10220

EUROPEAN UNIVERSITY INSITUTE

Department of Political and Social Sciences

EUROPEAN UNIVERSITY INSTITUTE
RECEIVED
23 APR. 1999
LIBRARY

THE TAMING OF INEQUALITY IN RETIREMENT

A comparative study of pension policy outcomes

by

AXEL WEST PEDERSEN

Thesis submitted for assessment with
a view to obtaining the degree of Doctor of the
European University Institute

Florence, May 1999

3/C [illegible]

European University Institute
3 0001 0032 8933 9

(7)
Rosso

EUROPEAN UNIVERSITY INSITUTE

Department of Political and Social Sciences

THE TAMING OF INEQUALITY IN RETIREMENT

A comparative study of pension policy outcomes

by

AXEL WEST PEDERSEN

LIB
331.252
PED

Thesis submitted for assessment with
a view to obtaining the degree of Doctor of the
European University Institute

Examining jury:

Prof. Tony Atkinson, Nuffield College
Prof. Richard Breen, European University Institute
Prof. Gøsta Esping-Andersen, Università di Trento (Supervisor)
Prof. John Myles, Florida State University

Florence, May 1999

Acknowledgements v

CHAPTER 1: INTRODUCTION **1**

1.1 Introduction 1
1.2 Historical background 3
1.3 Background in contemporary debates 6
1.4 A comparative strategy and its limitations 9
1.5 The dependent variable 11
1.6 Plan of the thesis 16

PART I: THEORY AND METHOD ***19***

CHAPTER 2: FROM INSTITUTIONS TO OUTCOMES **21**

2.1 Introduction 21
2.2 The rediscovery of institutions and outcomes 22
2.3 The welfare state and inequality – main theoretical positions 26
2.4 The complexity of contemporary pension systems 32
2.5 Measures of institutional variation 39
2.6 The outcome variable: specification and justification 50

CHAPTER 3: THE FORMATION OF RETIREMENT INCOME **63**

3.1 Introduction 63
3.2 Sources of inequality – a formal analysis 65
3.3 A trade-off between equality and generosity? 73
3.4 The interplay of public and private pensions 80
3.5 Individual retirement provision – motives and instruments 84
3.6 Occupational pensions 92
3.7 Conclusion: an optimal mix of flat-rate and earnings related benefits? 101

CHAPTER 4: METHOD AND DESIGN **107**

4.1 Introduction 107
4.2 Why comparative analysis? 108
4.3 On the comparative method 113
4.4 A review of existing comparative studies 125
4.5 Design and hypotheses 131

PART II: COMPARATIVE ANALYSIS 139

CHAPTER 5: INSTITUTIONAL VARIATION AND INCOME PACKAGING 141

5.1 Introduction 141
5.2 Summarizing institutional variation: Benefit Level and Benefit Range 142
5.3 Income packaging 156
5.4 Substitution between public and private pensions? 165
5.5 Concluding remarks 172

CHAPTER 6: THE DEGREE AND PATTERN OF INCOME INEQUALITY 175

6.1 Introduction 175
6.2 Lorenz dominance and partial orderings 178
6.3 Gini inequality 186
6.4 The structure of inequality 200
6.5 Group differentials and the contribution to overall Gini inequality 209

CHAPTER 7: EXPLAINING VARIATION IN OUTCOMES 215

7.1 Introduction 215
7.2 Internal analysis: the contribution to inequality by income sources 216
7.3 External analysis: patterns of covariation across countries 230
7.4 Concluding discussion 251

PART III: LONGITUDINAL ASPECTS: THE CASE OF DENMARK *257*

CHAPTER 8: REFINING THE MEASUREMENT OF INEQUALITY 259

8.1 Introduction 259
8.3 Presentation of the data 263
8.3 Cohort analysis 267
8.4 From yearly to permanent income 272
8.5 Conclusion 274

CHAPTER 9: INCOME TRAJECTORIES: THE EFFECTS OF DURATION AND WIDOWHOOD 277

9.1 Introduction 277
9.2 Previous research on income dynamics in retirement 279
9.3 Variation in permanent income according to gender, marital status and widowhood 281
9.4 Fixed effects estimation: the role of private income components 282
9.5 Results from the estimation of two dynamic models 285
9.6 Concluding remarks 288

CHAPTER 10: SUMMARY AND CONCLUSIONS 291

10.1 Introduction 291
10.2 Between policy relevance, academic discourse, and historical evidence 292
10.3 Mechanisms and micro-theoretical foundations 295
10.4 Results of the comparative analysis 298
10.5 The troubling case of Denmark 302
10.6 Implications for contemporary pension reform 303

APPENDICES 305

Appendix I: The choice of equivalence scales 307
Appendix II: The definition and measurement of inequality 311
Appendix III: A method for subgroup decomposition of the Gini index 319
Appendix IV: Tables 323

BIBLIOGRAPHY 325

ACKNOWLEDGEMENTS

This dissertation has been long underway. I would never have managed to finish if had it not been for the generous help and support I have received from many people since I started to work on this project in 1992.

First and foremost I am deeply indebted to my supervisor Gøsta Esping-Andersen. His crucial role goes back to the autumn of 1991 when he encouraged me to apply for a place in the doctoral program at the EUI – a decision I have never had reason to regret. His supervision of my work has been characterized by a balance of freedom and direction. Attending his weekly seminars at the EUI was a tremendous inspiration. The seminars were unique because of his extraordinary qualities as a scholar, inspirator and commentator, but also because of his conscious efforts to mobilize a spirit of collective learning among the students participating. I benefited a lot from the lively discussions of my own work as well as the work of fellow students that took place in these seminars.

Next in line I must express my gratitude to John Myles for the extensive correspondence we have had over the last three years, after I left Florence and went back to work in Oslo. Inspiration, direction and confidence are key words to describe what I have received. Our exchanges have encouraged me to surrender to my weakness for methodological issues and for trespassing into territory that sociologists and political scientists usually leave to economists.

I would like to thank the many people who have read and commented on preliminary outlines of the study and earlier versions of the chapters of the present thesis. I am grateful to all the participants in Gøsta Esping-Andersen's seminars who commented on various preliminary outlines. Among my fellow students at EUI, I am particularly indebted to Mary Daly and Johan Jeroen De Deken for many inspiring discussions on comparative welfare state research, and for their patient reading and detailed commentary of earlier versions of the thesis. Also a number of my colleagues at Fafo Institute for Applied Social Science have given valuable comments to various draft chapters: Stein Ringen, Espen Dahl and Ivar Lødemel.

I owe a special thank to Joakim Palme at SOFI in Stockholm, who shared data from the SCIP data-files with me and helped me to create a number of graphical presentations that play an important role in the dissertation. I am grateful to Koen Vlemincx at the Luxembourg Income Study for his patient and competent answers to my numerous questions about LIS over the years.

Four institutions have given crucial inputs to the work on this thesis. First, I should express my gratitude to the EUI. I enjoyed every minute of the three and a half years I spent at the Badia. The people who made this time so enjoyable are too many to mention. Secondly, I would like to thank Fafo for generously supporting me in my rather prolonged attempts to complete this thesis. The Director of Fafo Dag Odnes and other colleagues have repeatedly accepted my all too optimistic forecasts about the date of completion. Thirdly, I am indebted to the Danish Research Council for the Social Sciences for economic support to me and my family during our third year in Florence. Fourthly, I received crucial support from Centre for Labour Market and Social Research (CLS) in Århus. The director of CLS Niels Westergaard-Nielsen generously provided me with working space and access to the *longitudinal data used in Part III of the thesis. CLS even provided me with a research assistant – Kim Poulsen – who did all the computing.*

During the last weeks before completing this final version of the thesis Martha Sue Snodgrass did a splendid job of correcting my English and helping me to improve on various editorial aspects.

God knows that I owe the biggest thank to my wife, who followed me to Florence for three and a half years, and who has tolerated my long working hours and my almost chronic state of distraction. Hopefully, I can now start to make up for this.

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

The topic of the present thesis is the relationship between institutional features of national pension systems (policy) and the degree of income inequality prevailing among a generation of old age pensioners (outcome).

Although a basic public responsibility for income protection among the elderly has been universally recognized in all developed democracies – in particular since World War II – national pension systems show wide differences in their basic "ideology", benefit formula, generosity, coverage, method of financing, etc. The scope of public responsibility in the area of retirement provision and the way it should be institutionally implemented has often been subject of heated public debates and – from time to time – even of fierce political struggle.

National pension systems differ across the OECD area, first and foremost, in the way they use and combine five prototypes of social policy instruments: 1) Means-tested schemes, which provide ad hoc protection against economic hardship. 2) Universal flat-rate schemes ("demogrants"), where benefits are granted to all elderly on the basis of residence or citizenship. 3) Social insurance schemes, which distribute benefits according to individual income and contribution histories as they have unfolded prior to retirement. 4) Mandating, the imposition of legal requirements on private actors to establish and finance pension schemes of a certain kind and quality– typically the object of regulation are employers and/or their employees.[1] 5) Tax subsidies intended to stimulate (and regulate) voluntary arrangements for retirement provision – either occupational (employment related) schemes or individual savings/insurance schemes (Thompson and Upp, 1997).

Both historical and contemporary policy debates in the area of retirement provision can be seen to evolve around the question: which of these instruments or combination of instruments is best suited to advance a relevant set of policy goals?

There can be no doubt that national policy developments in this area are strongly influenced by the forces of tradition and institutional inertia. Some countries have a long tradition for compulsory social insurance as the primary policy instrument, while others have emphasized minimum protection through the provision of means-tested or flat-rate benefits. However, suggestions to adjust or fundamentally change the mixture of policy instruments do from time to time appear on the political agenda in most countries.

Typically, demands for pension reform have appeared in the wake of major societal changes. One example is the period with high and stable economic growth rates experienced by the Western economies in the 1950s and 1960s. During those two decades, revision and reform in national pension systems were carried out throughout the OECD area. Another example is the contemporary debates that appear to have been triggered by the prospects of a major demographic shift – the aging "crisis" – by widespread problems controlling public expenditure and by the perception of a tougher economic climate related to processes of globalization, technological change, etc.

---

[1] One can make a distinction between (collective) employer mandates and individual mandates, the latter being a relative recent phenomenon in the area of retirement provision, which has been strongly advocated by the World Bank (World Bank, 1994) and spearheaded by the famous Chilean pension reform.

Policy debates in the area of pensions systems and retirement provision tend to involve disagreements on normative as well as positive issues. The range of objectives to be pursued in the area of retirement provision and the way they should be balanced is highly controversial. However, disagreements on positive issues are often equally important. How do different policy mixtures actually perform in interaction with the relevant social and economic forces? What are their long-term implications for labor supply, aggregate savings rates, public finances, general economic performance and last but not necessary least, the distribution of income, wealth and consumption within and between generations and age-groups?

To state the topic of this work somewhat more precisely, I am concerned with what can be called *the egalitarian argument in favor of social insurance*. As I shall describe below, the argument surfaced in policy debates in the Scandinavian countries and in the UK in the 1950s and 1960s and it is no less relevant for contemporary debates about alternative policy strategies to meet the challenges of an aging society. The main purpose of the present thesis is to specify this argument and to confront it with relevant empirical evidence.

The argument is based on a certain normative commitment that some might be inclined to reject. It assumes that minimizing the degree of income inequality prevailing among a generation of retirees is a relevant policy objective – although of course it must be weighed against other distributive objectives and concerns for economic performance. Still, I suspect that the positive theoretical foundations and the empirical implications of the argument are by far the most controversial.

At the outset one might think that an emphasis on the degree of income inequality in retirement would exclude earnings related social insurance as an attractive policy instrument. Apparently, the provision of means-tested or flat-rate benefits would be the most effective means to promote a fairly egalitarian income distribution among old age pensioners. Both means-tested benefits and flat-rate benefits break the link with pre-retirement income differentials, while earnings related social insurance benefits will tend to perpetuate such links. It is not surprising therefore that justifications for social insurance schemes are typically cast in terms of a quid pro quo correspondence between the distribution of premiums and benefits. Or they are cast in terms of a distributive objective that has nothing to do with vertical (re-) distribution: the principle of income security and income stability (see for instance Goodin, 1990). In its pure form, the principle of income security is concerned with the degree to which individual pensioners can uphold income standards from their active years and hence by implication it is consistent with a preference for the preservation or reproduction of pre-retirement income differentials (see Myles [1984] 1989: 54-55).

However, the relationship between policies and institutions on the one hand and societal outcomes on the other is likely to be complex in the area of retirement provision. This is so due to the inter-temporal nature of pensions and the different ways private actors – individuals, companies, unions and insurance companies – can be expected to respond to different types of public pension provision and regulation. Retirement provision is certainly one of the functional areas of the welfare state, where it is justified to talk of a mixed economy of welfare, thanks to a potentially strong involvement of private actors and institutions. Thus, in order to address the positive issues involved in discussions about the choice of policy instruments, both theory and empirical evidence is needed.

The egalitarian argument in favor of social insurance embodies the rather paradoxical idea,[2] that there might be a rationale for earnings related social insurance also in terms of preventing excessive income inequality within a generation of retirees.

This argument is not, I must hasten to add, an argument in favor of an exclusive reliance on earnings related social insurance. It is, rather, an argument in favor of a mixture of minimum provision through universal and/or means-tested programs and earnings related social insurance that meets the demand for income replacement among broad segments of wage earners:

> *If the public pension system is based solely on flat-rate and/or income-tested benefits (supplemented with tax-stimulation for voluntary arrangements), inequality in the distribution of disposable income among retirees will tend to be high compared to a situation where – in addition to an certain minimum protection – the demand for income replacement among broad segments of wage earners is met by earnings related social insurance.*

In Chapter 3, I make an attempt to specify this argument more precisely and explore its logical components as well its potential theoretical foundation(s). Let me here just mention that one of the key mechanisms, on which the argument rests, refers to the interplay between public and private sources of retirement provision. If the public pension system does not offer sufficiently high replacement rates (income security) for broad segments of the economically active population (wage earners), complementary occupational pension schemes will tend to flourish. For various reasons it can be expected that these and other private institutions will distribute retirement income in such a way as to further intensify income inequalities from the pre-retirement stage. While public social insurance schemes will tend to roughly reproduce income differentials from the pre-retirement life-phase (lifetime income),[3] the most prominent private institutional substitutes are expected to distribute retirement income in a way that will amplify pre-retirement income differentials (see Stephens, 1995).

1.2 HISTORICAL BACKGROUND

Different versions of the egalitarian argument in favor of social insurance appeared in policy debates in the Scandinavian countries and in the UK in the 1950s and 1960s.[4]

These countries share a historical tradition for universal minimum protection in old age. In the 1950s their public pension systems were designed to provide a flat-rate income guarantee to all citizens above a certain age – in rather sharp contrast to the

---

[2] Korpi and Palme (1994) call it "the paradox of redistribution".

[3] At least, this is a characteristic of the ideal-typical social insurance scheme envisaged in the hypothetical statement.

[4] Apparently the same type of argument was raised during the so-called great pension debate in Canada in the 1970s, where in particular the Canadian Labour Congress argued for a radical expansion of the income related second tier of the Canadian pension system (the Canada/Quebec Pension Plans) (see Myles and Teichroew, 1991:92-96).

"Bismarckian" approach to old age provision based on compulsory earnings related insurance that can be found in most Continental European countries. Even if my main focus here is on the basic between the pension systems found at the time in Scandinavia and the UK similarities – the common emphasis on minimum protection –, one should not overlook their historical differences. In the UK, the old age pension system established with the National Insurance Act in 1946 was firmly built on the Beveridge model of flat-rate social insurance.[5] The payment of flat-rate benefits was combined with a peculiar system of funding based obligatory flat-rate contributions. As in earnings related social insurance, the right to benefits was linked to the payment of contributions during the pre-retirement life-phase. In the three Scandinavian countries, by contrast, the funding of old age pensions was based on general taxation and/or on a system of proportional contributions, without any implications for the allocation of benefits. Benefits had traditionally been subject to a means-test in all three countries, but means-testing was being totally or partly lifted in Sweden from 1946, in Norway from 1959 and in Denmark from 1964.

During the 1950s and 1960s proposals for a major pension reform emerged in all these countries with a view to supplement (or replace) the existing system of minimum protection for the elderly with a second tier of earnings related social insurance pensions. In all cases these proposals for reform originated either from the trade-union movement or from the political left and different versions of the egalitarian argument in favor of social insurance were part of the political rhetoric associated with these reform proposals.

In the UK the main architects and proponents of reform were a group of social policy analysts including Richard Titmuss, Brian Abel-Smith and Peter Townsend, who in collaboration with the Labour parliamentary spokesman Richard Crossman managed to persuade the Labour Party to accept a proposal for an earnings related pension system (National Superannuation) as part of Labour's campaign in the 1959 election (see Heclo, 1974; O'Higgins, 1986:108ff and Crossman, 1981:563ff). They justified their proposal on the basis of the following diagnosis: The existing flat-rate public pensions were becoming increasingly inadequate, not the least due to the system of funding by flat-rate contributions, the level of which was almost impossible to raise. The inadequacy of the flat-rate benefits coincided with and stimulated a strong growth in tax-favored occupational pension schemes among the more privileged strata of the workforce. The likely result was a dualized distribution of income protection in old age and a corresponding high degree of economic inequality in retirement (Titmuss, 1955).

The members of the Titmuss group argued that a superannuation reform could solve key problems associated with the existing system. The introduction of earnings related benefits would help legitimize the move towards earnings related (proportional) premiums and hence facilitate a radical improvement of benefits levels. With a public system offering decent income protection also for the more well-off segments of the workforce, the significance of occupational pension schemes would diminish in particular since the existing tax-privileges for occupational pension schemes would be removed as part of the reform.

---

[5] Admittedly this label is both somewhat anachronistic and potentially misleading as I do not mean to refer specifically to the model of social security laid out in the famous Beveridge report of 1942. Rather I include a broader set of approaches to income provision in retirement with an emphasis on flat-rate benefits – whether they are distributed universally among the elderly or subject some sort of means-test. The Danish national pension act of 1891 is a pioneering example.

Hence, the proposal for pension reform introducing a general earnings related superannuation scheme combined with minimum protection was motivated and justified in egalitarian terms. Contrary to the existing flat-rate scheme it could help ensure that income differentials from the pre-retirement life-phase would not be amplified in retirement:

> *The least we can do is to ensure that there are not more inequalities in old age than in working life. (Abel-Smith and Townsend, 1955).*[6]

Although this proposal was formally adopted by Labour in the late 1950s it was highly controversial within the party and met with resistance, in particular from parts of the British trade-union movement (Heclo, 1974). When Labour finally came into office in 1964, the new government did not actively pursue the reform proposal. In response to the original Labour proposal, the Tory government had in 1959 implemented a modest employment related – but not earnings related – second tier scheme with provisions to opt out for employers running their own occupational pension schemes. Finally in 1975 a modest earnings related pension scheme – SERPS – was enacted in the UK with continued provisions for contracting out.

In the three Scandinavian countries, the proposals to supplement the existing system of minimum protection in old age with a second tier of earnings related pensions was much less of an academic endeavor. It was pushed mainly by blue-collar union branches and the respective trade-union peak organizations – the LOs. Also in Scandinavia the growth in occupational pension schemes among more privileged strata was an important motivational force. The LOs were concerned with ensuring their members – mainly manual workers – participation in pensions schemes that promised to uphold income standards from the pre-retirement phase. They wanted income protection comparable to the occupational pension schemes that where prevalent among white-collar strata both in the public sector and in private companies. With the rapid economic growth, the objective of income security became increasingly relevant even for manual workers.

After the respective LOs had first made attempts to establish general occupational pension schemes for their constituencies through centralized wage bargaining, the demand for superannuation reform was eventually carried into the political arena by the Social Democratic Parties (Hippe and Pedersen, 1996). The debate on a public superannuation reform came first in Sweden and here it developed into a major political battle between left and right, waged over the later half of the 1950s. Two parliamentary elections and a referendum were held before the Social Democratic proposal to establish a second tier of earnings related pensions (ATP) was finally passed with very close margin in 1959 (Molin, 1965, Heclo, 1974). In Norway the Labor Party committed itself to a pension reform of Swedish inspiration in 1963, and the reform was enacted with broad parliamentary support in 1966 (Pedersen, 1990, Hippe and Pedersen, 1996). In Denmark, a Social Democratic government presented a proposal for an earnings related second tier in 1967, but it did not gain sufficient support. The proposal failed partly because of opposition within the labor movement itself – with powerful trade-union branches (metal workers) being openly hostile to the reform – partly because of parliamentary opposition from the left as well as the right of the Social Democratic minority government (Vesterø-Jensen, 1984).

---

[6] An almost identical statement can be found in Titmuss (1955:166).

The divisions over the issue of superannuation reform in the three Scandinavian countries involved a range of political motives – among which the goal of minimizing the degree of income equality in retirement might not have been the most important from a causal perspective. The interests and aspirations of blue-collar workers to share in the pension privileges of the "salariat" is arguably the single most important motivational force behind the eventual reforms in Sweden and Norway.[7] Secondly, for the political left, one of the attractive features of a superannuation reform was the prospect of the accumulation of pension funds under public control. This was surely the most controversial aspect of these reform proposals from the perspective of employers' associations and non-socialist parties (Molin, 1965; Pontusson, 1984; Pedersen, 1990).

Nevertheless, egalitarian arguments of a similar nature to those advanced by the Titmuss group in the UK did play a role in the political rhetoric also in the three Scandinavian countries. Proponents of these reform proposals argued – in particular in exchanges with left-wing critics – that a two-tier system was preferable from an egalitarian perspective. It would at the end of the day produce an income distribution among future generations of retirees with less inequality than the distribution that was likely to follow from a continuation of the existing flat-rate schemes combined with a spontaneous (market driven) diffusion of occupational pension schemes.

This argument has continued to form part of the standard political justification for these systems in Norway and in Sweden. A good example of this is the report published in the mid-1980s by the Swedish LO containing a study of the income distribution among old age pensioners in the early 1980s. The report concluded that the ATP system had in fact achieved its primary goal of modifying the degree of inequality found among younger cohorts of old age pensioners (LO, 1984).

1.3 BACKGROUND IN CONTEMPORARY DEBATES

The egalitarian argument in favor of social insurance is no less relevant for contemporary policy debates, although the present day debates are more concerned with alternative strategies of retrenchment and cost-containment in the existing public pension schemes than with a choice between alternative expansionary reforms.

During the first three postwar decades – the Golden Age of the Keynesian welfare state – public pension systems were expanded throughout the OECD area. Coverage was increased and replacement rates were drastically improved.[8] One of the most prominent structural reforms of the period was the introduction of earnings related social insurance schemes in countries that had previously relied exclusively on minimum provision – Canada, Finland, Norway, Sweden and the UK all followed this route to various degrees. A complementary line of reform can be traced among countries like France, Italy and the US with a historical tradition for earnings related social insurance. Here a form of means-tested minimum benefit was introduced to cater to households lacking a continual history of labor market participation.

---

[7] Similarly it can be argued that the failure by the trade-union movements in the UK and Denmark to agree on a collective rather than individual strategy to raise pension standards on behalf of blue collar workers is an important part of the explanation for the eventual failure of reform.

[8] A documentation of the impressive development in coverage and benefits levels of public pension systems which has taken place in all OECD countries since the 1930s can be found in Palme (1990).

Since the early 1980s, however, macro-economic problems, the prospects of low economic growth rates and aging populations have put measures to curb public pension expenditure on the policy agenda in most OECD countries (OECD, 1988; 1998; World Bank, 1994; Pierson, 1995; Myles and Quadagno, 1997).

Parallel to this change in the policy climate surrounding public pension systems, an almost universal tendency of growth in private pension provision can be observed.[9] In some countries shifting the balance between public and private pensions is an explicit policy goal. In others, private provision grows more spontaneously or as an unintended result of increasing dissatisfaction with (or lack of trust in) the benefit levels promised by public pension systems (Pestieau, 1992; Börsch-Supan, 1997).

Although reducing the projected growth in public pension expenditure has been high on the political agenda since the early 1980s, few developed countries actually carried out serious structural changes in their national pension systems up until the early 1990s – see the reviews in Holtzman (1989) and Mouton (1991). Incomplete indexation of benefits and accumulated pension rights and other piecemeal changes appear to have been the most widespread practical response during the 1980s.

During the 1990s, however, a number of developed countries have in fact implemented more profound changes in their institutions for public pension provision (for an overview see Myles and Quadagno, 1997 and OECD, 1998).

In some of those countries the general thrust of reforms has been to make public pension systems more directly redistributive and targeted towards the objective of minimum security. Examples of this can be found in Australia, Canada, Denmark and New Zealand, where the use of means-testing has been increased at the expense of universal entitlements. A different variation of the general theme of targeting can be said to characterize reforms in Norway and the UK, where the emphasis on flat-rate minimum provision has been reinforced by direct and indirect cutbacks in the second tier schemes of earnings related benefits. In the UK a significant step in this direction was taken by the Thatcher government in 1986, with the introduction of the Pension Act, which seriously curtailed the continued maturation of SERPS. In Norway the second tier scheme was changed from 1992, with the effect of lowering future pension accrual for all wage earners and especially for middle and high-income earners. Even more important in the Norwegian case is the continued tendency for under-indexation of central parameters of the second tier, resulting in a gradual convergence towards a flat-rate system.

Another group of countries can be said to have responded to similar structural imperatives by moving in a completely different direction – i.e., making public pension provision less directly redistributive. Recent pension reforms in Germany, Italy and Sweden have been designed to reinforce the correspondence between contributions and benefits in the existing social insurance schemes. In the case of Italy and Sweden it is more correct to say that the existing "defined benefit" schemes are being replaced with entirely new schemes based on the principle of "defined contribution" and lifetime accrual of pension rights.[10]

---

[9] The tendency is not entirely without exceptions. In the US coverage with occupational pension schemes among the workforce has shown tendencies of decline from the early 1980s (see Bloom and Freeman 1992).

A third distinctive trend of reform can be observed in countries like the Netherlands and Australia, where flat-rate or means-tested pension systems have been supplemented with legislation that makes occupational pension schemes obligatory for the entire labor market (collective mandating).[11]

If we concentrate attention on the group of countries that introduced a second tier of earnings related public pensions during the 1950s and 1960s – Canada, Finland, Norway, Sweden and the UK – a strong divergence in recent pension reforms can be observed. In Canada, Norway and the UK the traditional emphasis on minimum provision has been reinforced – partly by discrete reform initiatives and partly by more subtle and piecemeal changes. By contrast, Finland and Sweden have implemented major reforms that are intended to strengthen the earnings related part of the overall system. While the former group of countries can be said to have moved some way back towards their historical roots in retirement provision, the two latter countries appear with the recent reforms to have closed the door to their historical legacy of an exclusive reliance on minimum protection.

Nevertheless, despite this apparent divergence in the resulting pension policies, the contemporary public debates on pension reform do include some of the same general themes. One can say that the historical debates over superannuation reform – from the 1950s and 1960s – have been run in reverse. Calls for an abolition of the second tier schemes and a return to minimum provision have surfaced on the political agenda since the early 1980s, not only in the UK and Norway, but also in Finland and – in particular – in Sweden (see Ståhlberg, 1997).

Like in the earlier wave of superannuation debates, several difficult economic and political issues are involved. Possible consequences for the future income distribution among retirees is not necessarily the most important of these concerns, but there can be no denying that this aspect continues to play a role – at least at the level of political rhetoric. The egalitarian argument in favor of social insurance is often invoked among defenders of the second tier schemes (in their existing or reformed versions), and relevant counter-arguments are voiced by political actors and commentators who advocate a partial or total return to a system concentrated on minimum provision.

These policy concerns have also been reflected in recent academic literature. The egalitarian argument in favor of social insurance has been embraced by a number of prominent scholars within the tradition of comparative welfare state research – either presenting it as a highly plausible hypothesis or as a well-established empirical fact

---

[10] Contrary to ideal-type private insurance, these new pension schemes in Italy and Sweden are financed primarily on a pay-as-you-go basis, and the strong links between lifetime earnings and benefits are being modified by rules that guarantee pension accrual in specific life-situations without paid employment – like caring for small children, long-term sickness, unemployment and time spent in education.

[11] In the Netherlands there has been a gradual development over the last decades towards universal coverage with mandated occupational pension schemes, while in Australia general mandating was introduced in 1992 (Olsberg, 1995). It is worth noting that a proposal to introduce general mandating of supplementary pension schemes in New Zealand was defeated in a recent referendum.

(see for instance, Myles, ([1984] 1989; Stephens, 1995, 1996; Korpi and Palme, 1994; Bjørklund, 1998).

In Chapter 4 I shall review a few empirical studies that have attempted to test hypotheses derived from the argument, either on the basis of time-series data for a single country (Jäntti, Kangas and Ritakallio, 1996) or on the basis of cross-national data (Palme, 1989; 1993; Korpi and Palme; 1994; Kohl, 1992; Delhausse et al., 1994; 1996). All these studies – except for the study by Delhausse et al. (1994; 1996) – reach conclusions that appear to confirm the expectation that pension systems featuring a combination of minimum provision and earnings related social insurance tend to do better than alternative institutional arrangements in terms of keeping income inequality in retirement low. I shall maintain, however, that they all suffer from various methodological weaknesses. In addition to the perpetual methodological problems of measurement, of controlling for other relevant causal factors, etc, a key weakness of most of the existing literature, is the lack of precision with which the argument is stated. Does it imply a truly causal claim with direct operational implications, or is it rather a more modest claim about patterns of covariation? Under what social and institutional conditions is the argument supposed to be valid, and what is the precise counterfactual situation to which the argument refers?

It can be worthwhile in this context to consider once again the classical formulation of this argument by Richard Titmuss and his colleagues. Their version of the argument referred very specifically to the situation in the UK by the mid-1950s, and each of the two alternative institutional choices (preservation of the existing flat-rate Beveridge system or introduction of a new comprehensive and partly earnings related scheme) was quite precisely defined. The problem is, however, that a claim about the potential consequences that would have followed from a choice between alternative policies in the UK in the 1950s can never be tested by itself. It is necessary to generalize the issue, if we are to have any chance of actually confronting the argument with empirical evidence.

1.4 A COMPARATIVE STRATEGY AND ITS LIMITATIONS

The historical debates on earnings related pensions that took place in countries belonging to the "Beveridge" tradition have not only helped to inspire and motivate the present study. They have also produced the most important empirical evidence for the comparative analysis presented in Part II of the thesis. From the 1950s and 1960s a clear tendency of divergence in the design of national pension systems started to materialize within the "Beveridge" camp. In the present study seven of these countries are represented: Australia, Canada, Denmark, the Netherlands, Norway and Sweden. In some cases an ambitious second tier scheme was in fact introduced, while in others the traditional reliance on universal minimum provision was maintained. This divergence provides some highly relevant cross-national evidence about the distributive consequences of alternative institutional approaches.

In the comparative analysis I also included two countries that belong to the Bismarckian tradition – Germany and the US. A preoccupation with issues that have mainly been debated in the "Beveridge" camp, does not imply that the practical experience of countries belonging to the Bismarckian tradition can be rejected as irrelevant. The distributive outcomes to be observed in these countries does represent a valuable source of information for the empirical validation of the "egalitarian argument".

It is important at this point to stress a serious limitation of the comparative strategy, related to the problem of historical contingency. Even if the available cross-national evidence could provide us with valid answers to the policy questions faced by pension reformers in the 1950s and 1960s, these answers might not be relevant for the policy issues that are facing us today. The egalitarian argument might have been true (or false) in the 1950s and 1960s, but false (or) true today.

Studies of the outcome of pension policies confront a special and very serious problem related to the inter-temporal nature of pensions and retirement provision. There is likely to be a considerable time-lag between important institutional changes in pension systems and their observable outcomes in terms of a realized income distribution among a generation of retirees. It takes a lifetime for a pension system to mature, and the final consequences of a specific public pension system – including the effect of behavioral responses – can only be observed when the cohorts who have been exposed to the system for their entire active life-course, finally retire. Hence, the income distribution among the contemporary generation of retirees must be assumed to reflect the historical shape of the public pension system and the expectations it created for individuals in their active lifetime and for relevant collective actors (employers, unions, etc.).

This inescapable characteristic of the subject area forces students into a rather unpleasant dilemma. If you want to be up-to-date and study the workings of the current pension system and savings behavior among the present generation of the economically active population, you must accept that the final outcome is unobservable at present and far removed in a distant future. If, on the other hand, you insist on examining the final outcome of pension policies – in terms of a realized income distribution among retirees – you have to accept that the causally relevant pension systems and the labor markets (broader societies) in which they operated are somewhat antiquated and, if you like, primarily of historical interest.

In this study I have accepted the latter fate. I analyze the income distribution among contemporary generations of retirees, recognizing that this implies that I am engaged in an evaluation of yesterday's pension policies and pension systems. I do entertain a solemn hope, however, that improved knowledge about the outcome of historical policy decisions and institutions might be relevant also for contemporary institutional choices.

In the previous sections, I suggested that the topic of the present thesis has presented itself in different versions at different historical time-points. In policy debates in Scandinavia and the UK in the 1950s and 1960s, one was concerned about the possible consequence of adding a second tier of earnings related pensions to the existing regimes of flat-rate minimum provision. Could it be that the addition of an earnings related second tier – a compromise between "Beveridge" and "Bismarck" – would have beneficial consequences for the final distribution of income among future generations of retirees? In more recent policy debates over the last decade, the question has reemerged in some of these countries, but in a different form: what would be the potential consequence of a dismantling (fully or partly) of such second-tier schemes in order to let public pension provision – once again – rely more exclusively on flat-rate minimum provision and possibly means-testing?

It cannot be taken for granted that a correct answer to the first of these two questions, based on the observed outcome among contemporary pensioner cohorts, will automatically provide the correct answer to the second question. As pointed out by Elster (1989) a valid explanation does not necessarily entail a correct prediction.

Only under some very specific conditions will the answer to the contemporary policy question converge with the answer to the historic question. First, it must be assumed – as I have already done to a large extent – that the menu of institutional alternatives is fairly similar at the two time-points. The core issue is to choose a point on the range between pure minimum provision (the "Beveridge" pole) and pure insurance-based standard protection (the "Bismarckian" pole).[12] You can also put it in this way: The assumption is that the relevant choices facing contemporary pension reformers have already been tried out in some form or other by pension reformers of the 1950s, 1960s and 1970s. Secondly, it must be assumed that the outcome of alternative institutional choices does not depend too much on aspects of the societal context that have changed over the last decades: A pension system that worked well under the labor market and demographic conditions prevailing in the 1950s, 1960s and 1970s, will do so also under contemporary societal conditions. Thirdly, it must be assumed that the final distributive consequences of a certain expansion in public pension provision (a movement towards the "Bismarckian" pole) are equivalent to the expected consequences of a subsequent reduction (a full or partial return to the "Beveridge" pole).

Only if this set of assumptions is fulfilled, will a study of the present outcome of the historical decisions to expand (or not to expand) public pension provision in a certain direction provide relevant knowledge about the likely consequences of contemporary decisions to curtail (or not to curtail) public pension provision. Apart from brief discussions in Chapter 4 of the idea of conjunctural causation (Ragin, 1987) and the idea of asymmetrical causal relationships developed by Lieberson (1985), I shall leave these issues open and only return to them in the concluding chapter.

1.5 THE DEPENDENT VARIABLE

Most formulations of the egalitarian argument in favor of social insurance imply a normative concern for a certain type of outcome variable, the degree of income inequality prevailing among a cohort of retirees. By focussing the study on this argument I make a commitment to this aspect as a relevant evaluative criteria:

> *Pension systems should contribute to keep the degree of income inequality low among successive cohorts of old age pensioners.*

This objective is consequentialist in spirit. It is meant to relate to the combined effect of public and private sources of income protection, and it is thus concerned with the outcome of a set of pension policies, rather than with specific aspects of the policies themselves.

It is by no means the only distributive objective of potential relevance in this area. In the field of pensions and retirement income a number of distinct policy goals or outcome variables can be identified, all of which can be associated with economic equality in some sense. In the following, I shall review some of the more prominent alternative (or rather complementary) evaluative criteria that can be found in policy discourses and in the academic literature.

---

[12] See Graphs 3.1, 3.2 and 3.3 and the accompanying text.

Two of the policy objectives that tend to figure most prominently in contemporary policy discourses are 1) that pension systems should prevent the existence of widespread poverty among the elderly, and 2) that they should secure all economically active against a serious drop in income standards upon retirement. Myles ([1984] 1989) refers to these two rather different objectives as *income adequacy* and *income security*, respectively, and they correspond neatly to the immediate targets of the two traditional approaches to public pension provision: universal minimum protection and compulsory social insurance.[13]

In its pure form, the objective of income security is concerned exclusively with horizontal aspects of income distribution, the smoothing out of income streams over the life-cycle for each individual/household.[14] At the individual level the objective is to make sure that pre-retirement income is adequately replaced by a stable stream of pension benefits. When translated into aggregate terms, the aim is to secure that the average income position of pensioner households does not fall seriously below the average income standard enjoyed prior to retirement, or alternatively, the average for the contemporary economically active population.

Income adequacy, on the other hand, is – at least potentially – concerned with vertical aspects of the income distribution, but only in the "weak" sense of guaranteeing everybody a certain minimum income in retirement. [15] It should be noted, though, that this type of objective need not involve any direct concern for the specific (vertical) distribution of income among the contemporary generation of retirees at all, since an acceptable minimum (or a poverty line) tends to be either "objectively" defined or defined relative to average income standards prevailing in the population at large.[16]

In the earlier history of industrial capitalism, poverty among the elderly and disabled was an extremely serious social problem, equal in seriousness only with poverty rooted at the other end of the life-cycle, among families with small children (Rowntree's famous poverty cycle). However, during the past decades, the development and maturation of public pension schemes in the OECD countries has substantially improved the relative income position of the elderly. It is no longer an undisputed fact that the elderly constitute an economically underprivileged group (Smeeding, 1988; Hedström and Ringen, 1990; Hurd, 1990). To be sure, there are still a number of OECD countries where poverty – according to conventional definitions – is widespread among the elderly, but there are also countries where the risk of falling into poverty is neglectible among old age pensioners. (Smeeding, 1988, Pedersen, 1998).

---

[13] This does not mean that there is a one-to-one relationship between these objectives and the respective institutional approaches to retirement provision. A system based on flat-rate benefits might not do all that poorly in terms of providing income security and vice-versa for systems based on social insurance.

[14] I use the term horizontal to refer to redistribution of an individual's income over the life-cycle and to the ex-post redistribution that could take place within an actuarially fair insurance contract.

[15] See the quotations by Ringen (1987) and Korpi (1981) in Section 2.3 below for the distinction between a weak and a strong version of the egalitarian ethos.

[16] In comparative research the most prominent solution to the problem of selecting a poverty line is to use a certain fraction (like 50 percent) of the population median income.

Let me sum up the discussion so far. The traditional goals of income security and income adequacy are conceptually distinct from the objective that I have chosen to focus on here: minimizing the degree of income inequality among a cohort during its retirement years. In practice, however, there can be considerable room for compromise. The goal of minimizing income inequality in retirement can be translated into a requirement for distribution of income security between low-income and high-income segments of the population. There will not be "more inequalities in old age than in working life" (Abel-Smith and Townsend, 1955), if low-income segments experience at least the same degree of income security when entering and moving through retirement as do high-income segments. Another example of potential overlap is the point made by Hedström and Ringen (1990), that contemporary problems of low income among the elderly appear to be more a consequence of inequality in the distribution of retirement income than of a low average among retired households in general.

In the more recent academic literature another pair of alternative (complementary) distributive objectives have been given much attention.

The first is that pension systems should contribute to decrease (or at least not increase) the degree of *inequality in expected lifetime income* within a cohort or a generation (Aaron, 1977; Diamond, 1977; Burkhauser and Warlick, 1982; Ståhlberg, 1989b). For those who believe that people themselves could and should decide on how to allocate consumption over the life-cycle, this is one of the few "egalitarian" policy objectives that can be justified in the area of public pension provision (Tullock, 1983; see also Blinder, 1983).[17]

In order to estimate the effect of a pension system on the distribution of expected lifetime income, one needs to consider both the distribution of the financial burden (premiums and taxes) as well as the distribution of (expected) benefits. While the ideal-type social insurance scheme can be assumed to be more or less neutral in its (ex-ante) effect on the distribution of lifetime income within a cohort (Layard, 1977), various specific program features could very well render the system progressive or regressive in a lifetime perspective.

The second type of objective is related to the way pension systems distribute costs and benefits, and therefore consumption possibilities, between successive generations. The catchword is *inter-generational equity*. Public pension systems are almost everywhere based on pay-as-you-go financing, where current pension expenditure is paid for by the currently active population. In a steady-state scenario pay-as-you-go financing is perfectly compatible with inter-generational neutrality, as each generation pays for the retirement of the "parent" generation while it sends the bill for its own retirement on to the next generation. However, changes in the pension system itself (i.e., the introduction of more generous benefit plans or significant cutbacks) and demographic and economic developments are likely to produce asymmetries in the cost/benefit ratio for different generations. The contemporary concern in an aging society is of course that the young and future generations will be net losers.

It is interesting to note that the concern for the inter-generational distribution of income often takes actuarial neutrality as the implicit or explicit normative ideal. Each generation should have the same rate of return on its investment in the retirement of previous generations, rather than leaving a disproportionately heavy burden on the shoulders of future generations. It is not entirely clear, however, why the concept of inter-generational equity should not allow for some redistribution from richer to poorer generations. One could, for instance, require that the pension system should help reduce or at least not widen inter-generational differences in expected lifetime income/consumption. Despite ambiguities in the exact definition, the notion of inter-generational equity has drawn much attention, especially among academic policy analysts (see Johnson et al., eds. (1990) and Kotlikoff (1992) for important contributions to this literature, and Quadagno (1990) and Baker (1995) for two critical assessments).

---

[17] If the only relevant objective is to influence the intra-cohort distribution of lifetime incomes, while the allocation of income streams over the life-course is socially irrelevant, a public pension system would not be the most obvious instrument to use (Diamond, 1977).

It is a central assumption behind both of these latter policy objectives that issues related to economic well-being, inequality and the distribution and redistribution of economic resources should be seen in a lifetime perspective.

However, the empirical data necessary for actually describing the distribution of lifetime income within or between cohorts will very rarely be available (see however Schmähl, 1983), not to speak of the data required to measure the redistributive effect of a particular pension system in a lifetime perspective.[18] Studies that employ a lifetime perspective, must, therefore, invoke very strong, simplifying assumptions in order to make the necessary simulations, based – as is most often the case – on cross-sectional data.

Furthermore, recognition of the normative relevance of a lifetime perspective does not necessarily imply that this should be the *only* relevant frame for egalitarian objectives. It can easily be granted that certain short-term fluctuations in income streams from one year to the next are harmless, especially if they are anticipated and do not constrain the pattern of consumption (Atkinson et al., 1992). It is quite another matter to claim that any, more long-term changes in income streams, and thus variation in the way that total lifetime income is allocated over the life-cycle, is socially irrelevant (Tullock, 1983). In Chapter 3 I shall discuss the so-called life-cycle hypothesis which claims that the allocation of income and consumption over the individual's life-cycle is always the result of a successful attempt to optimize long-term welfare according to some inter-temporal utility function. The normative equivalent to this – originally positive theory – is that the allocation of income and consumption over the life-cycle is socially irrelevant (it is by definition optimal), and thus it involves a complete rejection of the goal of income security as a relevant policy objective.[19]

The position taken here is that the distribution of income within a generation/cohort as it passes through a certain life-phase – like child rearing or retirement – is socially relevant in its own right, also independently of the inequality picture that might obtain when incomes are summed over the entire lifetime. Of course, high degrees of life-phase specific inequalities are likely to be associated with a high degree of lifetime inequality, but I take the former to be socially relevant (undesirable) even if they should happen to cancel out in the lifetime perspective.

---

[18] In addition to having full information on lifetime incomes produced under the present pension system, one would ideally need similar information about the counterfactual situation that would have obtained without the system (or with an alternative system) in order to measure the actual redistributive effect (Layard, 1977).

[19] There is no necessary correspondence between the validity of the positive and the normative versions of the life-cycle theory. Although you recognize that people are constrained in their possibilities to successfully plan life-cycle income and consumption profiles, you might insist that the development of policy objectives and social evaluation should proceed "as if" the hypothesis were true.

The question remains how the degree of income inequality in retirement should be measured. What do we mean by the degree of income inequality found among a generation of retirees?

Most of the analysis undertaken in this thesis (the comparative analysis presented in Part II) is based on standard cross-sectional data from national income surveys. Annual income data for retired individuals who belong to different birth cohorts and are observed at different stages in the retirement phase are pooled together in one sample and the degree of inequality is measured across the resulting income distribution.

However, this will not necessarily produce an ideal picture of the degree of income inequality experienced by specific cohorts of retirees in each respective country.

One problem with annual data is that short-term fluctuations in income streams from one year to the next could exaggerate the more permanent income differentials among the population concerned. Furthermore, the pooling together of information from different cohort/age-groups is problematic. Cohort effects related to the continued maturation of pension systems, and the pattern of gender and class specific mortality risks, are likely to "bias" the picture of intra-cohort inequalities that is obtained from standard cross-sectional data.

One might argue therefore, that the ideal dependent variable would be the degree of income inequality experienced by a specific birth cohort, where the concept of income is defined as the average (expected) amount of (yearly) income received by each individual over the entire retirement phase.

A primary interest in the distribution of such a measure of "permanent income" within specific cohorts does not necessarily preclude any concern for the time-path of income streams over retirement for each individual. As suggested by Myles ([1984] 1989) and Kohl (1992), stability of real income streams received by individual households throughout retirement is in itself an important welfare objective. If an individual, in the course of retirement, discovers that the economic resources secured by public and private sources are being eroded by inflation or significantly reduced after the death of a spouse, it will most probably be too late to change savings and labor market behavior.[20]

The point is that it would be preferable – both from a normative and an analytical perspective – if these different aspects of the income distribution in retirement could be properly separated. This is only possible with large-scale panel data.

In Part III of the thesis I use panel data for a large sample of Danish old age pensioners in an attempt to sort out these different aspects of the income distribution in retirement, that can be found in this particular country. Members of specific birth cohorts are followed over a larger part of their retirement phase in order to measure the degree of inequality in "permanent" income (Chapter 8) and to estimate tendencies for income levels to decline over time or as a result of widowhood (Chapter 9).

---

[20] When people in working age experience reductions in income streams and living standards over time, the problem might often be of a temporary nature or at least in principle reparable. Gradual or sudden decreases in income standards among old age pensioners are likely to last.

1.6 PLAN OF THE THESIS

The main body of the thesis is divided into three parts: Part I: "Theory and method, Part II: "Comparative analysis" and Part III: "Longitudinal aspects: the case of Denmark".

Part I is further divided into three chapters. Chapter 2 attempts to situate the thesis within the tradition of comparative welfare state research, and I discuss main positions in the grand debate on the redistributive capacity of welfare states. The three last sections of Chapter 2 are devoted to the choice of independent and dependent variables of the present study. Existing attempts to develop quantitative measures of institutional variation in national pension systems are discussed, and, concerning the dependent variable, an argument is made for the normative relevance of the degree of income inequality prevailing among a generation of retirees.

Chapter 3 deals with the most important theoretical issues of a positive nature. I attempt to specify the egalitarian argument in favor of social insurance and to pinpoint a set of more specific mechanisms that must be invoked for the argument to make sense from a logical point of view. The argument rests on certain theoretical expectations: a tendency for trade-off between generosity and equality in the provision of public pensions, and a strong tendency for substitution between public and private income provision in retirement. The available evidence about the relationship between public and private pensions is discussed, and I try to evaluate the potential micro-theoretical foundations. The chapter concludes with a demonstration that the egalitarian argument in favor of social insurance can be presented as a consistent and plausible hypothesis.

Chapter 4 is devoted to the important methodological issues involved in an attempt to confront this hypothesis with relevant empirical data. I argue why I have chosen a comparative approach, but I also make a critical evaluation of the problems and limitations of the comparative method. I review some of the existing comparative studies that have been directly concerned with the income distribution in retirement as a social policy outcome, with a special focus on methodological problems. Finally, I present the research design used in the present study. I justify the choice of nine OECD countries for the comparative analysis, describe some critical choices made in the preparation of micro-data from Luxembourg Income Study (LIS) and formulate a number of hypotheses to guide the empirical analyses in Part II and III.

The comparative analysis in Part II of the thesis is organized in three chapters. Chapter 5 deals primarily with the main independent variable – institutional variation in national pension systems – and its relationship to variation in relative income levels and in the composition of income packages among retirees in the respective country cases. Two important analytical issues are addressed already in this chapter. Is there a trade-off between equality and generosity in public pension systems across this nine-country sample? Similarly, is there a tendency for substitution between public and private income sources?

Chapter 6 is almost exclusively descriptive. It deals with the measurement of the overall dependent variable: the degree of income inequality in retirement. I investigate whether a more or less complete ranking of the country cases can be achieved on the basis of the criterion of Lorenz dominance. As this is not the case, I move on to apply my preferred summary measure of inequality – the Gini index. The robustness of the resulting Gini ranking is tested in various ways, and also the scope of the observed cardinal variation in Gini inequality is discussed. In other words, can we be sure that the ordering of the country cases is actually valid, and are the observed differences in inequality really substantial, or trivial? The last sections of the chapter are concerned with differences in the way income inequality is structured in the respective country cases, according to age and family types.

In Chapter 7 I confront the core analytical issues of the comparative analysis: can the observed institutional variation be linked to variation in distributive outcomes in a way that renders support to the overall hypothesis? Two very different approaches are used in this chapter. The first I call "internal analysis", and it employs different methods to decompose overall inequality according to the contribution made by different income sources. The second approach is the truly causal analytical approach ("external analysis"), where the pattern of covariation between independent and dependent variables is the center of attention. In addition to a head-on confrontation with the main hypothesis, a number of auxiliary hypotheses are tested separately. Preliminary conclusions are summarized in the last section of this chapter.

The empirical analyses in Part III of the thesis are based on panel data, obtained from public (tax) registers and covering a large sample of Danish old age pensioners. It is of course a serious limitation that this analysis is done for one country and in one institutional setting only. This means that the findings can only very tentatively be used to draw conclusions about particular institutional effects. Hence, the purpose of this part of the thesis is rather modest: to serve as a correction to the comparative analysis of standard cross-sectional data that was presented in Part II.

In Chapter 8 I demonstrate how longitudinal data can contribute to a more comprehensive and adequate *description* of the income distribution among cohorts of old age pensioners. First of all I go beyond the cross-sectional snapshot by looking at changes in cohort specific income levels and income differentials over the retirement period. Then I investigate how the picture of income inequality within the elderly population changes as one moves from the conventional yearly accounting period to a measure of permanent inequality. Finally I try to control for the influence of differential mortality across income classes.

In Chapter 9 I make an attempt to sort out the effect of demographic processes and income dynamics that unfold during retirement. While a central purpose of Chapter 8 is to correct for fluctuations and relative movements in income streams during retirement, these movements become the central object of study in Chapter 9. In particular, I am interested to establish whether there is a general tendency – among Danish pensioners – for income to decline during retirement and whether the event of widowhood is associated with a drop in income for the surviving spouse. For this purpose I have estimated some, admittedly very simple, statistical models of the income dynamics in retirement.

Finally, the study and its findings are summarized in Chapter 10.

PART I
THEORY AND METHOD

CHAPTER 2

FROM INSTITUTIONS TO OUTCOMES

2.1 INTRODUCTION

Does politics matter?[21] It can be argued that this has been the overriding question in comparative welfare state research for the last decades. Does the mobilization and configuration of political forces (or political agency) make a difference in shaping welfare state policies and institutions; and do these policies and institutions in turn significantly modify the outcome of distributive processes in modern capitalist societies? This, I think, remains a core concern of comparative welfare state research even today, although the focus and methods of inquiry have changed considerably. As suggested above, the debate can be seen as involving two analytically distinct questions: first, whether the institutions of the welfare state are best explained by economic/demographic or political variables; and secondly, whether these institutions in fact achieve a redistribution of resources and life-chances favorable in terms of some measure of equality (Pampel and Williamson, 1989).

The present work does not purport to contribute to the first part of the "politics matters" debate, i.e., to an understanding of the causal factors behind variation in welfare state institutions. It is concerned only with the question whether welfare state institutions in their turn matter for distributive outcomes, and only a very restricted subset of this larger question will be addressed: the institutional configuration of national pension systems and its possible impact on the distribution of income among retirees.

In the introductory chapter I presented the topic of the present thesis with an emphasis on its immediate policy relevance, and its long-standing presence in the pension policy discourse – at least in the UK and in the Scandinavian countries. In the first part of the present chapter I shall attempt to situate the research topic within the wider tradition of comparative welfare state literature.

Two trends in comparative welfare state research over the last decade have helped motivate and give direction to this thesis: an emerging consensus about the need to focus on institutional features as the most valid operationalization of welfare state variation, and a growing interest in social and economic outcomes.[22] I shall argue that, although these tendencies are highly commendable in and by themselves, they could both benefit from being in closer contact with each other. Furthermore I shall suggest that an integration of these two tendencies, in studies of the link between welfare state institutions and social outcomes, is more likely to be fruitful when applied to more specific functional areas of the welfare state. As the remaining part of the chapter will show, even when the focus has been restricted to national pension systems and retirement income policies more generally, the task of devising reasonable measures of institutional variation and specifying the set of outcome variables is both complicated and controversial.

In the following section, I shall discuss these two tendencies in comparative welfare state research from the last decade, the move to "bring institutions back in", also in the context of variable-oriented comparative research and the renewed interest in social outcomes. I Section 2.3 I discuss what I consider to be the main theoretical positions in the grand debat about the redistributive effectiveness of welfare state interventions: the traditional optimisti view that used to pervade much of the earlier literature, the more recent "realist" challenge from both neo-liberal and radical critics and the realignment of the "politics matters" thesis i terms of an "institutional" position. The remaining three sections are devoted to a discussio of how the wider question of the distributive impact of welfare state institutions could b specified in the area of pension systems and the provision of retirement income. One migh say that the purpose is to prepare the ground for a specification of the main independent and dependent variable(s) for the present study. In Section 2.4 I describe the complexity o contemporary systems for retirement provision in the OECD countries. In Section 2.5 I review the most prominent attempts in the literature to develop parsimonious measures o institutional variation that could serve as independent variables in an analysis of distributive outcomes. Finally, in Section 2.6 I argue why income inequality in retirement has been chosen as the main outcome variable and discuss how it could be understood more precisely.

---

[21] The phrase was used in an important article by Francis Castles (1981).

[22] There is a third and for this work equally important tendency from the last decade, namely the growing pre-occupation with the interaction between public and private welfare. This topic will be treated more fully in Chapter 3 below.

2.2 THE RE-DISCOVERY OF INSTITUTIONS AND OUTCOMES

In the first generation(s) of macro-comparative research, most of the effort was concentrated on explaining welfare state variation – operationalized as the relative size of public or social expenditures. Some studies supported a structuralist view of the world; others found that, indeed, politics did seem to matter. Among the potential political explanations, theories about the impact of working class mobilization, operationalized as trade-union density and/or left-party strength (sometimes called the laborist approach) held a prominent position, but their efficacy vis-à-vis various structural variables appeared to be contingent on the general methodology employed (cross-sectional or time-series data), the choice of country cases (including developing countries or not) and the set of control variables used in the regression equations.[23]

It is fair to say that little attention was given to the second part of the "politics matters" thesis, and the most important reason was probably that it was simply taken for granted that comprehensive (read: expensive) welfare states did in fact achieve the alleged goals of alleviating poverty and promoting economic equality.[24] As pointed out by Esping-Andersen (1985; 1990), all sides to the debate entertained a linear conception of the welfare state itself, of the forces that were supposed to have shaped it and of the impact it was believed to have on social outcomes.

As a matter of fact, the exclusive reliance on a linear and one-dimensional conception of the welfare state was primarily a characteristic of large-scale statistical, or variable-oriented research efforts. In more theoretical work and in the tradition of qualitative comparative research, there was always a strong interest in institutional variation, inspired, for instance, by Richard Titmuss' (1974) idea about the existence of qualitatively different models (or ideal-types) of social policy interventions, or the (rather different) notion about the welfare state as an (expanding) set of social rights formulated by T.H. Marshall (1950).[25]

---

[23] The literature is massive. For an overview and critical examination of this first generation of comparative welfare state research see Shalev (1983) and Uusitalo (1984).

[24] One of the most influential contributions to this first generation of welfare state research is Wilensky's *The Welfare State and Equality* (1975), where, as the title suggests, the link between welfare state efforts and the promotion of equality is taken more or less for granted. See however Uusitalo (1985) for a review of "early" studies of the redistributive impact of welfare state interventions.

It is only quite recently, however, that the re-discovery of institutional variation and the associated discomfort with expenditure data has led to serious attempts to operationalize the notion of institutional variation in ways that are applicable also for variable-oriented quantitative research. Institutional features of general welfare states or of specific program areas have in many recent studies taken over as the preferred dependent variable – especially among supporters of the "politics matters" thesis (see Myles, [1984] 1989; DeViney, 1984; Korpi, 1989; Esping-Andersen, 1990; Palme, 1990; Castles and Mitchell, 1991; Abbot and DeViney, 1992; Huber and Stephens, 1993; Huber, Ragin and Stephens, 1993; Kangas, 1991; 1994; Korpi and Palme, 1994; Ragin, 1994; Usui, 1994).[26] We might also note that, as the focus has turned to institutional features of welfare state variation, structural theories have been pushed to the background and the theoretical battleground is increasingly being occupied by contending "political" theories. The working class mobilization thesis is currently being challenged most seriously by state centered theories (Amenta and Skocpol 1986, Immergut, 1992), interest group theory (Pampel and Williamson, 1985; 1989), theories claiming the importance of middle-class interests (Goodin and Le Grand (eds.), 1987; Baldwin, 1990), and theoretical contributions that stress the role of world system factors, diffusion and influences from the international environment.[27] Finally one could mention that catholic institutions and Christian Democracy have received much attention in recent years as explanatory factors both in qualitative and quantitative studies (Wilensky, 1981; van Kersbergen, 1995; Misra and Hicks, 1994; Huber and Stephens, 1993; Huber, Ragin and Stephens, 1993).[28]

If the first part of the "politics-matters" question has not yet been settled, the second part is even more open, but it has begun to appear more frequently on the agenda for comparative research. The optimism on behalf of the welfare state that characterized most of the first generation of macro-comparative research, has been seriously challenged by neo-liberal and radical critics. These critics maintain that welfare state interventions are either ineffective, futile, or even counterproductive with respect to the goal of a progressive redistribution of living standards and life chances. This has helped provoke a proliferation of comparative studies that attempt to treat welfare state variation as independent (or intermediate) variables and focus on distributive outcomes as the main dependent variable.

Among the most ambitious attempts to evaluate the distributive impact of welfare states in a comparative perspective are the works by Hicks and Swank (1985), Ringen (1987), Pampel and Williamson (1989), Muller (1989), Mitchell (1991) and Fritzell (1991), Huber et al. (1993), Korpi and Palme (1994). These are all highly aggregate studies, as they try to estimate the total impact of public welfare provision (and tax systems) on the general income distribution in different countries.[29] The highly inconsistent results that have emerged from these studies clearly demonstrate that also this part of the grand debate is very far from settled. Ringen (1987), Fritzell (1991) and Korpi and Palme (1994) all conclude that the public transfer and tax systems redistribute from rich to poor and that the effect is stronger the bigger the welfare state. Mitchell's conclusions are also highly optimistic about the welfare state's capacity to alleviate poverty and to reduce inequality, but she tends to emphasize efficiency aspects (the degree of progressivity of taxes and transfers) rather than the size of welfare spending (Mitchell, 1991). At the other extreme, Pampel and Williamson find no effect of the size of public spending on the level of aggregate income-inequality (1989).

---

[25] In some qualitative work, however, the conceptualization and classification of welfare state variation suffer from a tendency to be too abstract and holistic, at least for the purpose of systematic causal analysis.

[26] It is a further characteristic of the younger generation of macro-comparative research that a much more flexible and varied arsenal of analytical methods has come into play, some of which break with the linear and additive bias of the traditional regression analysis: pooled time-series analysis, cluster analysis, event history analysis, probit and logit models for limited dependent variables; boolean algebra etc. See Janoski and Hicks (1994) for a presentation of state-of-the-art analytical procedures in macro-comparative research.

[27] These kinds of factors are often found to be salient in qualitative case-studies, but they have not until recently been subjected to testing in a quantitative framework. See, however, Abbot and DeViney (1992) and Usui (1994) for very promising attempts to investigate the role of international trends on national social policy developments by the application of event history analysis to macro-comparative data.

[28] The finding that countries with a strong catholic and/or Christian Democratic legacy are high social security spenders is a disturbing anomaly for the laborist or social democratic interpretation of the welfare state. It is not clear, however, whether the fact of this anomaly could be accommodated within a more general (less Swedocentric) laborist perspective, or whether it requires a radically different theoretical framework (see the discussion in Kersbergen (1995:6ff.).

These two more recent tendencies in comparative welfare state research – the focus on institutional variation and the interest in outcomes – have not yet been fully integrated. Most of the existing efforts to explore the link between welfare state variation and distributive outcomes still use the size of social expenditures as their main independent (treatment) variable. Hence, they have not followed the lead to replace expenditure data with measures of institutional variation as a theoretically more adequate operationalization of welfare state variation.[30]

On the other hand, much of the research effort that has been devoted to measures of institutional variation stops short of a direct attempt to investigate the relationship between institutional characteristics and social outcomes (Castles and Mitchell, 1991). This is perfectly understandable in view of the serious methodological problems that face such attempts – especially where the impact of entire welfare states is at issue – but there is also a tendency in parts of the literature to rationalize this failure by suggesting that the measured institutional variation represents a relevant outcome in its own right. Hence, it is suggested that a search for traceable effects on social and economic structures is in some sense redundant.

It is certainly possible to argue that the very existence and quality of a set of social rights is significant in and by itself – as an extension of civil and political rights (Marshall, 1950), as a contribution to "the social wage" (Myles, [1984] 1989) or as providing for "decomodification" of labor (Esping-Andersen, 1990). However, I would agree with the consequentialist position taken by Castles and Mitchell (1991), who argue that what ultimately matters is the actual use of these rights and their traceable impact on social outcomes. If variation in welfare state interventions cannot be shown to make a difference to some aspects of social stratification (defined and measured independently of the social policy instruments themselves), then the "politics matters" thesis has failed and contending structuralist interpretations continue to command the high ground.[31]

---

[29] The basic methodology of these studies varies considerably. The studies by Muller (1989) Pampel and Williamson (1989) and Huber, Stephens and Ragin (1993) are based on statistical analyses of macro variables, while the other three rest on analyses of the redistributive impact of taxes and transfers in a number of countries. For a critique of the latter approach see Pedersen (1994).

[30] The studies by Fritzell (1991), Mitchell (1991), Huber et al. (1993) and Korpi and Palme (1994) are exceptions to this generalization, but in particular the first two of these studies suffer from serious methodological problems in their own right – see Pedersen (1994).

[31] "Making a difference" does not require that the outcome is close to some abstract ideal. The question is whether the outcome is less harsh than the counterfactual outcomes without (or with an alternative type of) welfare state interventions.

It is true that the range of potentially relevant social outcomes extends far beyond measures of poverty and income inequality that are the focus of the outcome oriented literature referred to above. As suggested by Esping-Andersen in the quotation below, the range of relevant social outcomes should be wide enough to include all aspects of class and status cleavages, i.e., phenomena like the occupational structure itself, conditions for occupational mobility, stratification by gender and ethnicity, residential segregation, etc.:

> *In any case, poverty and income distribution constitute only one (albeit important) aspect of welfare-state stratification. Even if inequalities in living standards decline, it may still be the case that essential class or status cleavages persist. What concerns us here is not so much incomes as how nations differ in the structuring of social citizenship. (Esping-Andersen, 1990:57)*

In other words, it is perfectly possible that contemporary welfare states exhibit differences in their institutional characteristics that do have significant repercussions for some aspects of social stratification, while they turn out not to bear on the capacity for economic redistribution. However, the distribution of economic resources is such an important feature of the social structure and a salient criterion for social evaluation (Rainwater, 1974:4ff), that it would significantly restrict both the political and the social scientific significance of those institutional differences.

The more general point is that the ambition to link welfare state variation with observable variation in patterns of social stratification should be reinforced rather than abandoned. Without this ambition we lack clear criteria for distinguishing between trivial and non-trivial institutional differences and for selecting between the myriad of possible classificatory schemes. There is always a danger that attempts to conceptualize institutional variation in welfare state institutions will be culturally biased. There is an undeniable tendency in the literature for disagreements about classification to correlate with the national background of the contending authors (see for instance Castles and Mitchell (1991), Mitchell (1991) and van Kersbergen (1995) for complaints about "Swedocentrism" in the some of the very influential contributions by Scandinavian scholars).[32] It is difficult to see how debates of this kind can be settled unless one agrees that the ultimate criterion for the relevance of a classificatory scheme is taken to be its efficacy in explaining certain outcomes.

To insist on the relevance of measurable outcomes helps to bring welfare state research in closer dialogue with policy oriented research efforts that are by their very nature concerned with the link between goals, institutions and outcomes. One might as well recognize that the ultimate purpose of any social scientific research effort is to gain instrumental knowledge about the social world (Popper, [1957] 1986:58ff), and therefore the distinction between purely academic and policy oriented research cannot be a deep one.

However, this does not mean that the outcome variables under study should necessarily correspond to what appear to be the primary goals and interests of the policy-makers or the most powerful actors in the social policy field. For instance, one might very well argue that vertical redistribution of economic resources is at best only a (contingent) side-effect of existing social policy institutions, while their main *raison d'être* is to provide the middle classes with insurance against various social risks and to smooth out income streams over the life-cycle (Baldwin, 1990; Øverbye, 1995). Even so, this does not make the actual degree of vertical redistribution less relevant or legitimate as an object for research. The responsibility for choosing outcome variables rests with the researcher, and the researcher must take the specification of outcome variables very seriously and be able to justify their normative relevance (Rein, 1974:62 ff).

---

[32] Interestingly enough, the tendency towards Swedocentrism is not exclusively found among Scandinavian scholars. Also influential North-American scholars have once in a while shown signs of affliction.

2.3 THE WELFARE STATE AND INEQUALITY – MAIN THEORETICAL POSITIONS

Does the welfare state make a significant contribution to a more equal distribution of economic well-being and life-chances? In the introduction I mentioned that a number of fairly recent comparative studies have come up with widely different results. The divergent results can probably to a large extent be accounted for by the vast methodological problems facing research efforts in this area and the different strategies employed to overcome these problems. But, of course the empirical controversy also reflects the presence of antagonistic theoretical positions. In this section I shall outline a number of contending theoretical perspectives on the distributive outcomes of social policy interventions.

I suggest that some of the most prominent theoretical contributions to this debate can be divided into three groups: the optimistic, the pessimistic and the institutional position. Although the question about outcomes of welfare policies is logically distinct from the question about the causes for welfare state variation, the theoretical positions pertaining to the two are not completely independent (see Pampel and Williamson 1989:22ff). Different versions of the optimistic position can be linked either with early versions of the class-conflict/laborist theories or with consensual, evolutionary views of the welfare state that can be seen to have characterized large parts of the first generations of comparative welfare state research. The bulk of the pessimistic arguments are founded on interest group or public choice theories, but there are also radical neo-Marxist and feminist versions of the pessimistic position. Finally, the institutional position can be seen as emerging from an attempt to revise and reformulate the class-conflict tradition of welfare state theory. It emphasized the diversity of welfare states and the contingent nature of their distributive impact

The optimistic position

The optimistic position is characterized by the belief that the aim of welfare state institutions is to further economic and social equality, and that the degree of success in fulfilling this aim is by and large a function of the scope and comprehensiveness of welfare state institutions. In the introduction to this chapter I already indicated that the optimistic view can be seen to have characterized the first generations of macro-comparative welfare state research.

First of all it is assumed that the *reason d'être* of the welfare state is to achieve a higher degree of equality in economic well-being than that produced solely through the workings of the market. A leading exponent in the recent literature of an optimistic and idealist view is Stein Ringen (1987):

> *That equality is a goal in the welfare state we know from what we can read in policy documents, and from the existence of policies that cannot be understood independently of some redistributive intention (Ringen, 1987).*

It is common to distinguish between a "weak" and "strong" interpretation of the egalitarian ethos of the welfare state: The weak interpretation is concerned with alleviating poverty and protecting against social risks by guaranteeing a "minimum standard for all members of society (...) In its strong formulation, the redistributive goal refers not only to the minimum standard but to the entire structure of inequality" (Ringen, 1987:8). Ringen seems to locate the propelling force behind the egalitarian thrust of welfare policies in "the common interest" that will tend to prevail in (imperfect) democratic processes (Ringen, 1987:9-10).

A completely different formulation can be traced in the works of Walter Korpi, one of the main exponents of the laborist theory of the welfare state. Korpi basically conceives of social policies as a battleground for class conflict. In their most developed form, welfare state institutions are the result of self-interested political action by the underprivileged and the working classes. The class-scheme underlying Korpi's analysis is very much in line with the classical Marxist capital-labor dichotomy, but unlike (other) neo-Marxist theories of the welfare state (O'Connor, 1973; Gough, 1979), Korpi is optimistic about the possibilities for the working class to transform capitalism through organized political action (see also Stephens, 1979). Korpi has actually made a tentative suggestion to define the welfare state as the degree of overall equality found in a society:

> *A tentative definition of the welfare state would thus have to be based on the extent to which equality in basic conditions of living has been achieved among the citizens. (...) A somewhat "milder" formulation can be phrased in terms of the extent to which the worst-off categories of citizens approach the average condition among all citizens. (Korpi, 1981).*

This suggestion should not necessarily be taken literally, since such a definition would seriously confuse the methodologically important distinction between the institutions of the welfare state and their social outcomes. I assume here that the quotation should be seen as primarily intended to give a strong signal about the normative concern for equality in living conditions as the most salient aspect of social policy outcomes.

At the heart of both these contributions rests a dualistic view of state and market in developed capitalist economies. The market is inherently in-egalitarian as a social institution, while democratic politics has a strong potential for equality. Either a sort of social rationality ("common interest") is assumed to prevail in democratic institutions and processes (Ringen, 1987), or it is assumed that social classes with a weak standing in the market, have a relatively stronger influence through democratic institutions where votes, rather than economic resources, count (Korpi, 1981). The welfare state realizes the "common interest" or the interest of the poor in counteracting the unequal outcome of market processes.

The more economic resources that are withheld from the market and re-allocated by political institutions, the better is the prospect for the realization of egalitarian objectives. The dualistic view allows the adoption a quantitative view of the welfare state ("the bigger, the better"), and plays down the role of non-political factors that might influence the level of economic inequality found in developed economies.

Walter Korpi does in this earlier work make use of a more qualitative classification of welfare states. In fact he draws heavily on the distinction between "marginalist" and "institutional" welfare states inspired by Richard Titmuss' famous classification of models of social policy interventions. It is characteristic, though, that he leaves out the third of Titmuss' models – the industrial achievement model – to use only the two models that can be seen to represent opposite poles on a one dimensional scale with variation according to the scope of state interventions in the distributive processes of the market (see the discussion in Palme, 1990:82).

The realist challenge

The common denominator of the contributions I shall refer to as "realist" is their pessimistic predictions about the distributive impact of welfare state institutions. However, one should be careful to distinguish among a number of very different types of argument. I am here not so much concerned with a distinction according to the underlying ideological inspiration – neo-liberal or radical – but rather with the type mechanisms that are supposed be responsible for the lack of redistributive effectiveness of welfare state institutions.

A first important group of theoretical contributions directly questions the assumption made by various versions of the optimistic position, that welfare state policies are designed to achieve equality in either the weak or the strong sense. According to one line of argument, the social force behind important welfare policies and the primary beneficiaries are **the middle classes** (Le Grand 1982; Goodin and Le Grand eds., 1987).[33] The fact that non-poor can be demonstrated to outrank the poor as beneficiaries of important social services and income maintenance programs is taken as evidence that the welfare state is not progressively redistributing economic resources (for a methodological critique of these works, see Åberg, 1989). The middle-class hypothesis finds theoretical support in public choice models of the political process. According to a Downsian model of majoritarian democracy, political decisions will reflect the preference of **the median voter** (see Stigler, 1970, Mueller, 1979; 1989; Tullock, 1983). If the poor are in a clear minority, there is no reason to believe that political decisions will be sensitive to their interests. Still within the same general spirit we find interest group theory claiming that political processes are dominated by powerful, well-organized **interest groups**, among which the poor are not very likely to figure (Pampel and Williamson, 1985; 1989).[34]

It is a common feature of these contributions that the source of pessimism with respect to an egalitarian impact of welfare state interventions is located in the processes of policy formulation and (sometimes) policy implementation. A second and rather different source of pessimism is the link between policy interventions and final societal outcomes. The basic idea is that attempts to redistribute economic resources through political means suffer from chronic failure despite idealistic intentions. The main theme in this type of argument is the potential role of behavioral responses and second-order effects (Le Grand, 1987). The profile of taxes and social transfers might be highly progressive, but still leave inequality more or less unchanged because of the behavioral responses and changes in market equilibria that they help to trigger. The real burden of a progressive tax on high-income earners might eventually fall on poor consumers, because the price of the services offered by these high-income groups could go up as a result of the tax. Social assistance schemes designed to alleviate poverty might have the effect of keeping people in a poor and dependent situation (Murray, 1984).[35] What makes these arguments distinct is not so much that they point to the possible impact of second-order effects and warn against a simplistic view of the relationship between means and ends. These issues form a central concern throughout the vast literature on the economics of social security (for summaries of this literature see Culyer, 1980; Aaron, 1982; Atkinson, 1987). It is the claim that the pursuit of egalitarian objectives is always futile or counterproductive that sets many of these contributions off from mainstream theoretical orthodoxy (Hirschman, 1991).

---

[33] For an early Danish contribution in this vein that refers specifically to pension politics see Dich (1973).

[34] It should be noted that not all analyses founded on public choice or interest group theory deny the welfare state any redistributive capacity. The more optimistic contributions emerging from these traditions tend to see poverty alleviation and vertical redistribution as essentially a (contingent) by-product of the middle classes' or the majority's attempt to protect themselves against shared social risks (Baldwin, 1990:94; Øverbye, 1995).

[35] The claim that the welfare state is responsible for inducing poverty, and that it puts the recipients in a dependent, powerless position, is also a theme in some radical critiques of the welfare state. See for instance Walker (1980) for an argument of this kind with reference to institutions for retirement provision.

In some of these contributions the pessimism about the distributive impact of political interventions is mirrored by an optimistic view of the distributive outcome of market forces, if the latter were just left alone. Not only does the tampering with market processes generally lead to inefficiencies (Okun, 1975) it might also, at the end of the day, produce more inequality than would otherwise have obtained (Tullock, 1983). The idea is that the poor are even weaker on the political than on the economic market.

Finally, it is possible to identify a third, more structuralist version, which simply does not leave much room for politics and institutions to have a significant influence on distributive patterns in modern society. The claim that attempts to bring about more equality through political means will at best be scratching the surface of social reality is embedded in classical and modern ideas about iron laws of economic inequality. The classical version was developed by V. Pareto, who observed that the distribution of economic resources (income) within different regions of Europe seemed to conform to a certain mathematical formula (Creedy, 1985:22ff.). He suggested that this formula reflected a universal iron law of economic inequality, and the idea was widely accepted as part of conventional wisdom for decades.

There is a modern parallel in the position held by many scholars, including both economists and sociologists, that the degree of economic inequality is by and large a function of structural factors alone and in particular of economic development. On the basis of analyses of both historical time-series and cross-sectional data, Kuznets formulated in the late 1950s his famous hypotheses that the relationship between economic development and economic inequality has an inverted U-shape. In an initial phase of development/industrialization inequality is supposed to increase, after a while it begins to rapidly decrease; but eventually, as a high level of economic development is reached, the slope approaches zero again (Kuznets, 1955; Pampel and Williamson, 1989). According to this view there is not much scope for political and institutional factors to influence the final distribution of income.[36] The marked tendency for the earnings distribution to become more dispersed over the last one or two decades in most of the OECD area (see for instance Gottschalk and Joyce, 1992) has given a new impetus to a structuralist outlook on the determinants of patterns of income inequality. Among the favorite explanations for this phenomenon are structural demand-side factors related to technological changes and the accelerating globalization of production and consumption (see Thurow, 1996).[37]

The institutional position

Finally, it is possible to identify a third, in some sense intermediate, position between a general optimism and a general pessimism on behalf of the welfare state. It has been most distinctly formulated by Esping-Andersen (1985; 1990), but it can be seen to underlie the more general trend in the comparative welfare state literature discussed above, to conceptualize welfare state variation in institutional terms.

The institutional position starts out by rejecting the question whether the welfare state in the abstract is conducive to equality or not, and it rejects a one-dimensional, quantitative view of the welfare state and its possible distributive impact. What matters, according to this view, is the institutional fabric of welfare institutions and how they interact with broader political-economic factors.

---

[36] It might be that welfare state expansion is recognized as a factor in the trend towards decreasing inequality, but only as an intermediate variable that is being fully determined by structural forces (industrialization).

[37] Note, however, that careful comparative studies tend to emphasize (institutionally contingent) supply-side factors (Gottschalk and Joyce, 1997).

Esping-Andersen argues that the welfare state itself is a system of stratification, rather than an abstract incarnation of egalitarian values (1990:53ff). He claims that the types of stratification built into social policies vary systematically between welfare state "regimes", and this variation presumably carries with it variation in distributive outcomes. The issue is how welfare states differ in their approach to distributive processes, whether they are geared to reproduce or perhaps modify processes in the labor market and the family.

> *As we survey international variations in social rights and welfare state stratification, we find qualitatively different arrangements between state, market, and the family. The welfare-state variation we find are therefore not linearly distributed, but clustered by regime types. (Esping-Andersen, 1990:26)*

A generalized institutional position would also involve the modification of the other part of the state-market dualism that is inherent in both the different versions of optimistic position and (with the complete opposite sign) some versions of a pessimistic position: the idea that all distributive processes outside the sphere of direct state intervention are resolved according to a pure and naked market nexus. In contemporary political economies, even the "private sphere" is thick with institutional variation. In particular it is important to note how labor markets are institutionalized in very different ways in modern economies, with very strong potential implications for distributive processes and outcomes (Åberg, 1984; Hibbs, 1991; Freeman ed., 1994). This latter point raises important methodological issues. The task of singling out a particular effect of welfare state institutions becomes more complicated once it is recognized that these institutions are systematically related to other institutional (and structural) factors that are likely to have an impact on distributive outcomes in their own right. The point that welfare state institutions in general and pension systems in particular, operate in different social and economic environments, and that the distributive outcome depends on the interaction between policy instruments and their environment will be developed further in Chapter 3.

Two sets of issues cultivated in various pessimistic contributions deserve serious attention: The first is a recognition of the fact that (ex ante) vertical redistribution is seldom in itself the primary objective of social policy interventions. The welfare state does not exclusively cater to the poor, and its promise to protect broad segments of the population against various social risks is probably a necessary precondition for the political sustainability of a high level of public welfare spending. There is, therefore, likely to be a trade-off between the financial scope of social policy interventions and the degree to which they are exclusively targeted towards the poorest segments of the population (see however the discussion in Mitchell, 1991:147ff). The second important theme is the complexity of the relationship between social policy interventions and their final outcomes. In the next chapter, I argue that behavioral responses cannot be ignored in the area of pension provision. The scope and pattern of behavioral (and institutional) responses to public pension systems is a critical determinant of the final outcome, i.e., the income distribution among the retired.

The need for disaggregation

The link between welfare state institutions and patterns of social stratification represents an enormous agenda for comparative research. Patterns of economic inequality are only a subset of relevant outcomes, and even here it seems to be the case that the most fruitful way to proceed is to disaggregate the larger issue and concentrate research efforts on specific program or functional areas of the welfare state. Above I referred to a number of studies that have attempted to evaluate the distributive impact of entire welfare states in one analytical operation, but the methodological problems are overwhelming.

It cannot be denied that the methodological challenges are very serious also for more disaggregated research efforts, but I still believe that they can be handled more effectively than in the context of highly aggregate studies.

> *It will be obvious that the difficulties in connection with relatively limited studies of redistribution are going to be substantially amplified in more comprehensive assessments of the redistributive impact of the entire government budget. (Culyer, 1980:133)*

One reason is related to the possibility and desirability of deriving measures of institutional variation that cut across all functional areas of the welfare state. The conceptualization and measurement of institutional variation among welfare states is of course a highly contested issue. Esping-Andersen's more specific suggestion is that contemporary welfare states cluster around three distinct regime types labeled with direct reference to the political configurations that are supposed to have shaped them: the "liberal", the "conservative" and the "social democratic" regime types. One of the controversial claims embedded in this ambitious and highly influential classificatory scheme is the assumption that there is, within each welfare state, a strong internal coherence in the institutional profile across different program areas – from health care to employment policies. This might not always be the case.

A lack of internal coherence between program areas of contemporary welfare states could be the result of historical processes. Different parts of the welfare state have been institutionalized in different time periods, with a particular balance of political and social forces (Heclo, 1974; Baldwin, 1990). It also seems plausible to imagine that different social forces could command a higher degree of control over particular parts of the social policy apparatus (Immergut, 1992).[38] Chances are, therefore, that existing institutional differences come out more clearly when focus is concentrated on specific functional areas.[39] As the following sections should demonstrate, it is already very difficult to develop reasonable and operationalized measures of institutional variation in the area of pension systems.

Another reason why the distributive impact of welfare state institutions represents an agenda for research rather than being reducible to a specific research question is the multi-dimensional nature of concepts like poverty and economic inequality. In the introductory chapter I mentioned how the distributive impact of pension systems can be evaluated from a number of different angles, all of which can claim to be expressions of an egalitarian ethos. My point here is not so much that the precise specification of the concept of economic inequality is ambiguous and contestable, but that it is best understood as consisting of a number of separate and to some extent independent, aspects. I shall argue in Section 2.6 below that the distribution of income among pensioner households is socially and normatively relevant in its own right, and not just for its contribution to the level of inequality found among the entire population. So disaggregation of the overall question about the redistributive effectiveness of the welfare state is required by both theoretical and methodological concerns. Different aspects of inequality and different parts of the welfare state are more relevant for some than for others.

---

[38] Alternatively, some parts of the social policy apparatus might enjoy a higher degree of autonomy vis-à-vis the influence of social interest groups.

[39] For a specific argument in favor of disaggregating the larger issue of causal forces behind welfare state variation see Esping-Andersen (1990:118).

2.4 THE COMPLEXITY OF CONTEMPORARY PENSION SYSTEMS

The task of locating, measuring and evaluating variation in complex institutional phenomena, like systems for the provision of retirement income, is anything but straightforward and undisputed. Once you open the "Pandora box" of institutional variation it is difficult to strike a balance between the temptation of excessive abstraction and the danger of being absorbed in a chaotic web of, perhaps, trivial differences.[40] Some observers are struck by the similarity of contemporary institutions for retirement provision, while for others these very same institutions are "worlds apart". At sufficiently high levels of abstraction, cross-national differences fade, but they quickly become almost overwhelming as one attempts to zoom in on the specific properties of the policy instruments involved. It is tempting to reconcile these contrasting impressions by embracing the view that in most important aspects, national pension systems are functionally equivalent despite their institutional diversity. Thus, it is not uncommon for observers who are initially highly sensitive to institutional variation to end up directly or indirectly supporting the view that the overwhelming diversification is mostly a surface phenomenon which serves to obscure a basic (functional) equivalence. Another possible temptation (pitfall) in the face of the complexity of contemporary pension systems is to base classificatory schemes on highly abstract concepts that are more or less detached from the disturbing details of real-life institutions.

Before embarking on the review of some of the recent attempts in the comparative welfare state literature to conceptualize and measure institutional variation in national pension systems, a historical and qualitative introduction to the complicated architecture of contemporary pensions systems might be useful. My main emphasis here will be on the high degree of institutional heterogeneity that has come to characterize retirement provision in most developed economies – a fact that seriously complicates the task of finding reasonable ways to measure institutional variation.

Two historical traditions

It can be argued that the contemporary pension systems in Europe and the whole OECD area have developed out of two very different traditions (Baldwin, 1990). One is the Continental European social insurance tradition, which was first made operational in Bismarck's Germany. Among its main characteristics were a strong insurance analogy with an exclusive emphasis on redistribution over the life-cycle, a close correspondence between earnings/contribution records and expected benefits and (at least in its historical origins) a strong segmentation among systems for different socio-economic groups. The underlying philosophy was that economic hardship in old age can be prevented by forcing different socio-economic groups (above all manual workers) to save for their own retirement, and thus it fits well with conservative ideals of preserving traditional status hierarchies (Rimlinger, 1971). Historically, this tradition became dominant in Central and Southern Europe. A modified version of the social insurance approach was also adopted in the US, when a public old age pension system was finally introduced with the New Deal reforms in the late 1930s.

The other main tradition is the Scandinavian/Anglo-Saxon approach, with its emphasis on universal minimum protection. Universal coverage and flat-rate, rather than earnings related, benefits are the main constituent characteristics.[41] The underlying philosophy behind this approach comes from very different sources: A liberal emphasis on equal treatment and a clear demarcation of state responsibilities only to provide against extreme economic hardship, or a socialist/social liberal emphasis on redistribution and equality of outcome (Rimlinger, 1971; Myles, [1984] 1989; Castles 1985; Castles and Mitchell, 1991). The Danish act on relief for the aged from 1891 is the earliest expression of this approach (Petersen, 1989; Baldwin, 1990), which can be seen to characterize later developments in the Nordic countries, the Netherlands, the British isles and overseas Commonwealth countries like Canada, Australia and New Zealand. However, fairly strong differences among these countries (both historically and presently) in benefit levels, the role of means-testing, eligibility rules and the mode of financing must qualify the degree to which we can speak of a common tradition.

---

[40] It cannot be excluded that such a balance simply does not exist, and that the variation between contemporary welfare states is characterized by a chaotic web of non-trivial differences. The implication would be that one should simply give up any attempt to summarize the observable variation in terms of (continuous or categorical) variables and hence give up any attempt to study either the causes or the effects of such variation. Apparently, this is the position taken by Ringen (1991).

I refer here to two traditions rather than a clear division of present day systems of old age pensions. If we look at the development of pension systems over a longer historical period – say from the 1930s until the late 1970s – it is difficult to deny that there have been strong tendencies of convergence among countries originating in either of these two models; sometimes through changes in the public pension systems themselves and sometimes through developments in complementary public or private institutions (van Gunsteren and Rein, 1985). The addition of a second tier of earnings related public pensions in the UK, Canada and all of the Nordic countries (except for Denmark), and the achievement of more or less universal coverage with mandated occupational schemes in the Netherlands and in Australia is evidence of significant modifications of many of the systems originating from the flat-rate model.

Correspondingly we can find important modifications in the social insurance approach of the Continental European countries. First the previous strong segmentation of legislated pension schemes for different categories of the workforce has in some countries been reduced through the dual effect of decisions to standardize benefit formulas and the increasing role of general revenue financing which opens up for cross-subsidization between socio-economic groups. Again (West-) Germany can be taken as the pioneering example. In the important pension reform of 1957, the traditional social insurance approach was reinstalled, but benefit formulas were standardized for most categories of wage earners.[42] The system of pay-as-you-go financing supported by the federal budget has come to imply that the financial burden is in reality shared collectively by the economically active population. Secondly, the actuarial correspondence between contributions and benefits has in most countries been weakened by measures like the introduction of so-called minimum pensions or the granting of non-contributory pension rights to people who temporarily leave the labor market to take up caring activities.[43] Thirdly means-tested "social pensions" or categorical social assistance schemes with special provisions for elderly without sufficient alternative means, have in almost all countries been set up to cover the needs of persons who fall outside the social insurance systems.

Moreover this bird's-eye picture of convergence among countries coming from different traditions has to some extent gone hand-in-hand with increasing diversification within each camp – especially so in the Scandinavian/Anglo-Saxon group, where, as I have mentioned, some countries have remained faithful to the flat-rate principle in the provision of public pensions, while others have embraced social insurance to create more hybrid systems. The use of means-testing versus universal flat-rate benefits also shows strong variation among these countries. In Norway and the Netherlands means-tested programs for the elderly play a truly marginal role. Australia on the other hand, is the only country where public pensions are exclusively of the means-tested kind.[44] In the remaining countries belonging to this tradition, minimum protection is provided by a mixture of universal and means-tested benefits.

---

[41] Palme (1990) prefers to talk about the two traditions in more ideologically loaded terms, as founded on the ethics of "work-merit" and "citizenship", respectively.

[42] With the important exception of civil servants (*Beamte*), who maintained their traditional privileged position in terms of pension rights.

[43] In the recent German pension reform of 1992, however, the actuarial profile was significantly tightened (Schmähl, 1993; 1995; Hinrichs, 1993).

Nevertheless, the distinction between two traditions remains useful for presenting the present architecture of pension provision in selected OECD countries – even if the purpose is to demonstrate a high degree of institutional diversity within each tradition. In most countries belonging to the Scandinavian/Anglo-Saxon tradition, flat-rate pensions (with or without a means-test) still constitute the backbone of public pension provision.[45] It is no less evident that earnings related social insurance has remained the dominating vehicle of old age pensions in countries belonging to the Continental tradition.

Institutional mixtures

Table 2.1 summarizes what I have already said about the institutional heterogeneity of contemporary systems for income provision in old age. It shows the mixture of institutions present in the public pension systems of a selection of OECD countries. The bold typeface is used to mark what can be considered the most important element(s) of the respective national pension systems.

e 2.1: The composition of public systems for income provision in retirement

Contemporary public systems			Mandated occupational pensions
niversal flat- ate benefits	Means-tested benefits	Earnings related benefits	
No	Yes	No	Yes
Yes	Yes	Yes	No
Yes	Yes	No	No
Yes	No	Yes	No
Yes	No	No	Yes
Yes	No	Yes	No
Yes	Yes	Yes	No
Yes	Yes	Yes	No
No	Yes	Yes	No
No	Yes	Yes	Yes
No	Yes	Yes	No
No	Yes	Yes	No

MP=Historical tradition for minimum protection. SI=Historical tradition for social insurance

---

[44] The practice of means-testing was partly lifted for a period, but was reinstalled in 1984.

[45] Note, however, that in Sweden (and even more clearly Finland), the second tier scheme of earnings related benefits has become very important in quantitative terms. It also seems to have become more firmly established as an unquestionable part of the overall pension system.

- The provision of **universal flat-rate benefits** is still a core element of the public pension system in most of the countries with a historical emphasis on minimum protection. Among the country cases displayed in the table, Australia is the only exception, since means-testing was recently (1984) (re-) installed as a general criterion for receiving public pensions (Shaver, 1991). On the other hand, the Netherlands is the only country where the system of public income protection for the elderly rests exclusively on the provision of universal flat-rate benefits. Many important details differentiate such universal flat-rate schemes, and some qualify the degree to which they can claim to be truly universal. In most countries the right to full benefits depends on permanent residency in the country for a certain number of years prior to retirement (a residency test). Sometimes the granting of benefits is in fact conditional on a full or partial withdrawal from the labor market in the first years above the minimum age for drawing a regular old age pension (a retirement test), and benefits only become universal from this later age. In the UK and the Netherlands, the right to pensions is formally conditional on past contribution records, but this feature has little practical importance. In the Netherlands married women only recently acquired the right to receive a pension in their own right.[46]

- I have already mentioned that virtually all the continental European countries have established some kind of **means-tested program** to pick up elderly people without sufficient social insurance pensions (and access to other types of means). In some countries these programs are labeled a social pension (as in France). In others, as in Germany, they are technically a form of social assistance.[47] Means-tested, supplementary programs also play a significant role in some of the "flat-rate" countries. In both Denmark and Canada a substantial part of the public pension proper is subject to a means-test. In Sweden and Denmark special means-tested housing allowance schemes contribute significantly to raise the lot of low-income groups among the elderly. It is well known that social assistance continues to be a key to minimum protection for the elderly in the UK. I have here chosen to include social assistance and housing allowances, insofar as they have special provisions for old age pensioners and/or are de-facto a significant source of retirement income. However, it is clearly advicable to distinguish clearly among various types of means-tested programs. One important distinguishing feature is the degree of initiative needed in order to claim the benefit and how much practical and psychological inconvenience is associated with a possible application procedure. Another very important distinguishing feature is the range of "means" that the program actually tests for. Does it include only labor income, for instance, or does it also consider private pension and property income? Are assets counted and does it look for alternative means at the level of the individual, the nuclear family/household or perhaps (as in Germany, at least in principle) the extended family? Finally, the rules for the tapering off need consideration. Which income ranges are effected and what is the resulting effective marginal tax-rate? Traditional means-tested programs hit exclusively on the lower income ranges often producing composite tax-rate at or above 100 percent, while more modern forms of income-testing tend to reach higher up the income distribution and involve more modest rules of tapering off.

---

[46] I have used a rather inclusive definition of universal programs here. I consider pension schemes to be universal despite the use of a retirement test (sometimes designed as a test against earnings and self-employment income) for a certain period (in Norway between 67 and 70 years of age) or for the entire retirement phase (as in Denmark). I also consider the special supplementary benefits offered in the Finnish, Norwegian and Swedish pension systems to individuals, who have not earned sufficient earnings related benefits as being part of a universal minimum guarantee. The point is that these supplements are not tested against other (private) income sources.

[47] Note here that I use a rather wide (functional) demarcation of public systems for retirement provision.

- Of course, **earnings related benefits** dominate in countries belonging to the social insurance tradition, but many of the "flat-rate" countries have added a second tier of earnings related public pensions. Sweden is the pioneering example, but similar programs have been introduced in Norway and, on a more modest scale, in Canada and the UK. It is characteristic of the Swedish and Norwegian schemes that they are obligatory, cover the whole workforce, are integrated with the flat-rate scheme and aim for total replacement rates for wage earners that resemble those of the Continental social insurance systems.[48] The British SERPS system also belongs to this category, but it is characterized by relatively modest benefit levels and provisions for contracting out both at the company and (later) at the individual level.

Important institutional differences can be found also outside the domain of public pension systems as narrowly defined. If we move out of the public sphere proper, and into private or semi-private territory, the column to the far right in Table 2.1 indicates whether **occupational** (employment related) **pension schemes** have been made obligatory by legislation (mandating).

Two of the countries that have not established a second tier of earnings related social insurance pensions, Australia and the Netherlands, have (instead) made increasing use of mandating, whereby the establishment of occupational pension schemes of a certain standard is made obligatory for private companies in specific branches and industries or perhaps in the entire private sector. In both Australia and the Netherlands the coverage with mandated pension provisions has become increasingly inclusive, to embrace most private sector companies. In the Dutch case the practice of mandating has developed in a close interplay with the diffusion of pension schemes through collective bargaining (the Dutch Ministry of Social Affairs, 1993; Lutjens, 1996). Mandated occupational pension schemes are also found in France as a supplement to the first tier of public social insurance pensions (Reynaud, 1997).

In some of the remaining countries occupational pension schemes are founded on collective agreements, covering larger or smaller segments of the workforce. Industry-wide contractual schemes play a strong and increasing role in Denmark, and such schemes cover virtually the entire workforce in Sweden.

Finally, occupational pension schemes established and run by individual companies can be found in all OECD countries, and they can only be deemed relatively insignificant in countries like Sweden (and Finland). They constitute the most important type of supplementary scheme in many countries belonging to the social insurance tradition, and they have a relatively strong position in the UK and Canada and to a lesser extent in Norway.

Both of these two latter – more genuinely private – institutions for retirement provision are everywhere directly and indirectly subject to state interventions, most importantly in the form of tax subsidies and (associated) systems of regulation. The degree and nature of state regulation vis-à-vis private occupational pension schemes varies quite considerably among OECD countries (see Johnson, 1992; Altman, 1992; Øverbye, 1991). In this context mandating can be considered to form a special case of strong regulation. As I shall suggest below, the boundary between public and private pensions should be seen as a matter of degree rather than a clear-cut dichotomy.

---

[48] A compulsory supplementary pension scheme for wage earners also exists in Denmark, but its flat-rate character and very modest benefits make it an outlier.

If perhaps complex, this overview of institutions for the provision of retirement income is not exhaustive.

Special pension schemes for public employees, individual pension insurance and the role of taxation also deserve consideration. Throughout the OECD area, public employees (at least core segments of them) tend to be covered with pension provisions that are more generous in comparison to almost any other group (Neyens and Koob, 1993). In fact, this is one of the most safe generalizations that can be made about contemporary systems of retirement provision: public sector employees constitute a particularly privileged stratum. There are, however, many technical differences. Most often these special pension schemes for public employees are legislated, but sometimes they are based on collective agreements. The way these schemes are integrated with the general public pension systems also shows systematic variation – in particular between countries adhering to the two main traditions for general retirement provision. In the countries belonging to the Continental social insurance tradition, the schemes for public employees are typically kept as a separate pillar that takes care of all pension provision among this segment of the workforce. The standardization, which in most cases has taken place between the pillars covering other segments of the workforce, has generally stopped short of seriously infringing upon the privileges of public employees. In countries belonging to the minimum security tradition, the special pension schemes for public employees are most often organized as supplements to the first and (where present) second tiers of the general public system. This difference is important to bear in mind for the measurement of the relative importance of public employee pensions among countries belonging to different traditions.

Individual pension insurance and the capital market in general represent further possibilities for retirement provision. Like most types of private occupational pensions, individual pension insurance is often heavily subsidized and regulated by public authorities – primarily through the tax system. They can therefore to some extent be seen as instruments of public pension policy, and there seems to be a surprisingly high degree of cross-national similarity in the way and degree to which individual pension insurance is subsidized through the tax systems (Johnson, 1992; Dilnot, 1992).

Finally, an analysis of the distributive impact of pension policies should also take into account possible differences regarding taxation of pensioners and retirement income. The level and structure of taxation among pensioners shows strong variation in the OECD area. This is partly a result of differences in the general system of income taxation in the various countries (see Heidenheimer, 1990; Steinmo and Tolbert, 1998), but also of differences in the specific treatment of pensioners and pension income (Kvist, 1992). In some countries public pensions are not treated as taxable income (Germany), and in others special tax allowances for pensioners (particularly low-incomepensioners) de facto constitute very powerful instruments of income (re-)distribution among the retired (Denmark, Norway and Sweden). As we shall see, this issue is only sparsely covered in the theoretical literature, but its potential importance will become apparent later in the empirical chapters of the thesis.

The public/private dichotomy

Since the balance between public and private sources of retirement provision forms a central theme of the present work, it is at this point necessary to address explicitly the question of definitions and demarcations – how are public and private pension systems to be distinguished from each other? In the real world the boundaries between these two spheres are often blurred (Tamburi and Mouton, 1986). The problem can be especially difficult with respect to certain types of occupational pension schemes, which often are the most important vehicle of private provision.

Conventional classifications – as used, for instance by the ILO – provide a good approximation of what should be deemed public systems proper. To qualify as public, a pension system should cover the whole population or at least all wage earners, although different types of eligibility rules might exclude particular individuals from receiving benefits because of lack of contributions (social insurance) or access to alternative economic resources (means-testing).

In contrast, private pension systems are established as the result of discretionary decisions on the part of private actors – either the beneficiaries themselves (individual pensions) or their employers or unions (occupational pensions) – to provide a certain pension coverage. Thus, there is no problem in classifying the market for individual pension insurance found in all countries as belonging in the private category. The pure case of a private occupational pension is also fairly easy to establish. In an occupational pension scheme the right to benefits follows from the employment contract, and the scheme has been established unilaterally by the employer or as a result of collective wage agreements. It is financed either by the employer alone or by a mixture of employee-employer contributions (von Nordheim-Nielsen, 1987).

The real ambiguity arises in the case of mandating, where the state has interfered to make employer-financed pension schemes obligatory for specific industries or sectors or for the entire labor market,[49] and in the cases where possibilities for contracting out of a public scheme have been granted to employers and unions.[50]

Attempts to stimulate and regulate private occupational pension systems are of course an important part of the overall policy package employed to deal with the problem of income provision in old age. However, this does not necessarily mean that the pension schemes themselves should be considered part of the public pension system. Only if the regulation is so tight and complete as to leave no choice for individuals, companies or unions regarding the terms of pension coverage, would it seem obvious to treat such schemes as part of the public pension system.[51]

Hence, a reasonable solution is to consider different systems of mandating as distributed on a continuum, where the private pole is characterized by legislation that allows for low coverage and ample discretion in the design and administration of schemes and the public pole by guarantees for wide coverage and tight and uniform regulation on all aspects of pension schemes. The degree of harmonization and centralization of a system of mandated (occupational) pension schemes is likely to correlate with another factor that has important distributive implications: the degree of risk sharing that the system will ensure across the participating individuals and groups in the labor market.

A rather different type of boundary case is represented by the special, very generous pension schemes for public employees. They are of course the result of government action, and often they are supported by legislation. Still, they will be considered equivalent to "private" occupational pensions, as they form part of employment conditions and labor management policies in a certain sector of the labor market (see Rein, 1983; and von Nordheim-Nielsen, 1987).[52]

---

[49] Finland, France, Netherlands, Australia all show examples of more or less economy-wide mandating.

[50] The British second tier of earnings related pensions, SERPS, introduced in 1978 is the most prominent example. The right to contract out can even be granted to the individual, as has recently become the case in the UK.

[51] This is the case in Finland, where a system of mandating is so comprehensive and strictly regulated that for most practical purposes it should be seen as a public social insurance system (Kangas, 1994).

2.5 MEASURES OF INSTITUTIONAL VARIATION

So far I have said little about differences in the more detailed but nevertheless extremely important characteristics of any of the public programs, let alone of the supplementary institutions – benefit plans, rules governing coverage and eligibility, methods of financing, etc. In the following I shall discuss a range of different indices and typologies of institutional variation that promise to reduce this bewildering complexity to manageable proportions and even claim to be sensitive to the more specific but extremely important program features.

In the introduction to this chapter I argued that comparative welfare state research has been (and should continue to be) concerned with social policy institutions as both a dependent and an independent variable. The famous "politics matters" thesis involves claims on both counts: Political factors (agency) are responsible for (parts of) the observed variation in welfare state interventions, *and* this variation has in turn significant repercussions for patterns of social and economic stratification in modern society. Thus, the same measure(s) of institutional variation should ideally be capable of featuring both as dependent and as independent variable, as a critical link between social, political and economic forces on the one hand and societal outcomes on the other.

In order for a conceptualization of institutional variation to serve this double role as both dependent and independent variable, three basic conditions must be met. First the measure(s) should, of course, be operationalized so that it can be matched with empirical data, i.e., the criteria for scoring or classifying each case should be as concrete and unambiguous as possible. Secondly, the measure should be conceptually independent of the factors that are supposed to explain its variation – that is, the measure should not (by its very definition) tap features of the social and political environment in which the institutions operate. And finally, the measure should be conceptually independent of the outcome variables of interest. If these last requirements are not met, the two-fold research question about the causes for and effects of institutional variation is in danger of being seriously reduced – in the worst case to simple tautologies.[53] For an example of violations of the last two requirements it is enough to think about the traditional expenditure data. The size of social expenditures is in fact the result of an interaction between the social policy instruments themselves and the social and economic environment in which they work, i.e., the scope of social expenditures is, strictly speaking, a kind of outcome.[54]

The demand for conceptual purity does not mean, of course, that one should not attempt to bring out aspects of institutional variation that can, theoretically, be expected to correlate with pertinent political factors and have a significant impact on relevant social outcomes. The conscious effort to select what is believed to be the relevant institutional aspects from the irrelevant, is perfectly legitimate. The point is that indices and typologies of institutional variation should, ideally, be based on uncontaminated "policy" data. Apart from being methodologically sound, the insistence on the use of data that refer directly to properties of policy instruments helps to reinforce the policy relevance of the research effort.

---

[52] For a somewhat different view see Esping-Andersen (1987 and 1990), where schemes for public sector employees are treated as a separate category, distinct from both individual and private occupational schemes.

[53] Korpi's tentative definition of the welfare state in terms of equality in living conditions (quoted in Section 2.3 above), is, if taken literally, an extreme example of a definition that fails to make the necessary distinction between institutions and outcomes.

[54] Obviously the problems with expenditure data are more acute in areas like unemployment insurance than in the case of old age pensions. Public expenditure on unemployment benefits is more likely to reflect the scope of unemployment than the quality of the income protection offered to those who cannot find a job. Expenditures on old age pensions, properly adjusted for the size of the population above the normal retirement age, should tend to give a fairly valid impression of the overall generosity of the public pension system (see Huber and Stephens, 1993:317).

These requirements have to a large extent been met in the growing body of comparative research engaged in the development and use of empirically grounded measures of variation in social policy institutions. The development and application of indices that aim to tap salient aspects of institutional variation began relatively early and has been taken furthest in the area of old age pensions (Day, 1978; Myles, [1984] 1989; DeViney, 1984; Esping-Andersen, 1990; Palme, 1990). In most cases they were developed with a view to serve as dependent variables: to be explicable in terms of political factors and configurations. So far this is certainly the context in which they have most often been used in empirical research. However, as I have argued above, in order to provide real support for a version of the classical "politics matters" thesis, they should also be demonstrated to bear on patterns of economic and social stratification.

The recent attempts in comparative welfare state research to conceptualize and measure cross-national variation in pension systems can be grouped according to their stand on two important issues. How narrowly or widely should one define the set of institutions belonging to the pension system; is their variation a one-dimensional or a multi-dimensional phenomenon – and, related to this latter question, is it desirable and reasonable to group contemporary OECD countries cases into a small number categorical types or models?

I shall concentrate on what I consider the three of the most important contributions: Myles ([1984] 1989), Esping-Andersen (1990) and Palme (1990).

Myles' index of pension quality

Myles' "Index of Pension Quality" is built very closely on the index developed by Day (1978), and it attempts to summarize variation in salient aspects of the national pension systems found in developed economies into a one-dimensional, basically ordinal, index.

Myles' theoretical approach is focused on the distributive logic of public pensions, and as such it is particularly relevant for the present project. He distinguishes between three distributive principles that are to a varying degree embodied in the design of public pension systems. *Income security* concerns the degree to which individual pensioners are guaranteed to uphold income standards from their active years as they enter and move through retirement. The overall degree of income security provided in a system will be reflected in the average level of benefits relative to average income standards prior to retirement or in the general population. *Income adequacy,* on the other hand, is concerned with the structure of retirement benefits and more precisely the extent to which everybody is secured a satisfactory minimum, regardless of their pre-retirement income status, employment record, etc. For a given level of average benefit levels, income adequacy is more likely to be satisfied the more egalitarian the structure of public pension benefits. Finally, Myles points to the principle of *need* that is sometimes reflected in the way public pension benefits make adjustments for the family/household situation of the beneficiaries, in particular whether sufficient adjustments are made for the support of a dependent spouse.

In addition to these aspects of the level and structure of benefits, Myles points out two other sets of issues to be considered in relation to the "quality" of public pensions: First, whether the procedures for indexing benefits guarantee that pensions keep up with prices and perhaps with the development in real wages in society. Secondly, he stresses the importance of eligibility rules and the general accessibility of pensions: Contrary to flat-rate, universal pensions, social insurance schemes cover only individuals in gainful employment,[55] and they do not always include the entire economically active population. Under the heading of accessibility Myles also considers means-testing (presumably because means-testing will have the effect of excluding a minor or bigger fraction of the elderly from actually receiving benefits), the possible use of "retirement-tests" and rules concerning retirement ages and the flexibility allowed for the individual to decide the timing of retirement.

Myles translates these aspects into eight separate indicators (components) of variation in national pension systems, and he gives the following description of the procedure for measuring each country's performance on each dimension and for summarizing the information into a single score :

> *To construct a composite index of public pension quality, analysts first rank-order countries on each component. A system of weights reflecting the theoretical construct being measured is then assigned to the components, and the weighted scores are added together to provide a single value for each country. (Myles, [1984] 1989:66)*

However, the actual procedure used for the scoring of countries on the individual components is more discrete and subjective than the quotation would seem to indicate. In order to represent the level and structure of benefits, Myles/Day use three indicators. First they calculate the maximum pension benefit available to low-paid, average-paid and high-paid wage earners respectively. Then the relevant pension benefits are divided by the average male wage in non-agriculture to obtain a benefit ratio for each type of pensioner.[56] It is clear how a simple average of these benefit ratio scores can be taken to represent the relative generosity of the pension system, while the difference between the ratios can be seen to reflect the degree of inequality in the benefit structure. In order to make the overall "index of pension quality" sensitive to both aspects, Myles gives stronger weight to the benefit ratios of low-paid workers and weaker weights to benefit ratios for high-paid workers, when the three components are added together with the other five components to form the overall index. Finally, one should note that Myles/Day make the calculation for one specific family type – namely, workers/pensioners with a dependent spouse. In this way the index can claim to be sensitive to the third egalitarian principle discussed by Myles, i.e., distribution according to need. Pension systems that give relatively generous allowances for a dependent spouse, and systems where a dependent spouse can claim a universal pension in her own right, will tend to perform relatively well for this particular family type, and hence they get special credit in the overall index.

The remaining five components in the index are devoted to features related to the stability and accessibility of pension benefits. Here the subjective (arbitrary?) element in the scoring procedures becomes more apparent, and Myles' index starts to depart in various respects from Day's original index. Consider for instance the component in Myles' index called "degree of means-testing". Maximum score (10) is given to countries that offer both a universal pension for all citizens and a special supplement to people with a low accrual of earnings related public pensions. A score of 9 is given to countries offering a universal flat-rate pension supplemented by means-tested benefits. The following category (scoring 8) is distinguished by the granting of universal pensions *without* any means-tested supplements.[57] Countries without universal pension benefits but with means-tested minimum pensions are given the score of 5. Finally, countries without any minimum pension (means-tested or universal) are given a score of 1. Presumably this is countries where public pensions are solely of the social insurance type (Myles, [1984] 1989:74). This attempt to rank-order systems with different mixtures of types of pension benefits is not without merits, but it is certainly very far from being a straightforward operationalization of the "degree of means-testing" as the title for this component would indicate.

---

[55] Of course persons (read: home-makers) who are not covered in their own right, might have indirect coverage via the participation of a family bread-winner.

[56] Benefit ratios should not to be confused with replacement ratios.

I shall now turn to the indices of institutional variation in pension systems suggested by Esping-Andersen (1990) and Palme (1990). Esping-Andersen and Palme make use of (slightly different) versions of a common data-source, namely the so-called SCIP data-files.[58] They both see variation in pension systems as fundamentally a multi-dimensional phenomenon, and they eventually use the building of various indices as a stepping stone towards a more categorically oriented classification of pension systems (or welfare states more generally) within advanced capitalist democracies.

Esping-Andersen's indices

Esping-Andersen's index of "decomodification in old age" is more simple than the indices of Myles/Day (Esping-Andersen, 1990:48-54). As the name suggests, its theoretical focus is different from that of Myles's index, and in particular it is less concerned with (inequality in) the benefit structure.[59] The index summarizes information from five constituent measures. The first two are built on calculations of benefit ratios for low-income and standard-income workers, respectively. Contrary to the benefit ratios used in Myles' index, the benefit ratios that enter the "decomodification index" are based on net (after-tax) figures. This means that the benefit ratios pick up variation in the level and structure of taxation of pensioners and pension income between the country cases as well as variation in the (relative) level of gross benefits.

In addition Esping-Andersen considers the maximum contribution period required to obtain full benefits (the longer the period, the lower the score), the individual's share in pension contributions (the bigger the share, the lower the rank score) and finally the take-up rate – i.e., the ratio of benefit recipients among the population above the normal retirement age.[60] Esping-Andersen proceeds by making a partial ranking of the cases on each of four out of the five dimensions. He then adds the rank-score on the four dimensions together without weighing, and finally he includes the fifth dimension (take-up rates) multiplicatively. Although the procedure to create this index is somewhat more transparent than in the case of Myles' index, it is not free of ambiguities and controversial subjective judgments (see Castles and Mitchell, 1991; 1993 and the discussion below).

---

[57] So it is better to offer means-tested benefits on top of a universal floor than to rely exclusively on universal benefits.

[58] The full English title of the database is the "Social Citizenship Indicator Program". It covers all the major social transfer programs in 18 OECD countries since 1930. The data have been collected and developed at the Swedish Institute for Social Research under the direction of Gøsta Esping-Andersen and Walter Korpi. See Korpi (1989) and Esping-Andersen (1990) for a more detailed description of this data collection program.

[59] As we shall see below, Esping-Andersen uses various separate measures to capture the "stratification" aspects of national pension systems.

[60] Note that the concept of "take-up rate" usually has a more narrow meaning, namely the share of actual recipients among those who legally qualify for a certain benefit.

In Esping-Andersen's theoretical framework, welfare states (and pension systems) vary not only with respect to their potential for decomodification, but also according to the type of social stratification that they nurture. Esping-Andersen uses a wide range of indices of stratification in welfare provision in order to build his case for a basic three-fold typology of contemporary welfare states. In order to characterize variation in pension "regimes" in particular, Esping-Andersen considers four different aspects with associated indicators: the share of private pensions in total pension expenditure ("market bias"),[61] the share of public pensions in total pension expenditure ("social security bias"), the share of public employee pensions in total pension expenditure ("etatism") and finally the number of occupationally distinct public pension programs ("corporatism") (Esping-Andersen, 1990:120-126).

The inclusion of "market bias" and "social security bias" clearly demonstrates how much more comprehensive is the approach adopted by Esping-Andersen as compared to Myles' exclusive focus on public pension systems. In empirical terms "market bias" and "social security bias" are hardly distinguishable, and they both measure differences in the public/private mix of pensions among the country cases.[62] As such they are of central relevance to the present project, but they go a little far in the direction of measuring outcomes rather than concentrating on variation in pension policy. The scope and character of private pension provision is not in itself a policy parameter. It is likely to be influenced by a host of structural and institutional factors in addition to the nature of public pension policies as broadly conceived to include direct and indirect stimulation and regulation of private pension provision. The sensitivity of private pensions to differences in the quality of public pensions (and attempts at regulation and stimulation) is an important theoretical and empirical issue, which I prefer to keep open in the present study (see the discussion in Chapter 3).

"Etatism" and "corporatism" can be conceived of as genuine policy features, but they are questionable as major predictors of distributive outcomes. There is no doubt that they reflect distinct political cultures and historical legacies in (mainly catholic) central and southern Europe, and so they perform well as dependent variables with indicators for the strength of catholicism and Christian Democracy as explanatory variables (see Esping-Andersen, 1990:122-125). It is more doubtful whether they in their own right can be expected to be of strong relevance for the explanation and prediction of distributive outcomes.

"Etatism", operationalized as the relative share of expenditures on public employee schemes, is likely to reflect different modes of interaction between such schemes and the general social security pensions, rather than being a valid measure of the relative generosity of pension provision for public employees per se. As I argued above, the privileged position of (core segments of) public employees in terms of pension provisions seems to be a universal feature throughout the OECD area. The fact that public employee pensions account for a relatively large share of total pension expenditure in countries belonging to the Continental social insurance tradition is mostly a technical artifact, produced by the horizontal segmentation of pension provision for this and other occupational groups.

"Corporatism", operationalized as the number of occupationally distinct public pension programs, can also in itself be expected to play a minor role in a distributive perspective, since at least some of the countries scoring high on this variable have achieved a high degree of standardization among the different schemes and since general revenue financing is often quite important, with the associated mechanisms for cross-subsidization between various occupational groups.[63]

---

[61] Private pensions are here defined as including individual insurance and all private occupational plans whether they are mandated, contracted or company based.

[62] The perfect collinearity between these two indicators is disturbed only by differences in the scope of expenditure on public employee pensions.

However, one of the indices used by Esping-Andersen to characterize stratification of income transfers in general, called "benefit equality", would probably be more directly relevant for explaining distributive outcomes in area of pensions.[64] "Benefit equality" is calculated as the ratio between minimum benefits and maximum benefits in the three most important programs for income maintenance: sickness benefits, unemployment insurance and old age pensions (Esping-Andersen, 1990:70). A similar indicator calculated for public pension systems will in the present project be used conjunction with an indicator for the average benefit generosity to characterize institutional variation in public pension systems.

Palme's indices and typology

Like Esping-Andersen, Palme (1990) rejects the idea of portraying variation among pension systems on a one-dimensional scale. He argues that one should distinguish between a number of different dimensions of variation, and he actually suggests no less than six different indices of institutional variation based on altogether 21 separate measures or components.[65] To support his appeal for multi-dimensional measurement, Palme shows that various pension quality indicators do not correlate strongly with each other (this applies also to the constituent indicators used in Myles' index), and that they show varying degrees of correlation with different structural and political background factors (Palme, 1990:111ff.).

However, the overriding purpose behind the development of indices of institutional variation is to accomplish a reduction in the complexity of the total available information. With six different indices of variation in national pension systems, the complexity reduction has not been taken very far, and hence Palme proceeds by developing a four-fold typology of contemporary pension systems and applying it to his sample of 18 OECD countries. The main inspiration behind this move in the direction of categorical classification are Titmuss' classical ideal-types of social policy interventions and Esping-Andersen's more recent welfare state typology.

Palme's typology of pension systems is built around two dimensions: "basic security" and "income security", which are intended to capture roughly what Myles calls the principles of "adequate minimum" and "income security". Palme specifies a set of minimum criteria that must be fulfilled for a system to provide "basic security" and "income security" respectively, and the result is a four-fold typology. **The Residual Model,** failing to satisfy both of the two criteria, **the Basic Security Model** that satisfies only the first, **the Income Security Model** satisfying only the second and finally **the Institutional Model** that scores high on both counts. Palme uses a complex procedure for ordering national pension systems into his four-fold conceptual matrix, based on cut-off points on a set of constituent dimensions. The result is shown in Table 2.2.

---

[63] I do not deny that both "etatism" and "corporatism" can have important implications for certain aspects of social stratification – in particular for the cultivation of (class-) identification, occupational cleavages, etc. "Corporatism" might also help nurture a certain type of policy discourse, where much political attention is given to the more or less automatic, but still rather visible, cross-subsidization between occupational groups with different age and risk profiles.

[64] It could also be tested out as an indicator of a "conservative" regime type in the area of pensions, as it is used in the context of income maintenance in general (Esping-Andersen, 1990).

[65] While the indices suggested by Myles and Esping-Andersen are based on ranking scores, Palme's indices are (as far as possible) based on numbers reflecting "real" variation on the constituent dimensions. This means that Palme's indices can be used in a time-series as well as a cross-sectional framework.

Table 2.2: Palme's typology of national pension systems with the resulting classification of 18 OECD countries.[66]

INCOME SECURITY	BASIC SECURITY	
	NO	YES
NO	*RESIDUAL* AS UK US	*BASIC SECURITY* CN DK NL
YES	*INCOME SECURITY* AU BE FR GE	*INSTITUTIONAL* FI NW SW

Source: Palme, 1990: Figure 4.5 and Table 4.2

According to this typology most countries that have their historical roots in the social insurance tradition conform to the Income Security Model. The US is an exception, however. It is relegated to the Residual Model, since the benefit levels secured for standard and high-income workers are too low to qualify for the Income Security Model. The countries originating from the flat-rate tradition are spread quite evenly among the remaining three "Models of Old Age Pensions".

A possible critique to be raised against this attempt to make sense of cross-national variation in pension systems parallels Palme's own argument against the one-dimensional measures. As one might demand a high correlation among the basic indicators in order to accept the construction of a one-dimensional index, the corresponding empirical requirement for accepting a four-fold classification would be a demonstrable *clustering* of cases in the two-dimensional space.[67] However, Palme presents no empirical justification for reducing the original continuous variation on the underlying variables into a four-fold classificatory scheme. Of course, one could argue that the typology represents ideal-typical constructs, and that the demand for empirical backing is misplaced. Under this interpretation, however, it is not clear why the typology has been constructed in a way to classify unambiguously all empirical cases.[68] For the purpose of explaining and predicting distributive outcomes, the problem is of a pragmatic nature, and it concerns a loss of information that follows from the more or less arbitrary dichotomizing of the original continuous variation on the two constituent dimensions.

---

[66] AS=Australia, AU=Austria, BE=Belgium, CH=Switzerland, CN=Canada, DK=Denmark, FI=Finland, FR=France, DE=Germany (W), IR=Ireland, IT=Italy, JA=Japan, NL=The Netherlands, NW=Norway, NZ=New Zealand, SW=Sweden, UK=The United Kingdom, US=The United States.

[67] See Ragin (1994) and Kangas (1994) for two recent attempts to use cluster-analysis to investigate the hypothesis that welfare state institutions come in distinctive types.

[68] As could also be argued with respect to Esping-Andersen's regime types, there remains in Palme's scheme an unresolved tension between the use of theoretical ideal-types and inductive classification.

Table 2.3 Ranking of selected countries according to three indices of institutional variation in public pension systems and according to public expenditure on pensions as % of GDP, 1980 (EXP).[69]

	Pension quality (Myles)	**Decomodification (Esping-Andersen)**	**Institutionalism (Palme)**[70]	**Public expenditure on pensions**
Sweden	1	1	1 (IM)	2
Finland	2	5	- (IM)	9
Norway	3	4	4 (IM)	7
Netherlands	4	8	2 (BM)	1
Austria	5	7	- (SM)	4
Denmark	6	2	- (BM)	5
Canada	7	12	7 (BM)	14
France	8	6	- (SM)	6
United States	9	13	5 (RM)	13
Belgium	10	2	- (SM)	10
Switzerland	11	9	8 (RM)	8
Germany	12	10	3 (SM)	3
UK	13	10	6 (RM)	11
Australia	14	14	9 (RM)	12

To sum up the discussion of these various attempts to measure institutional variation in national pension systems, Table 2.3 shows the overall ranking of selected countries on the "index of pension quality" created by Myles, Esping-Andersen's "index of decomodification in old age" and Palme's index of "institutionalism" together with a ranking according to the level of public expenditure on pensions in 1980.[71] It is apparent that the three institutional indices produce a rather different picture from the ranking based on total expenditures on public pensions. It can also be seen that the three indices disagree to a considerable extent among themselves. They all put Sweden on top and Australia at the bottom of the respective rankings, but apart from that, the "institutional" rankings show significant inconsistencies – note for instance the strong differences in the rankings of Germany, the Netherlands and the US.

---

[69] Source: ILO, cited after Huber and Stephens (1993).

[70] In addition to the ranking on the institutionalism index that is reported in Palme (1989: Table 3), Palme's general classification of each national pension system is shown in parentheses (IM=Institutional Model, BM=Basic Security Model, SM=Income Security Model, RM=Residual Model). See Table 2.2 above.

[71] Myles' data refer to the mid 1970s, while Esping-Andersen's and Palme's data refer to 1980.

Some general criticisms

Any attempt to systematize relevant empirical information on national pension systems – in one summary index, a set of summary indices, or a classificatory scheme – will necessarily involve compromises and contestable judgments. Much depends on the theoretical perspective and associated opinions about which aspects of variation are more important. For the purpose of employing them as independent variables in analyses of distributive outcomes, I would argue that the indices discussed so far suffer to a greater or lesser extent from four basic weaknesses:

1) The first point is somewhat formal. It concerns the fact that some of the measures used to construct the indices/typologies are actually tapping features of the social environment rather than being based on pure and uncontaminated "policy data". This is the case for the figures on pension coverage used by Myles and a similar indicator used quite extensively by Palme. It is also the case for the take-up rate indicator that plays an important role in Esping-Andersen's index.

It is difficult to disagree with the assertion that the rules that regulate the coverage of pension systems are important to take into consideration. Unlike universal pension schemes that cover all citizens or residents, social insurance schemes only include the economically active population and some social insurance schemes are more exclusive than others. Segments like the self-employed or farmers might not be covered at all. Many systems have rules that require a certain level of labor market participation (number of hours work per week) or income level in order for a person to be covered in a particular period, and a minimum number of contribution years might be required in order to obtain an effective claim to pension benefits. People in atypical employment relations tend to be excluded, and in some systems this tendency is stronger than in others. At the same time, many social insurance schemes have provisions that allow certain categories of (temporarily) non-active persons to continue pension accrual. Parents temporarily leaving the labor market to care for small children, the registered unemployed and people suffering from long-term illnesses are sometimes allowed to continue participation in the social insurance system. To incorporate such features in summary indices of the quality of pension rights is clearly desirable, but also extremely difficult.

The solution pursued by both Palme and Myles is to use figures on coverage in the general population. Presumably if a national pension system has a core of flat-rate universal pensions, it is registered with a maximum 100 percent coverage (no matter how exclusive an eventual second tier of earnings related pensions might be). In Palme's indices purely means-tested systems are simply recorded with zero coverage, and Palme justifies this solution by the claim that means-tested benefits do not constitute a social right in the proper sense of the word.[72] Real variation on this indicator is thus confined to systems based exclusively on social insurance pensions. Here the number of covered individuals (in a certain year) is divided by the total population below the normal retirement age to arrive at a specific coverage ratio. The problem is that such coverage ratios will reflect patterns of (female) labor force participation and the structure of employment (the prevalence of atypical employment relationships), as well as the specific character of the pension system. The same argument can be made against Esping-Andersen's and Palme's use of data on the proportion of the population above the normal retirement age who actually claim a pension in their own right. The use of this indicator for the accessibility of public pensions is less discriminatory against means-tested systems, but it will again be sensitive to historical differences in female labor force participation and other contextual factors, like the level and pattern of private income provision among the contemporary generation of retirees.

---

[72] Needless to say, this treatment of means-tested programs, regardless of their specific characteristics, is vulnerable to claims about "Swedocentrism" – see Castles and Mitchell (1991; 1993).

2) The preceding discussion of the use of figures on coverage to represent the accessibility of pensions illustrates a second major difficulty in all the indices, and it concerns the treatment of hybrid systems. For many of the indicators (except for the benefit ratios) the overall score of heterogeneous systems is inherently ambiguous, simply because the answer will vary according to which part of the system one chooses to look at. Apparently the strategy adopted by Esping-Andersen and Palme is to let a possible universal benefit dominate the description of the overall system. If a core of universal benefits is present (however small), the coverage of the overall system is assumed to be complete (no matter how exclusive a possible second tier might be). Furthermore, the contribution period needed to obtain full benefits is taken to be zero (no matter what might be the rules governing the second tier), and the system is registered as being without means-testing even in the case of substantial means-tested supplements to the universal benefit. This solution is not ideal for all purposes. One might be interested in variation in salient characteristics of a possible second tier scheme, or one might be interested in the presence of means-tested supplements for their potential impact on the distribution of total retirement income and their possible effects on the scope and distribution of private income sources.

3) Thirdly, the very important benefit ratios are calculated on "typical cases" that are narrowly conceived and not in touch with contemporary family structures in many OECD counties. In the construction of his "index of pension quality", Myles calculates all the necessary benefit ratios for one particular family type: married couples where only one of the spouses has been economically active prior to retirement. Esping-Andersen and Palme use calculations for two different family types, single workers/pensioners and one-earner married couples, and in various benefit-ratio measures the results for the two family types are averaged together.

There are two important types of family/demographic situations missing in these attempts to measure the benefit level and benefit structure in different national pension systems. First of all, there is no consideration for the quality of public pensions granted to widows/widowers. The substantial differences in life expectancies between men and women imply that a large proportion of total public pension expenditure is actually received by widows, so the neglect is problematic from a purely quantitative point of view. Systems that do well for one-earner couples and single worker/pensioners might not do quite so well in securing widows against ending up with low levels of income and hence reduced economic well-being (Davies and Heather, 1995). There is reason to believe that many traditional social insurance systems with their generous provisions for widows will tend to perform relatively well on this dimension, and it is not clear why the treatment of widows should not be a salient aspect of a pension system's sensitivity to "need".

A second type of family situation that the indices fail to consider is a married couple where the wife has even a modest record of active labor force participation on her own. Most pension systems offer less generous replacement rates for this family type as compared to one-earner couples (Myles, [1984] 1989:56), and the more comprehensive the labor force participation of the wife, the less generous will be the replacement rate for the couple taken together. The real problem in a comparative context is again that different systems are likely to differ in their relative performance for this family type, and hence its exclusion from the calculation will tend to create a bias in the overall picture of benefit generosity and benefit structure. The pure one-earner family has become a rarity in many OECD countries even among the cohorts presently in retirement. In Scandinavia and North America the extent of prior labor force participation among married women increases for every new cohort entering retirement, and in particular in these countries the benefit ratios for the traditional one-earner couple is becoming increasingly irrelevant as an indicator of relative benefit generosity. At the same time there is, of course, still a long way to go before women catch up with the labor force behavior of men – not to speak of reaching the average lifetime earnings of men.

One might think that the rise of the two-earner family makes the former issue about the economic well-being of widows and widowers less relevant. This is not necessarily the case. Although married women will increasingly be entitled some social insurance pensions in their own right (provided that the system offers social insurance pensions), they are likely to suffer a drop in economic well-being on the death of the spouse, unless the pension/tax system has built in a sufficient compensation for the remaining difference in lifetime earnings between the spouses and for the presumed higher needs (in terms of per capita income) of single pensioners vis-à-vis pensioner couples (Burkhauser and Smeeding, 1994; Davies and Heather, 1995).[73] So even under "modern" family and labor market participation structures, the treatment of widows/widowers remains an important aspect of institutional variation in pension provision, to which all these indices are generally blind.

4) Finally, all the indices discussed here can be criticized for being narrowly focused on public pension systems as defined by administrative boundaries in each of the country cases. Myles very explicitly states that his concern is with old age pension systems rather than with programs for income maintenance for the elderly in general (Myles, [1984] 1989:63-64). However, if the focus on institutions is supposed to help predict and explain the distribution of income among pensioners, a more functional approach would clearly be commendable, although difficult to implement in practice.

The indices suggested by Palme and Esping-Andersen do incorporate the effect of the tax system, as their benefit-ratios are calculated on after-tax figures. Differences in the general level and progressivity of taxation and a possible preferential treatment of pensioners and pension benefits can make a lot of difference to the picture of income replacement offered to old age pensioners in various countries, and to the structure of benefits. By basing the calculations on after-tax incomes, the benefit ratios are really measuring the joint impact of the pension system and the tax system in deciding the level of (disposable) income replacement offered by public pensions. However, one could argue that it would be preferable if these two aspects were treated separately. Differences in the level and profile of taxation among pensioners directly affect the link between the distribution of private income components and the distribution of total disposable income. A relatively heavy and progressive taxation of pensioners will not only make the after-tax benefit structure of public pensions look more egalitarian, it will also tend to curtail the regressive impact of private components in the income packages of pensioner households.[74] The first effect is captured by indices based on net replacement rates in public pensions, while the second is not.

Other aspects of the overall retirement policy package are ignored by all the indices. Social assistance schemes and other means-tested programs (for instance related to housing expenditures) that in some countries play a significant role in giving income support to less privileged segments among the elderly are not considered. It would be possible at least theoretically to incorporate estimated payments from such schemes into measures of benefit generosity in the public system for income maintenance among old age pensioners.[75] Whether such an endeavor is really recommendable depends on the nature of the program and whether the program can be expected to reach the population that fulfills the formal requirements.

---

[73] This raises the very complicated and controversial issue of the relationship between economic needs and household size, which underlies debates over equivalence scales used in measurement of economic well-being. See p. below.

[74] I here ignore possible behavioral responses to the taxation of pensioners (see Chapter 3 below).

None of the indices are sensitive to initiatives to mandate and in other ways regulate the provision of occupational pensions in (parts of) the labor market. As already mentioned, mandating serves in some countries as a kind of functional alternative to direct state provision of social insurance pensions. Where such mandating is both complete in coverage and strict in its regulation of contribution and benefit formulas, there are strong arguments for including such schemes in the very definition of public pension provision, and to incorporate them in the calculation of replacement rates and benefit ratios.[76]

The case to be made in favor of including information on adjacent policy instruments in the measurement of institutional variation, does not entail an implicit assumption that different means lead to similar ends. To the contrary, one could argue that distributive outcomes are likely to be sensitive to differences in the mixing of policy instruments from public pensions proper, to tax concessions, regulation or mandating of private occupational pensions and the provision of various means-tested programs.

In Chapter 5.2 below I suggest two indices of institutional variation in public pension systems – Benefit Level and Benefit Range – that will serve as independent variables in the comparative analysis. They cannot pretend to meet all the criticisms that have been raised here against previous attempts to conceptualize and measure institutional variation in retirement provision. In comparison to the indices of Myles and Esping-Andersen they are far simpler and concentrated on measuring two salient aspects of the benefit schedule: the relative generosity of benefits, and the degree to which benefits are allowed to vary according to differences in pre-retirement income levels.

2.6 THE OUTCOME VARIABLE: SPECIFICATION AND JUSTIFICATION

In this final section, I shall attempt to justify the central outcome variable of the present study – the degree of income inequality prevailing among a cohort of retirees – and I shall argue why I prefer the Gini index as a summary measure of inequality.

It is a central premise of this argument that economic well-being (and individual welfare) is a relative and socially contingent phenomenon. More specifically I suggest that intra-cohort comparisons constitute an important point of reference for the social definition of individual welfare and further, that such definitions will tend to be specific to certain life-phases among which retirement is, perhaps, the most clearly distinguishable. In other words, the choice of outcome variable can be supported by ideas about *the social contingency of economic well-being* and *retirement as a socially distinctive life-phase*.

In the following discussion I elaborate first on the general point about the relativity of individual welfare, and then move on to discuss its implications for the conceptualization and measurement of inequality. My conclusion is that the Gini index is an attractive measure of inequality, precisely because it can be seen to embody a relativistic conception of inequality.

---

[75] For instance, Kohl (1993) incorporates the German social assistance allowance to pensioners and the British means-tested income support in his calculation of the level of minimum protection offered to old age pensioners in these two countries.

[76] This is also the solution pursued by both Palme and Esping-Andersen for the case of Finland. They both classify the second tier of the Finnish pension system as being public, despite the fact that the schemes are administered by private insurance companies.

However, the commitment to a relativistic conception of inequality has serious implications that are not always fully recognized. Inequality in this particular sense is only meaningful when measured on populations that constitute appropriate "reference populations" – i.e., it must be assumed that each member of the population defines his/her social standing with reference to everybody else, while at the same time ignoring all non-members. The implication is that the Gini index can only be meaningfully applied at a certain level of aggregation – corresponding to the boundaries of the presumed reference population. Issues of aggregation and disaggregation from this "appropriate" level become highly complex and, as I shall argue, they require different methodological solutions.

Finally, I proceed to suggest that the conditions enjoyed by members of the same cohort, as they go through the life-phase of retirement, is likely to have particular significance as a social reference point and hence, that a cohort of retirees does in fact constitute a relevant "reference population". In other words, I believe it is appropriate to measure the degree of Gini inequality among this population subgroup.

The social contingency of economic well-being

It is rather commonplace for sociologists to assume that people are concerned about their relative standing vis-à-vis other people – be it in their immediate environment or in the larger social structure. Runciman's work on the concept of *relative deprivation* has become a standard reference (Runciman, [1966] 1972), and the presumption that the relationship between economic resources and subjective well-being ultimately hinges on relative standards set by the social environment has been a central theme in much sociological theorizing and empirical research both before and after Runciman's book. Lee Rainwater (1974) mentions how the idea goes back at least to Marx, who observed: "Our desires and pleasures spring from society, we measure them therefore, by society and not by the objects which serve for their satisfaction. Because they are of a social nature they are of a relative nature."[77]

The idea is, however, quite alien to most contemporary economic theorizing (normative as well as positive), where it is a fundamental assumption that individual utility functions are independent and strictly self-centered.[78] There are, however, notable exceptions to this generalization about contemporary economic theory. Duesenberry (1949) developed a theory of consumer behavior where the utility derived from a certain level of consumption depends crucially on the perceived consumption level of other individuals. Easterlin (1973; 1974) imported this idea into the area of development economics, using survey data to show that subjective feelings of well-being are less a function of absolute income levels than of the associated rank-position within the income distribution at a given time.[79] Layard (1980) investigated how the recognition of status ranking as a source of motivation and utility and expectations about future income levels can be incorporated into a welfare economic framework, and what consequences might follow for social evaluation and social policy recommendations. More recently, Frank has sketched out implications for a number of sub-disciplines in economics (welfare economics, labor economics and public policy analysis) of the recognition that concerns for status and ranking are important aspects of individual motivation (Frank, 1985).

---

[77] The quotation is taken from Rainwater (1974:22). Also Adam Smith can be quoted for similar observations (Rainwater, 1990).

[78] Self-centered meaning that both envy and altruism are ruled out – sometimes with intra-family relations as a curious exception (see Becker, 1981).

[79] The sociologist Otis D. Duncan made an interesting study based on longitudinal data on a sample of home-makers to support Eaterlin's claim that economic well-being seems to depend on the individual's rank-position within a certain reference population rather than on the absolute level of income or consumption (Duncan, 1975).

In addition to these rather scattered contributions, an explicit and persistent concern for the social relativity of economic well-being can be found in the growing literature on the "subjective" or "consensual" approach to the measurement of poverty and to the empirical assessment of economic need and well-being.[80] In this approach people are asked to evaluate their household's income needs or to assessm different hypothetical income levels, and the answers are then used as input to estimations of poverty lines, equivalence scales, or for producing subjective indicators of economic well-being. The economists who pioneered this approach in the early 1970s built it explicitly on a theory about the interdependence and relativity of utility and well-being (Goedhart et al., 1977; Kapteyn et al 1980, Kapteyn and Wansbeek, 1982, Stadt et al., 1985).

It is interesting to note that a rather similar line of research was pursued by the sociologist Rainwater (1974). Rainwater's approach is arguably more firmly consensual (as opposed to subjective). He uses survey questions about the income needs of specific household types to reveal an existing, presumably well defined consensus in a society about what constitutes an appropriate (minimum) level of income for this particular family type. With incomes below this level, the household will not be able to function and participate according to general social norms of the particular society, and hence the household is in effect poor (for a similar perspective on poverty see Townsend, 1979).

Different versions of the subjectivist/consensual approach are increasingly being applied by both sociologists and economists in research on poverty and economic well-being. In a fairly recent study, Rainwater (1990) has shown, on the basis of a long series of cross-sectional data for the US, that the income level required to stay out of poverty, as defined by the consensual approach, tends to change in direct proportion to changes in the general level of prosperity. The approach can also be turned in a more subjectivist direction, so that the estimation of economic need is allowed to vary between population subgroups (like age-groups) or in the extreme case between individuals (Saunders et al., 1994; Kapteyn and Melenberg, 1993).

In the study mentioned above, Rainwater finds that the social definition of economic need seems to vary systematically with the age of the respondent, so that prime age families appear to need more than both younger and elderly families (Rainwater, 1990:15ff.). The finding that elderly people tend to be more modest in their self-reported economic needs appears in many studies (Kapteyn and Melenberg, 1993; Saunders et al., 1994). I shall return to this particular phenomenon below, but it is important here to recognize that it points to a key issue for any attempt to take a relativistic approach to economic well-being and its role in social evaluation: Relative to what? The expectations of the individual (based on past experience), the conditions enjoyed by a specific group to which the individual belongs, or the entire society?[81]

---

[80] Because of the institutional affiliation of the pioneers, the approach is often dubbed "the Leyden School". Among the classical contributions are van Praag (1971) and van Praag and Kapteyn (1971).

[81] In Layard (1980) and Stadt et al. (1985) it is assumed that the individual utility function (of income) is sensitive both to the individual's own past experience (income history) and the income level enjoyed by a contemporary reference group. As pointed out by Layard, the first assumption will tend to point in a conservative direction (warn against too much redistribution too fast), while the second has strong egalitarian implications.

Implications for inequality measurement

In a seminal article in 1970, Tony Atkinson founded what can be termed the normative approach to inequality measurement. He pointed out how the choice between different summary measures of inequality must necessarily involve normative judgments (Atkinson, 1970), and he argued that these normative qualities should be given priority in the choice among specific indices. As an alternative to the existing inequality indices with implicit and – sometimes – ill-defined normative underpinnings, Atkinson suggested a new inequality index that built directly on an explicit Social Welfare Function (SWF) of the Bergson-Samuelson type (see Mueller, 1989).

In this standard framework, total welfare is a simple additive function of individual utilities, and individual utilities are assumed to be a symmetric function of income with a general tendency for the marginal gains in utility to decrease with the level of income (concavity). The assumptions about concavity and symmetry of the individual utility functions guarantee that a preference for equality will prevail in the social evaluation.[82] Total utility is increased by taking from the rich and giving to the poor, provided that no income is lost in the transfer (no leak in the bucket), and for a given total sum of income, social welfare is maximized by a completely egalitarian distribution. This type of SWF is individualistic in a double sense. It is based exclusively on information about individual utilities, and the individual utilities are in turn exclusively a function of the individual's own income and the bundle of goods that it will buy. The framework is faithful to the assumption entertained in most branches of economic theory, that individuals maximize utility in a social vacuum. Individual preferences are exogenously given, and they are completely self-centered – phenomena such as envy and altruism are neither required nor allowed.[83]

In much of the literature that has followed Atkinson's seminal work, the correspondence with a standard additive SWF has been used as a criterion for the normative sensibility of an inequality index. It turns out that the widely used Gini index is one of the available inequality indices that cannot be rationalized in this, basically utilitarian, framework (Newbery, 1970).

The Gini index also fails to meet another criterion often invoked as a condition for a reasonable inequality index, the so-called Subgroup Consistency Axiom, SCA (Shorrocks, 1984; Cowel, 1995:57ff). The axiom requires that if measured inequality goes up in any particular subgroup of the population, while everything else remains constant including the average income of this particular group, then the measured inequality for the whole population should either go up or at least remain constant. SCA appears to be an innocent, practically oriented criterion.[84] It is clearly convenient if the measurement of inequality can be done both on a general population and on its various subgroups and the results be always compatible. However, the satisfaction of SCA requires the same mathematical structure of an inequality index as the one following from a standard additive SWF, and the requirement is fundamentally incompatible with a relativistic conception of inequality.

---

[82] The symmetry assumption is as essential as the assumption about concavity in order to ensure the egalitarian thrust of an additive (utilitarian) SWF (Sen, 1973:15).

[83] As I have already mentioned, there are notable exceptions to this statement. In addition to the works already cited, there is a strand of welfare economic literature concerned with envy and fairness (defined as the absence of envy). See Feldman and Kirman (1974).

[84] Shorrocks presents the use of criteria like SCA to select among available inequality indices as a practically oriented alternative to the "ethical approach" pioneered by Atkinson (1970) and Sen (1973). This is potentially misleading, as the practical qualities you would want an inequality index to possess must depend the basic conception of inequality entertained and its normative underpinnings.

Amartya Sen was one of the first to point out that an SWF of the Bergson-Samuelson type is not the only available normative foundation for an inequality index, nor is it necessarily the most attractive one, exactly because of its built-in neglect of any interdependence between individual utility functions and their contribution to social evaluation:

> *In general, if one feels that the social valuation of the welfare of individuals should depend crucially on the levels of welfare (or incomes) of others, this property of the independence of each person's welfare component from the others has to be sacrificed. (Sen, 1973:41)*

The failure of the Gini index to be rationalized in terms of an additive, strictly individualistic SWF and the closely related failure to meet the Subgroup Consistency Axiom is rooted in the relativistic nature of the index and its built-in tendency to see individuals in the context of others.

As pointed out by Sen (1973), the formula for the Gini index can be written in different ways, each of which reveals its relativistic nature (see also Lambert, 1993:123ff). The Gini index of inequality is equal to half the mean difference in income between all pairs of individuals in the population, so the contribution by each individual to total inequality will consist of N-1 difference terms: one for each of the other individuals in the population. This of course contrasts sharply with the traditional additive SWF, which only includes one term for each individual. The Gini index can also be written as a weighted sum of individual income levels, where the weights are in each case provided by the rank-order position of individuals when everybody is ranked from the bottom up according to the level of income. By, instead, ranking everybody in descending order you get the negative of the Gini index (Sen, 1973), and this can be seen as a kind of welfare index where each individual's income is weighted according to the fraction of the population that is more well-off than himself (i.e., weighted according to the level of relative deprivation experienced by the individual). Again the contribution by each individual to the social evaluation depends crucially on information on all other individuals, as the latter is needed to establish the rank-order position and hence the appropriate weights.

Hence, the type of SWF that is associated with the Gini index must assume that the welfare of the individual (or at least the individual's contribution to social welfare) depends not only on his own income but also on the income levels enjoyed by everybody else within a certain reference population. If this is accepted, the Subgroup Consistency Axiom ceases to be a reasonable requirement. From this point of view there is no such thing as subgroup inequality without reference to the relevant total population. Hence, as we shall see, the selection of the relevant population becomes all the more crucial in the context of a relativistic conception of inequality.

There are various ways in which such a relativistic notion of inequality and social welfare can be justified, either by assuming that interpersonal comparisons have direct moral relevance (Temkin, 1993) or by assuming more "sociologically" that individual welfare is determined by a deprivation/envy effect depending on the rank-order position of the individual within the overall income distribution (Sen, 1973; 1974; 1976; Yitzhaki, 1979; 1982; Kakwani, 1986; Bishop, Chakraborti and Thistle, 1991; Lambert, 1993).[85] It can in turn be translated into a full-fledged Social Welfare format by stipulating some kind of trade-off between Gini inequality and variation in total income levels.[86]

---

[85] In their work on fairness as the absence (or minimization) of envy, Feldman and Kirman (1974) develop criteria for social evaluation that in some versions have strong affinities to a Gini-based SWF.

The authors who have elaborated on this interpretation of the Gini index all refer to Runciman (1966), for the idea that people evaluate their own situation and develop their aspirations by making comparisons with other people. However, it is not immediately clear how Runciman's classical work on the concept of relative deprivation can be used in support of arguments for Gini-based Social Welfare Functions stipulating that everybody compares herself with everybody.

Runciman developed the concept of relative deprivation in an attempt to understand the formation of popular beliefs and attitudes about social stratification. In particular he was concerned with explaining why the level of class-political discontent (grievances) voiced among members of various social groups did not seem to correlate strongly with objective indicators of economic and social deprivation. He suggested to explain this by stipulating that the level of social discontent is determined by the difference between one's own social and economic conditions and the perceived conditions enjoyed by some specific *reference group*. If groups that are fairly well off tend to compare themselves with even more privileged strata, this could explain why they are sometimes more discontented than genuinely (read: objectively) poor people, as the latter presumably tend to be much more modest in their choice of reference group.

One could argue that this line of reasoning is totally at odds with the justifications for the Gini index that were sketched out above: that everybody draws comparisons with everybody else within a certain population (or that such extensive comparisons are directly morally relevant). It is a crucial point in Runciman's account that people are very selective about whom to compare themselves with:

> *Most people's lives are governed more by the resentment of narrow inequalities, the cultivation of modest ambitions and the preservation of small differentials than by attitudes to public policy or the social structure as such. (Runciman, [1966] 1972:285)*

However, the apparent contradiction is mitigated by the fact that Runciman's concern was for the formation of political grievances vis-à-vis other social groups or strata, and, perhaps, eventually for understanding the workings of interest based political behavior. Runciman's observation that members of various social strata tend to choose reference groups that are fairly close to themselves in the overall social structure concerns the formation of externally directed complaints and grievances. Therefore his argument does not preclude that the poor do make comparisons with the rich that result in internalized feelings of deprivation, failure and a low level of self-esteem, or conversely that people derive social satisfaction from their approximate rank-order position within the general income distribution.[87]

In his discussion of the concept of the reference group, Runciman distinguishes three different meanings: The one directly responsible for generating feelings of relative deprivation is *the comparative reference group* "whose situation or attributes a person contrasts with his own". *The normative reference group* is a group that an individual aspires to become a recognized member of. Finally, *the membership group* is the group on behalf of which the individual makes her claim against the comparative reference group (Runciman, [1966] 1972:10ff). Runciman recognizes that some or all of these aspects can coincide in various practical situations. However, since he is primarily interested in understanding and explaining class-political grievances he is mostly concerned with the situation where the membership group (say, the working class) is distinct from the comparative group (say, the middle class). This is the combination most likely to feed active political discontent. However, when the concept of relative deprivation has been invoked to support a relativistic conception of inequality, it is with a quite different kind of situation in mind: the individual belongs to a reference population (however narrow or wide) in which comparative, normative and membership aspects tend to coincide. The members of the reference population compare themselves with each other and derive satisfaction (dissatisfaction) from their relative position vis-à-vis the other members: "For our purpose (...) the term implies the group within which an individual confines his aspirations." (Yitzhaki, 1982:106)

---

[86] One very simple suggestion is to let the social welfare function take the form: $\mu(1-G)$, where μ is the mean income and G the Gini coefficient (Sen, 1976; Yitzhaki, 1979). See also Bishop, Chakraborti and Thistle (1991).

[87] As pointed out by Layard (1990), Runciman uses the concept of relative deprivation in the part of his book concerned with explaining class-political attitudes, while it is more or less absent in the normative part where he discusses theories of social justice. Apparently Runciman did not himself see the concept as particularly relevant in the context of social evaluation.

A more direct support for the relativistic approach to inequality measurement that is built into the Gini index, could be obtained from the works of Easterlin (1973; 1974), Duncan (1975) and Rainwater (1974) cited above. Rainwater makes the assumption most explicitly that the standard of reference is shared among all members of the larger society. After suggesting that all people pursue a certain consumption standard that is perceived to be appropriate to their self-perception, he writes:

> *As background for any particular consumption standard there exists a very broadly based consensus on the standard package of "mainstream America". This is a conception of the going standard of living, an approximation of which the great majority of Americans can and do enjoy. Higher-status living levels represent additions to, and refinements of, this mainstream standard package, but basic to their standing is the conception of the mainstream package from which these higher-status standard packages depart in a more desirable direction. Living levels below the mainstream package are thought of as constrained compromises, as recipes for "making-do", for "doing the best we can." (Rainwater, 1974:23-24)*

Here there is a basic justification for a relativistic definition of poverty and, perhaps, also a corresponding inequality index. However, as Rainwater himself concedes, it is a rather controversial question just how much consensus really exists in the greater society about the "mainstream standard package". For one thing the definition seems to vary systematically with the age or generation of survey respondents (Rainwater, 1990; Kapteyn and Melenberg, 1993).

The point remains, therefore, that by invoking the sociological notion of relative deprivation one is inevitably confronting difficult questions about how people actually evaluate their own position in society. The specification of the relevant reference population is contestable and it is likely to affect the results of social evaluation.

This issue has been explicitly dealt with by Yitzhaki (1982). He discusses the consequences of accepting the idea (again with reference to Runciman) that the greater society might be divided into a number of distinct reference populations that make internal comparisons only. He shows that the presence (and ethical recognition) of such strata can change the picture of relative deprivation quite dramatically. It is no longer justified to calculate an overall Gini coefficient, since the necessary assumption about the social relevance of the entire income distribution for every individual is not satisfied. Instead it makes sense to measure the degree of inequality (=relative deprivation) within each of these subgroups by the Gini index.

In the approach suggested by Yitzhaki, overall inequality can then in turn be aggregated over these distinct reference groups by taking a weighted average of their separate Gini coefficients. It is easy to show that if this procedure is followed, the presence of stratification (in this particular, subjective or normative sense) will always lead to the finding of less overall inequality than if the evaluation had been made on the assumption that people make their interpersonal comparisons over the entire population (Yitzhaki, 1982).[88] The rather disturbing implication is that a highly stratified society (in both the objective and the subjective/normative sense) might be associated with a low level of relative deprivation, if the objectively defined income strata coincide with subjective boundaries of such closed reference groups. The reason is that differences in the average level of income enjoyed by the various strata (and associated differences in their average rank-order position) will not enter into the social evaluation at all. Popular images of feudal hierarchies or of social structures based on caste could be seen as examples of such deeply divided societies.

Of course, it would be difficult to find convincing empirical examples of modern societies (nation states) that are strictly divided into a number of closed reference populations, and to completely discard any consideration for differences in living conditions between such population subgroups could hardly be ethically defendable, even if such a situation were to be observed.[89] However, it is plausible that people do in many circumstances focus on more narrow reference groups. An approach to social evaluation based on the concept of relative deprivation should take seriously the possibility that not all cross-population comparisons within the larger society are equally relevant for social (self-)evaluation. A recognition of the ethical relevance also of between-group differences could in turn be built into the social evaluation without necessarily falling back on the assumption that everybody compares herself with everybody.

The critical choice of reference population

If one is prepared to argue that the entire population of a nation state is the sociologically (and therefore ethically) correct reference point, then the Gini index should be used to measure inequality at that level only. It would be misguided to use the Gini index as a measure of inequality among various subgroups that might be distinguished according to social, economic or demographic characteristics. The problem is that such subgroup Gini coefficients would imply the assumption that each of the subgroups made comparisons only among themselves and ignored the larger population.[90] Instead, you would have to use some method for decomposing Gini inequality with respect to population subgroups, that explicitly recognizes the dependence of conditions within the subgroup on the overall distribution.[91]

---

[88] The weighted sum of the subgroup Gini coefficients will be smaller than the Gini coefficient calculated over the entire population.

[89] Note, however, that this would seem to be a reasonable procedure if one were to characterize the level of income inequality for a group of nation states, like the OECD countries. An obvious procedure for portraying the contemporary level of income inequality in the OECD area would be to calculate a simple or a weighted average of nation-specific Gini coefficients, on the (not too unreasonable) assumption that differences in mean income between countries do not really belong to the picture.

[90] It would be equivalent to the calculation of subgroup specific relative poverty lines, while at the same time supporting the idea that the definition of (relative) poverty is shared among the entire population.

[91] Most of the methods for decomposing the Gini index by population subgroups that have been suggested in the literature do not fulfil this criterion (c.f. Bhattacharya and Mahalanobis, 1967; Silber, 1989; Lambert and Aronson, 1993; Dagum, 1997).). In Chapter 6 below I shall apply an alternative method for decomposing Gini inequality according to population subgroups that I believe fulfils this requirement. The method is a simplified version of the more complicated decomposition suggested by Yitzhaki and Lerman (1991) and Yitzhaki (1994).

Alternatively, one could be inclined to believe that people evaluate their own economic circumstances with primary reference to people with whom they share certain characteristics, for instance people of their own generation and in the same stage of life. In this case it will be entirely appropriate to use the Gini index to measure inequality within such subgroups. However, by the same token, using the Gini index on the entire population ("meta-group") becomes highly questionable. The level of inequality that characterizes the general population – a "meta-group" consisting of several reference populations – would have to be some function of the Gini inequality found among the relevant subgroups. As mentioned above, the solution suggested by Yitzhaki (1982) is simply to calculate the aggregate level of inequality by taking a weighted average of the group-specific Gini coefficients. This means that between-group differentials do not enter the social evaluation at all. If this is not acceptable, one could decide to include of a set of terms that allows also the degree of difference found between the constituent groups to be reflected in the overall evaluation.[92]

To summarize: a choice must be made about the location of appropriate reference population. Does the entire population constitute a uniform reference group with no distinction between inter- and intra-generational comparisons, or is it perhaps more appropriate to consider cohort bands/age-groups as constituting (at least partly) separate reference groups? I already mentioned that I take the latter position in the present work. I employ the Gini index as the preferred inequality measure, using it on contemporary generations of retired individuals. Thus, I have committed myself to the assumption that intra-cohort income differentials have a special significance for social self-evaluation and therefore for economic well-being.

I should hasten to admit that the high political salience of questions of inter-generational distribution and the resulting development of what one could call "age-based" politics over the last decades is strong evidence that people make comparisons across age and generational boundaries. However, I would argue that these kinds of comparisons are likely not to have the same repercussions for psychological well-being and for the experience of social self-esteem. Therefore, they should not necessarily enter the social evaluation on an equal footing with intra-cohort inequalities.

This does not mean to say that questions of inter-generational distribution are unimportant; politically they certainly figure strongly. The point is that they are of a different nature from intra-generational inequalities. The former are probably more easy to mobilize politically, but they are, arguably, less salient as determinants of psychological well-being and as an aspect of social stratification. Inter-generational comparisons have the structure that lends itself to political mobilization in the manner studied by Runciman: claims made on behalf of a well-defined membership group against a well-defined comparative reference group. In the case of intra-generational inequalities among the elderly, the comparative and the normative group tend to coincide, a situation in which feelings of relative deprivation are more likely to be internalized and accepted as part of a stratified social order. The political acceptance does not make the social and psychological repercussions less severe. The main theme of Runciman's book is precisely that there is not necessarily a close correspondence between what one would consider to be important from an ethical and a social point of view and the observed allocation of political attention.

---

[92] With a very particular and complicated formulation of these between-group terms it is possible to make this function add up to the Gini coefficient for the entire (meta-)population – see for instance Lambert and Aronson (1993) and Dagum (1997). However, it is difficult to see any theoretical justification why such a particular formulation should in fact be preferred to other, more simple formulations.

Retirement as a distinctive life-phase

It has been claimed, in the literature on life-course behavior, that the ordering of the life-course into well defined, chronologically structured life-phases is becoming less relevant in modern "postindustrial" economies (Guillemard, 1991). One of the most important symptoms here is the tendency towards lower effective retirement ages and the increasing diversification of the timing and institutional context of retirement from the labor market. It is undoubtedly true that the beginning of retirement as a life-phase is becoming less well defined than it was in the first postwar decades (Kohli et al., 1991). However, retirement is still a rather universal phenomenon in contemporary society. Although the expected retirement ages show considerable variation among modern economies, it is still a universal feature that, beyond a certain age (usually corresponding to the "normal" retirement age), almost all members of a birth cohort will have left regular employment to live from transfer incomes of some kind. Increasing life-expectancies mean that the regular retirement phase (as thus defined) is spanning a substantial number of years. The universality and the comprehensiveness of a retirement phase in people's life-course make it all the more likely that specific expectations and norms are developed about a "mainstream package" of consumption and a related pattern of behavior among this group.

Many studies based on survey data show that elderly people have tended to be more modest than prime age individuals in assessing their own economic needs. One possible explanation for this phenomenon is the presence of cohort effects. The present generation of pensioners lived most of their lives in a much less affluent society. They grew up in the period just after the First World War, they experienced the Great Depression and they were engaged in the process of family formation around the time of the Second World War. To the extent that people form their aspirations and preferences about their present and future income and consumption pattern based on past experience, we have a straightforward explanation for the fact that elderly people report being able to make do with less income than younger cohorts. If this explanation is valid, we should expect the pattern to perpetuate itself with the entry of new cohorts into retirement, at least over historical periods with significant economic growth. We should also expect the pattern to be more or less the same across countries.

An alternative explanation could be built on the logic of reference group theory. In an attempt to explain their finding that the elderly in the Netherlands tend to more satisfied with a given (absolute) level of income than younger cohorts, Kapteyn and Melenberg write:

> *The explanation for this is that the reference groups of elderly primarily consist of other elderly, whose income is somewhat lower than the income in the population as a whole. As a consequence, the incomes of the elderly do not compare too badly to their reference group incomes, resulting in a rather favourable valuation of their own incomes. (Kapteyn and Melenberg, 1993:179).*[93]

The relative modesty of elderly people could then simply result from the fact that their average income tends to be lower than the level found in the general population. This explanation would imply that a continued improvement in the income position of retired households is likely to be associated with an increase in the subjectively felt income needs of this particular group. Hence, the tendency for elderly people to be more modest in their self-reported economic needs is basically a historical phenomenon that can be expected to fade once norms and expectations have adjusted to the fact that the relative income standard of old age pensioners is improving. On the basis of this explanation you would expect the apparent modesty of the elderly to be less pronounced in countries where the income position of the retired has become relatively favorable. I cannot claim to have strong evidence on this. However, in their study comparing subjective indicators of well-being in Sweden and Australia, Saunders et al. (1994) do report that an age effect appears to be significant in Australia and insignificant in Sweden, corresponding to the fact that the income position of the contemporary generation of old age pensioners appears to be relatively poor in Australia and relatively more comfortable in Sweden (see Table 5.4 in Chapter 5 below).

---

[93] They do also keep open the possibility that part of the phenomenon could be caused by a cohort/experience effect.

The point I want to make is that the income distribution among a cohort of pensioners can be considered socially significant even if the average equivalent income of pensioners is not far below the rest of the population, and even if poverty rates among the elderly are low according to conventional definitions.[94]

Comparison with the economic situation of people belonging to the same generation is probably an important point of reference for social self-evaluation and for economic well-being. Therefore, a high degree of intra-generational income inequality can be expected to arouse sentiments of "relative deprivation", irrespective of the average income position of pensioner households vis-à-vis other generations or cohorts. It is highly plausible that people are concerned about the way their income situation might change as a consequence of the transition to retirement, and that they to some extent define their level of economic well-being in retirement by comparing it with their own situation prior to retirement. I would suspect, however, that whatever the size (and direction) of the absolute change in the level of income enjoyed by an individual, much will depend on its consequences for the relative position of the individual among other retiring people from the same generation. An absolute drop in income standards will be all the more painful if it is associated with a significant downward move in the intra-cohort distribution of income.

The rising income standards (both absolutely and relatively) enjoyed by new generations of pensioners – a situation that applies throughout the OECD area over the last decades – is likely to have been associated with a change in the expectations about the lifestyle and the associated economic needs of pensioners. Take intra-family transfers between generations as an example. Before the maturation of contemporary public (and private) pension systems, support from economically active offspring was presumably an important source of economic well-being among the elderly (Munnell, 1982). Today the stream of economic resources still more often runs in the opposite direction (Kotlikoff, 1987 and Hurd, 1990). While the ability to cope without economic support from children must have been a rather privileged condition and thus a sign of economic well-being in earlier times, expectations and norms might now have turned in the direction of the elderly as being net providers of economic resources within the family. An elderly person who does not have sufficient economic resources to be able to support younger family members while still alive or through bequest might very well be looked upon as relatively poor.

The social relevance of income inequality among pensioners does not rest exclusively on ideas about a reference group or "envy" effect. The interdependence of economic well-being among retirees could to some extent hinge on an objective interdependency of incomes and consumption patterns of members of the same cohort. For cultural as well as demographic reasons, members of the same generation of retirees tend to demand the same type of goods, some of which might be in limited supply or even of a "positional" nature. Age- or generation-specific demand structures can be found in areas like leisure, housing, health care and social care, and in some of these areas "absolute" scarcities could very well appear.[95] Under these circumstances "it makes a difference if others earn more than you, even if you are interested exclusively in your own consumption possibilities." (Hirsch, 1977:102). Here again the point is that the relevant "other" is people in the same generation and life-phase rather than the general population.

---

[94] Defined in terms of absolute standards, or in relative terms with reference to average income standards in the general population.

---

[95] Absolute scarcity meaning here simply that prices are sensitive to changes in the demand, also in the medium- and long-term perspective.

CHAPTER 3

THE FORMATION OF RETIREMENT INCOME

3.1 INTRODUCTION

In almost all areas of the welfare state, private institutions and agents take some part in the provision for social needs. Hence, in order to explain a certain outcome of welfare state intervention one has to take account of the way public and private institutions interact. This general insight applies with particular force to the area of pensions and retirement income. In all developed market economies, insurance companies offer a range of opportunities for individuals to provide for their own future retirement. Even individual pension insurance – the ideal-type alternative to public pensions – is in most cases far less important in quantitative terms than two other private institutions involved: the ordinary capital market[96] and occupational pension schemes, where rights to future pension benefits are acquired as part of the employment contract.[97]

In the last section of the previous chapter, I argued that a low degree of income inequality in retirement could be a relevant policy objective and a legitimate criterion in social evaluation. The fact that such an outcome cannot be assumed to depend on the character of public pensions alone – but rather on their interaction with the wider societal context including the behavior of private institutions and agents – does nothing to decrease its relevance from a normative point of view. However, whenever the relationship between public policy and social outcome is complex, the need for positive theory and empirical evidence comes to the fore (Atkinson, 1995), and one implication could very well be that the egalitarian aspirations on behalf of public pension systems have to be tempered.

Pensions systems can – at the very best – be expected to modify the projection into retirement of economic inequalities that have prevailed among a cohort during its economically active life-phase. This way to conceptualize the distributive impact of public pension systems has been very clearly formulated by Myles ([1984] 1989:53).[98]

> *As each cohort makes the transition into retirement, the preretirement distribution of income is transformed. Typically, income levels decline relative to both preretirement income levels and the standard of living in the larger society. Individuals within a cohort may also change place in the ordering of rich and poor, the result of differential accumulation of retirement-income entitlements. And, finally, the level of inequality within a cohort may either increase of decline. The public pension systems of the capitalist democracies may be usefully thought of as the aggregate of policies designed to affect this transformation.*

---

[96] One should perhaps have added the housing market as a third institution. Home-ownership clearly plays a major role in private savings behavior and hence in distributing consumption possibilities across the life-cycle.

[97] Historically, also intra-family transfers have been a source of economic support for the elderly of some importance. They do not seem to play a major role today, however, and some scholars even argue that sharing within the extended family was never as important or efficient in keeping the elderly out of poverty as it is often portrayed (Quadagno, 1990).

[98] The only reservation one could make against Myles' statement is that it is probably no longer universally true that income levels typically decline relative to the standard of living in the general population.

The main reason why the impact of public pension systems must be portrayed in this fashion lies precisely with the recognition of the role that private institutions and agents are likely to play for the provision of retirement income in advanced market economies. You need not fully embrace the neo-classical life-cycle hypothesis (discussed later in this chapter) in order to appreciate that, due to the operation of private income sources, there is bound to be some degree of continuity in the income distribution before and after a cohort has passed the threshold of retirement – both in terms of the way people are ordered with respect to income (from rich to poor) and in terms of the typical size of income differentials. So the relevant question to ask is whether the institutions for retirement provision help to increase or decrease income inequality within a cohort as it enters and moves through retirement.

The main hypothesis of the present work is that not only the structure but also the level of public pension benefits can have a systematic effect on the degree of income inequality prevailing among a generation of pensioners. If a departure from the flat-benefit principle in public pension provision is associated with significantly higher average benefit levels, it could, at the end of the day, turn out to be beneficial in terms of the degree of overall income inequality found among pensioners. The reason would be that a higher level of public pensions is likely to depress the relative significance of the (presumably highly concentrated) private sources in the income packages of pensioner households (O'Higgins and Klein, 1983; Palme, 1989; Kohl, 1992; Kangas and Palme, 1993; Korpi and Palme, 1994; Stephens, 1995).

This is roughly the main thrust of the egalitarian argument in favor of social insurance that I shall explore more in depth both formally and theoretically in the remaining part of this chapter. In Section 3.2 below I pursue a simple arithmetic analysis of the relationship between the level and structure of public pensions on the one hand and the degree of Gini inequality prevailing in the income package of pensioner households. The purpose of this rather abstract and technical exercise is to pinpoint a set of conditions under which the introduction (removal) of earnings related public pensions will have positive (negative) effects on the overall level of income inequality among the retired. Specifying these conditions, or mechanisms, helps to identify the relevant theoretical issues to be discussed in the remaining sections of this chapter, and will in turn be used in the last section of Chapter 4 to direct the formulation of hypotheses for the empirical analysis.

It turns out that one of the crucial determinants of the outcome to be expected from different policy approaches is the possible existence and strength of a trade-off between benefit equality and benefit generosity in the provision of public pensions. This issue is discussed in Section 3.3. The section concludes with the presentation of a simple model for the policy trade-off and its dependency on broader societal and political conditions that tend to differ across countries.

Relevant theories and empirical evidence about private income provision in retirement are presented and discussed in the following sections. Section 3.4 is concerned with the relationship between public and private pension provision from a macro perspective. How must we expect that the scope and character of public pensions will influence the provision of private retirement income? The intuitive anticipation, that private pensions flourish if public pensions are meager and that they will taper off as public provision becomes more generous, seems to be at odds with historical experience. In many countries the historical record shows that the two types of pension system have grown in tandem, particularly so in the postwar era (van Gunsteren and Rein, 1984). However, statistical analyses of both cross-national and time-series data have shown significant tendencies for substitution/trade-off between public and occupational pensions.

Sections 3.5. and 3.6 are devoted to a more detailed discussion of the micro-theoretical foundations of alternative hypotheses about the performance of private income sources and their relationship to public pensions. Section 3.5 concentrates on individual retirement provision – its motivational basis and the nature of the available institutions and instruments – while Section 3.6 is concerned with the nature and dynamics of occupational pensions. I shall maintain that, in order to make sense of the observable interplay between public and private pensions, one needs to take account of the relativistic orientation of both individuals and collective actors in their development and pursuit of retirement objectives.

The arguments developed in this chapter are summarized in the concluding section. I suggest a hypothesis about an optimal mixture of flat-rate and earnings related benefits in public pension provision, with the hypothetical optimum being dependent upon variation in the structural and institutional context.

3.2 SOURCES OF INEQUALITY – A FORMAL ANALYSIS

In this section I shall present some rather stylized thought experiments in an attempt to highlight the conditions under which public pensions produce high or low levels of overall inequality in conjunction with private income sources. What are the more specific mechanisms through which variation in the size of public pensions and their distributive profile could affect the overall level of inequality found among pensioner households? The aim is to identify a set of critical links in the causal chain leading from changes (variation) in public pensions to changes (variation) in the overall level of income inequality among pensioners. Disaggregating the research question in this way will help to sharpen the focus on the relevant theoretical issues and to increase the empirical leverage over the more general relationship between institutional characteristics of pension systems and final outcome in terms of the degree of income inequality among pensioners.[99]

For the sake of simplicity I shall assume, in the following, that the income package of the elderly consists of two types of components only: public transfers and income from "private" sources. I also have to abstract from all details about the workings of these two components except for their scope/generosity and the degree to which they are concentrated among the population of retirees. In other words, I am interested in the consequences that might follow if public and private components are more or less generous and more or less concentrated among the relevant population. Variation in aspects like the incidence of pensions among different household types and the time-path of retirement income will be totally ignored.

In order to proceed, I need a method for evaluating how public and private income components interact to produce a certain level of inequality in total income. Here I shall take the so-called natural decomposition of the Gini coefficient as a point of departure. It devises a very simple formula for decomposing Gini inequality of total income according to the contribution made by each of a number of individual income components. Like other methods of its kind, the natural decomposition of the Gini index is completely static. It takes the distribution of the overall income package as given and it ignores behavioral responses or any possible dependency of one income component upon the size and distribution of others (Shorrocks, 1982). One should therefore be very careful when using this and similar methods to make causal claims and counterfactual arguments (see Shorrocks, 1982; 1988; Podder, 1993). I shall show, however, that with due respect for its severe limitations, the method does provide a conceptual framework for discussing the outcome of hypothetical changes in the mix of public and private retirement provision.

---

[99] The possibilities and limits of a comparative approach to the study of distributive outcomes will be discussed more in detail in Chapter 4 below.

The natural decomposition of the Gini index

Lerman and Yitzhaki (1985) have suggested a very helpful way to write the natural decomposition of the Gini index that is applicable to any partitioning of a total income package in k separate components. According to their formula (see below), the contribution made by each income component (Q_k) to overall Gini inequality is a product of three factors: the Gini coefficient for the component itself (G_k), the share of the component in the overall income package (S_k) and finally the so-called Gini correlation between the component and the overall income package (R_k).[100]

$$G = \sum Q_k = \sum G_k \cdot S_k \cdot R_k$$

However, it must be emphasized that, as a general rule, one cannot infer anything about the change in total inequality that will follow from non-trivial changes in the k'th component by just looking at Q_k and its further breakdown according to the formula above. Substantial changes in one component will almost always affect the assessment of the contribution made by the other components – partly because their share in the total income package will be modified and partly because the ranking of observations according to total income is liable to change – and then all the R-terms will change too.[101]

With this in mind, I shall apply the tools provided by the decomposition formula to discuss the consequences of the hypothetical introduction of new public pension benefits as well as of changes in the size and concentration of existing components in the income package of the retired. First I shall consider the very simple case where an equally distributed, "universal pension" is introduced or an already existing one is expanded, and I shall briefly compare it with the effect of an income-tested benefit. Then I shall go on to discuss the effect of the introduction of social insurance benefits that are supposed to be directly proportional to pre-retirement income levels.

The impact of a uniform income transfer

As we saw in the previous chapter, a number of OECD countries offer flat-rate benefits to every resident beyond a certain age as part of the public pension system. Such benefits are the closest real-life approximation to what I here consider as a "uniform" income transfer.[102]

---

[100] The Gini correlation is a hybrid between the more familiar measures of correlation, Pearson's r and Spearman's rank-correlation coefficient. For some further explanation of the Gini correlation see footnote 277 in Chapter 7.

[101] Lerman and Yitzhaki (1985) and Podder (1993) have used the natural decomposition to devise a formula for the marginal elasticity of the overall Gini coefficient with respect to proportional changes in individual components. However, the formula is only valid in general for infinitely small changes that do not cause any re-ranking of cases.

[102] In practical empirical analyses, even flat-rate universal pensions will not always turn out to be exactly uniformly distributed among the income units (the Gini coefficient is not exactly zero). Most countries employ a residence test that excludes some sections of the resident population in the relevant age-groups from receiving full benefits. Another important reason concerns the treatment of individuals in different household settings. Any benefit system has an built-in equivalence scale, deciding whether the pension for a married person should be

It is particularly simple to analyze the effect on total inequality of changes in such a uniform income component. As long as one is only manipulating its size (or introducing such a transfer from scratch), and assuming that the distribution and absolute size of the remaining income components are unaffected (no behavioral responses or other second-order effects), the change in total inequality is extremely simple to calculate.

The Gini coefficient for a uniform transfer is zero by definition, so its own contribution to overall inequality is also zero. According to the natural decomposition formula, total inequality will in this situation be equal to the contribution made by the remaining income package taken together. The remaining income package might consist of private components only or a combination of private components and public social insurance pensions. The only thing that matters is the Gini coefficient for these components taken together and their share in total income (one minus the share taken up by the uniform benefit).[103] The size of the uniform component affects total inequality only through its impact on the share commanded by the remaining income package. The absolute reduction in overall inequality is simply given by the size of the increment (measured as a proportion of the new income package) multiplied with the Gini coefficient for the remaining components. If a uniform income transfer is introduced and it takes up 10 percent of the new, expanded income package, then total inequality will decrease by exactly 10 percent.

Thus the equalizing potential of a uniform benefit is indisputable. Increasing its size will always lead to less inequality, and as long as we ignore any behavioral responses, the reduction in inequality will be exactly proportional to the relative size of the increment with respect to the entire expanded income package. However, one should at the same time note that, in order to achieve very substantial reductions in overall inequality from a given initial level, the necessary (increase in the) size of a uniform income transfer will soon become overwhelming as measured against the size of the "old" income package.[104]

Of course, an income-tested benefit would clearly be more cost efficient under these completely static conditions. To demonstrate this in terms of a Gini-decomposition, we can imagine that an income-tested benefit has been carefully constructed so that it does not cause any re-ranking in the distribution of total income, and so that it at the same time consistently pays out higher amounts the further down people are positioned in the overall income distribution. Thus the benefit has a perfect negative Gini correlation with the overall income package (the R-term is equal to -1). This admittedly very stylized benefit will on its own be responsible for a *negative* contribution to total inequality that is equal to its share in the income package multiplied by its Gini coefficient.[105] This effect comes in addition to the equalizing effect that the uniform transfer also has, by causing a reduction in the share taken up by the remaining income package.

Before leaving the discussion of uniform and means-tested benefits, let me briefly consider how *behavioral responses* could enter the picture. If anticipated in advance, changes in the pattern of public pensions might lead to changes in the savings behavior of the individuals

---

equal to or less than the pension benefit going to a single person, and this will not necessarily be in agreement with the equivalence scale used by the researcher.

[103] Since the ranking of observations in terms of total income will be entirely determined by the remaining income package, its R-term must necessarily be equal to 1, and hence it can be ignored.

[104] In order to accomplish a 50 percent reduction in overall inequality the uniform transfer must take up 50 percent of the new income package, and thus be exactly equal in size to the entire "old" income package.

[105] To the extent that a means-tested benefit does lead to some re-ranking and its negative correlation with the overall income package is less than perfect, the equalizing effect will be weaker.

concerned and/or in the behavior of relevant collective actors like employers and unions, and therefore the possibility of behavioral (and institutional) responses must be taken into account (this is the topic of Sections 3.4-3.5 below).

Generally speaking, behavioral responses (and second-order effects more generally) could have very different implications for the level of income inequality that will finally obtain, depending on whose income is affected (rich or poor) and in what direction (a decrease or an increase in income from alternative sources).

Let us here assume that the expansion of a uniform income transfer will to some extent be offset by a reduction in other (private) income components.[106] If this reduction were simply proportional, that is, if it did not affect the Gini coefficient for the private income components taken together, it would just have the effect of further strengthening the equalizing effect of the uniform income transfer. The reason is, of course, that the share of the remaining income package becomes even smaller, and therefore its contribution to overall inequality further declines as compared to the static example above. However, the assumption of a proportional effect is quite heroic. It is more likely that the *relative reduction* in private income sources will be weak among high-income strata, and the consequence would be that the Gini coefficient for the remaining income package would tend to increase. In the language of Gini-decomposition, the net result depends on the relative strength of these two effects: the relative reduction in the share taken up by private components, and a possible relative increase in their Gini inequality. Of course, the two effects would exactly balance each other, if everybody experienced an *absolute reduction* in their income from private sources, that was exactly equal to the size of the universal benefit. This is not a very plausible outcome either, simply because members of the low-income strata might not initially have enough private income to offset the uniform transfer.[107] In practice much will depend on the level of inequality obtaining in the status quo. The higher the initial level of inequality, the less likely it is that the introduction of a uniform income transfer will induce an increase in the concentration of private sources that is anywhere near strong enough to offset the equalizing effect.

For typical means-tested benefits there are more compelling reasons to expect that offsetting behavioral responses will materialize and that they will tend to be concentrated in the lower and middle part of the income distribution. Like the uniform pension, an income-tested benefit has a pure income effect that might lead people, who expect to receive this benefit, to acquire less private retirement income than they would otherwise have done. Secondly, and probably more importantly, the implicit taxation of income from other sources that goes with income-testing, gives rise to a kind substitution effect as well. In the income ranges where the benefit is leveled off (usually the lower and middle part of the income distribution), the marginal gain from additional private income is curtailed, creating an incentive against the acquisition of private retirement income. Neither of these effects are likely to involve high-income strata (pre- and post retirement) as people belonging to these strata do not expect to receive the benefit anyway and as they are typically above the income range affected by the tapering off of means-tested benefits. If it is correct to assume that behavioral responses to means-tested pensions are likely to be strong and concentrated in the lower half of the income distribution, then Gini inequality for the remaining income package can be expected to change systematically in the direction of more inequality. So the net result, as compared to a uniform benefit of a similar size, might be substantially less favorable than you would expect from the static comparison. Theory and empirical evidence as to the extent and character of behavioral responses is needed in order to foresee the final result.

---

[106] This assumption is by no means unquestionable, as we shall see in Section 3.4 below.

[107] Below I shall argue that a significant fraction of retirees can be expected to end up with very little private income irrespective of the institutional setting.

The impact of social insurance benefits

How might inequality among pensioner households be affected by the presence of social insurance benefits that vary among the recipient households in direct proportion to pre-retirement income levels?

Usually social insurance pensions are built up over a long time span, but I shall continue to ignore the time dimension and simply assume that a state of maturation has been reached instantaneously. In the status quo (or the counterfactual situation), I stipulate there to be a uniform public pension of some size, while income from private sources causes a certain level of inequality to prevail in the distribution of total income. In the status quo the distribution of private income will unilaterally decide the ranking of individuals in terms of their level of total income, so there must be a perfect Gini correlation between the private component and the entire income package ($R_p=1$). Therefore, the Gini coefficient for total income must equal the Gini coefficient for the income from private income sources multiplied by their share in the total income package ($G=G_p*S_p$). If we for instance assume that the Gini coefficient for the private income component is 0.6 and its share in the total income package is 50 percent, then the Gini coefficient for the entire income package will be equal to 0.3.

If we further assume that the new social insurance pension is perfectly rank-correlated with private income and hence with the prevailing income distribution among the retired, then the conditions under which the change is equalizing or dis-equalizing can be stated with precision. Inequality in total income will decrease if the Gini coefficient for the social insurance benefits, G_i, is smaller than the Gini coefficient for the "old" income distribution, and it will increase if it is bigger. In the numerical example, the critical value for the concentration of the social insurance benefit is 0.3. We can even go on to estimate the change in the overall Gini coefficient, which will be given by the expression $(G_i-G)*S_i'$, where G is the "old" Gini coefficient and S_i' is the share taken up by the new transfer in the expanded income package.[108] In other words, the new Gini coefficient, G', will equal $G+(G_i-G)*S_i'$.[109] Suppose, for instance, that the Gini coefficient for the pre-retirement income distribution and hence the social insurance benefit is 0.2, and that it takes up 20 percent of the new income package; then total inequality will go down from 0.3 to 0.28.

So far it has been established that the introduction of a social insurance scheme with a certain level of inequality built into its benefit structure can be equalizing, under completely static circumstances – i.e., without any behavioral responses. For this result to occur, the new social insurance benefits must be less strongly concentrated than the existing income package. The more inequality there is at the outset, through the interaction of a large share and a high concentration of private income sources, the more likely and the stronger the equalizing effect. In this case it was assumed that in the status quo the concentration of private retirement income was three times stronger than the concentration of pre-retirement incomes, and it was assumed that the existing income package was split in half by private income and a uniform income transfer.

---

[108] I use the (') to indicate whenever a term refers to the income distribution that materializes after the hypothetical intervention. Terms without the (') refer to the distribution in status quo.

[109] Of course it is possible to express the size of the increment in terms of its share of total income ex-ante. Si' must then be replaced with Si/(Si+1), where Si is the ratio between the scope of the new component and the size of the existing income package.

In the following I shall consider the consequence of modifying the underlying assumptions in three different directions (one at a time). What is the result of dropping the assumption about a perfect correlation with the existing income package? What happens if the social insurance benefit is not just added to the existing income package but indirectly "financed" by reductions in the uniform pension offered in the status quo? As a third and final point I shall consider the impact of behavioral responses.

For technical reasons I have assumed that the social insurance transfers are perfectly rank-correlated with the private sources of retirement income. It is not unrealistic to expect a fairly strong positive correlation, since the propensity to acquire private means of income provision in retirement is related to some of the same factors that usually govern the distribution of social insurance benefits: income and employment histories of the recipient households. However, we should not necessarily expect the correlation to be perfect. One must expect the distribution of private income to (rank-)correlate less perfectly with income levels prior to retirement than social insurance benefits tend to do. Relaxing the assumption that the new transfer is perfectly rank-correlated with private retirement income complicates the picture from a technical point of view, but the direction of the "bias" is easily predicted: Total inequality will unambiguously be smaller than what would have obtained under the assumption of perfect correlation, and the conditions for the policy change to have favorable consequences can be somewhat relaxed. It is possible for the social insurance transfer to have and equalizing impact even if its Gini coefficient is slightly bigger than the Gini coefficient for the existing income package.

For the sake of realism, one might very well object to the total neglect of fiscal constraints that has been built into the example above, where a social insurance scheme is simply added on top of flat-rate pensions. It seems more plausible to assume that the introduction of social insurance benefits will have at least some opportunity costs in terms of a reduction in the level of flat-rate benefits. Of course, the odds in favor of a beneficial outcome decrease sharply if the introduction of a social insurance scheme is associated with a reduction in the universal income guarantee that is being offered to all pensioners in the status quo. Also this issue can be analyzed ex-ante on additional assumptions about the extent of the associated reduction in flat-rate benefits. Suppose that the total size of public transfers is only increased by a fraction, P, of the size of the new insurance transfer (the flat-rate benefit is reduced by (1-P)*Si'); then the change in overall inequality is given by (Gi*Si' – G*Si'*P).

If, for instance, the old uniform transfer is reduced by 50 cents for each dollar spent on the new social insurance scheme (P=0.5), then the level of inequality that can be allowed to characterize the new transfer, in order to maintain at least neutrality, will go down by a corresponding 50 percent. With values for P less than 0.5 the conditions become even tougher. In the extreme case where the introduction of social insurance benefits is financed entirely by cut-backs in an existing uniform transfer (P=0), more inequality will result – unless, of course, the social insurance benefits are themselves perfectly uniform.

This example illustrates an important general point: A conversion of a certain expenditure on flat-rate pensions into expenditure on social insurance benefits can hardly be beneficial in terms of income equality among the retired.[110] Hence, within fixed budgetary constraints, a uniform benefit will invariably do better than earnings related social insurance benefits.[111] For the purpose of keeping income inequality among pensioners low, social insurance is only an attractive alternative or supplement to flat-rate or means-tested pensions if it does somehow facilitate an increase the total funds available for public pension expenditure. The question is, therefore, whether there is a systematic relationship between the benefit structure of public pensions and their generosity, and whether there are good and compelling reasons why more money is spent when public pension provision is based, at least in part, on social insurance (I discuss this issue in Section 3.3 below).

---

[110] It is logically possible that the incorporation of behavioral responses could reverse this conclusion, but the necessary behavioral assumptions would have to be rather far-fetched.

[111] This confirms the claim made by Delhausse et al (1994). The claim is difficult to dispute if made under the crucial reservation of fixed total benefit levels.

Finally, the potential impact of behavioral responses should be considered. Let us presume, as before, that there will be a tendency for private income provision to decrease in response to the increase in public pensions.[112] In the case of a social insurance benefit that reproduces the (intra-cohort) distribution of lifetime earnings, there is – at least theoretically – a much better chance that the behavioral responses will be proportional or perhaps even progressive in profile: i.e., the relative reduction in private income is as strong for high-income as for low-income groups. If we assume that the decrease in private provision is roughly proportional, then the prospects for achieving a reduction in inequality improve very significantly improved as compared to the static scenario. In the limiting case, where the total volume of the social insurance benefit is offset by a strictly proportional reduction in private income components ($S_i'=S_p-S_p'$; and $G_p'=G_p$), the Gini coefficient for the social insurance benefit will just have to be lower than the Gini coefficient for the private income components, in order for the change to be equalizing. To put the point in terms of the previous numerical example, under these admittedly rather optimistic assumptions, the outcome will be a reduction in inequality, as long as the Gini coefficient for the social insurance benefit is less than 0.6. If the Gini inequality of the social insurance benefit is as low as 0.2 (presumably the same level of inequality that characterizes the pre-retirement distribution) and it is expanded to take up 20 percent of the income package, then inequality will go down from 0.3 to 0.22 (as compared to 2.8 in the static but otherwise parallel example above).

However, as I already pointed out, one cannot exclude a priori that the behavioral response could have a regressive profile, i.e., that the shrinking of private income provision is associated with an increase in the Gini inequality for the private components. Such an effect could, at least in theory, partly or totally offset the equalizing effect of the social insurance transfer, but this is only a logical possibility if the concentration and the scope of the private component were relatively modest in the status quo. So once again, much depends on the initial level of inequality that characterizes the distribution of private income sources.

Main implications

The preceding discussion should have made clear that the relationship between the level and structure of public pensions on the one hand, and income inequality in retirement on the other is rather complex. In order to have an idea about the difference in overall inequality that can be expected to follow from differences in the scope and structure of public pensions, it is not enough to invoke the indisputable but also quite trivial fact that private retirement income everywhere tends to be more concentrated than public pensions even when the latter take the form of earnings related social insurance (Pestieau, 1992).

The main hypothesis of this study holds that the presence of generous social insurance pensions would tend to have a dampening effect on the level of income inequality prevailing among the population of retired. The validity of this hypothesis rests on the following four conditions:

---

[112] As I shall argue below, there are reasons to believe that social insurance schemes will tend to have a more consistent "crowding-out" effect on private retirement provision (in particular vis-à-vis occupational pension schemes) than other types of public income provision.

First of all, it requires that private income sources tend to project the pre-retirement income distribution in such a way as to strongly intensify the degree of inequality, while social insurance pensions themselves just reproduce (maybe even in modified form) the pre-retirement distribution. As we have seen, an equalizing effect of social insurance transfers is conditional on a relatively high degree of inequality in the distribution of private income sources.

Secondly, it requires that total public pension expenditure is allowed to expand as social insurance pensions are introduced. If the budgetary constraints on public pension expenditures are fixed regardless of their structure, then the hypothesis should most probably have to be rejected because a fixed sum is most efficiently spent on flat-rate or means-tested benefits. If, on the other hand, one assumes that there is absolutely no trade-off between the introduction of social insurance pensions and the provision of flat-rate or means-tested benefits, the main hypothesis can hardly fail.[113] I do not consider any of these extreme possibilities to be particularly realistic, though, so the strength of a trade-off is a pertinent issue in interaction with the remaining conditions.

Thirdly, the ability of social insurance pensions to crowd out/substitute for private provision is very important. This raises the question of behavioral and institutional responses and of the dynamics of private pensions to which I shall turn in the following sections. If the scope of private provision tends to be unaffected by the generosity of public pensions, the main hypothesis is liable to fail. If, however, public pensions, and in particular social insurance pensions, substitute for private provision, it is likely that this substitution will be beneficial in terms of overall inequality – provided, though, that the distributive profile of private provision does not change dramatically towards more inequality.

Hence, fourthly, one must assume that there are not systematic and strong tendencies for the concentration of private income components to increase as their relative and absolute contribution to the overall income package diminishes. This again raises questions about the nature of behavioral responses and the dynamics of private pensions, which I shall introduce in Section 3.4 and explore further in Sections 3.5 and 3.6 below. However, the simple arithmetic of Gini-decomposition does tell us that the more extreme the initial inequality in the distribution of private sources, the less likely it is that any further concentration can be strong enough to offset the equalizing impact of expanding public pensions.

These four conditions are all matters of degree, and the final outcome depends on their interaction.[114] So, the eventual success or failure of the main hypothesis does not necessarily hinge solely on the performance of one particular mechanism. Nevertheless, I shall maintain that a closer investigation – theoretically as well as empirically – of each of these four conditions will provide as much insight into the general problem as any attempt to test the main hypothesis directly on cross-national data.

The specification of these four conditions helps to highlight a very important difference between the present study and some recent contributions to the study of welfare state outcomes. In the discussion of theoretical positions concerning the distributive impact of the welfare state (Section 2.3), I mentioned two themes developed by representatives of the pessimistic, "realist" position that require serious attention in the area of pensions and retirement provision: 1) A possible trade-off between the financial scope of social policy interventions on the one hand and their progressivity on the other; and 2) the presence of behavioral responses and second-order effects more generally. While these topics form crucial parts of the theoretical argument developed here, their importance is either denied or completely ignored in much of the recent literature.

---

[113] Some even claim that the presence of social insurance benefits (legitimizing the public pension system vis-à-vis the middle classes) could make a higher level of minimum protection more politically sustainable than would have been the case without the social insurance benefits (a strong version of the middle-class inclusion thesis).

[114] In the concluding section of this chapter I present a graphical exposition of the main argument based on these conditions, leading to the idea of an optimal mix of flat-rate and proportional social insurance pensions.

Castles and Mitchell (1991; 1993) outline a program for welfare state research based on a model "by which we can better explain the forces contributing to social policy outcomes" (1991:5). They explicitly recognize that their model, and the corresponding program for research, is based on the fundamental, a priori assumption that behavioral responses are non-existing or insignificant, and that there is no trade-off between the scope and progressivity of welfare state interventions (Castles and Mitchell, 1991:7-8). It follows almost by implication that studies within this framework will be optimistic about the outcome of attempts to target social benefits towards the neediest.

Similar assumptions are employed – but this time implicitly – in the study of Delhausse et al. (1994). On the basis of income survey data for seven countries obtained from the Luxembourg Income Study, the authors attempt to evaluate the distributive outcome of various policy reactions to the challenge of aging populations over the coming decades. They run a number of thought experiments where various public and private income components in the income packages of elderly households are scaled up or down, and where public pension benefits are reallocated as a uniform transfer. The authors do not take into consideration any interdependencies between the scope and distribution of the various income components. It is hardly surprising that their conclusion points in the direction that the scarce resources available for public pensions will be most efficiently spent on flat-rate as opposed to earnings related pensions, given that the goal is to keep inequality low among the retired.

By contrast I shall attempt to keep open the possibility of 1) a trade-off between benefit generosity and benefit inequality in the provision of public pensions and 2) systematic behavioral responses to variation in public pensions. These two topics occupy the remaining part of this chapter. Before turning to the larger issue of behavioral responses and the interplay of public and private retirement provision, I shall discuss the question about a possible policy trade-off between benefit equality and benefit generosity of public pensions.

3.3 A TRADE-OFF BETWEEN EQUALITY AND GENEROSITY?

The available comparative data bear strong witness of a negative relationship between benefit equality and benefit generosity in public pension systems. As we shall see in Chapter 5, there is, among the OECD countries, a strong and robust tendency for systems based (totally or partly) on earnings related social insurance to provide substantially higher average benefit levels as compared to countries that rely exclusively on flat-rate and/or means-tested benefits.

However, a negative correlation based on a number of country cases does not in itself prove the point about a policy trade-off. The existence of a trade-off would mean that policy-makers in each country face certain constraints in their pursuit of policy objectives: choices made about one parameter (benefit structure) tend to pre-determine choices on the other parameter (benefit levels) in a systematic way.

In this section I shall attempt to develop the *reasons* why such a trade-off is likely to apply more or less universally, and how it could be accommodated within a model that allows the terms of the trade-off to differ according to variation in structural and political conditions. In developing this argument I shall have to touch upon two themes that I have otherwise claimed to be beyond the scope of the present thesis: the financing of public pensions and the general topic of causal factors behind variation in public pension systems.

The hypothesis about a trade-off can be contrasted with two competing assumptions. The first assumes that budgetary constraints on public pension expenditure are fixed. The other assumes that there is no interdependence between expenditure on flat-rate and earnings related pensions, i.e., there is no conflict between the quality of minimum protection (expenditure on flat-rate and means-tested pensions) and the quality of income security (expenditure on earnings related benefits). I shall built the case for the existence of a moderate trade-off between benefit equality and benefit generosity by investigating and rejecting the two alternative hypotheses.

Fixed budgetary constraints?

In policy analyses it is common to compare alternative policy options on the basis of fiscal (expenditure) neutrality. It is not particularly interesting to find out that one option does a better job in realizing policy goals, if it involves a much higher expenditure level than competing alternatives. The idea is that the expenditure decision should be kept analytically distinct from decisions about the structure of the expenditure. Society should first settle how much it can afford to spend on old age pensions and then choose the structure of expenditure that maximizes a set of policy goals, like for instance income equality among the retired. The basic assumption is that the costs (economic as well as political) of a certain social policy program are measured simply in terms of the level of expenditure, while the structure of financing as well as the structure of benefits is taken to be irrelevant. This is not always an appropriate assumption to make, and for the area of public pension provision I claim it to be misleading.

Let me start by looking at the issue from a purely economic point of view. It is a central analytic result in public economics that all forms of taxation have costs in terms of distorting economic efficiency (Culyer, 1980). It does not follow, however, that the economic costs incurred by a certain expenditure will not tend to vary with the form of taxation and with the structure of social transfers.

In the ideal-typical social insurance scheme, the financing of benefits is based on earmarked contributions by the insured and/or the employer, with some link between contributions paid and the accrual of pension rights. This implies that the incentive effects are potentially very different from the payment of an ordinary income tax, which (by definition) carries no link to any (present or future) individual benefit.

For the sake of argument let us assume that this feature of social insurance schemes is taken to the extreme, and that a compulsory social insurance scheme is designed as a perfectly fair annuity. In this case it would be entirely mistaken to consider the contributions paid by (or on behalf of) the insured as equivalent to any income tax. Contributions should rather be considered as forced saving. For an individual whose discount rate on future income happens to correspond to the rate of return to be expected from the scheme, the contribution paid should be considered completely equivalent to an addition to take-home pay, and hence for this individual, no distortion of the labor supply decisions will follow (Ståhlberg, 1997). Of course, the forced participation in a perfectly fair annuity might not satisfy the preferences of all participants equally well, and hence other individuals might evaluate their contribution/expected benefit lower than its present value. However, only completely myopic individuals (see Section 3.5 below) would react to a compulsory, but fair retirement annuity in exactly the same way as they would react to any tax.

It is true that real-life social insurance schemes are often a far cry from being perfectly fair annuities, but they generally entail a certain linkage between contributions (labor force performance) and benefits, and hence the incentive structure is far more complicated than suggested by the simple tax analogy.[115] It should also be recognized that some compulsory pension systems do come rather close to the model of a fair annuity. One prime example is the second tier of the Finnish pension system, which is organized as compulsory private insurance.[116] Recent reforms in the Swedish second-tier system and in the Italian and German pension systems have also moved these systems closer to the model of a fair annuity, despite the fact that the systems continue to be publicly (or semi-publicly) administered and financed (primarily) on a pay-as-you-go basis (Palme and Ståhlberg, 1993; Kangas, 1994; Schmähl, 1993). In the debate leading up to the 1994 reform of the Swedish pension system, there was a fairly broad consensus that the projected financial burden associated with the "old" system was prohibitive. However, as an alternative to a more or less complete phasing out of the second tier of earnings related pensions,[117] it was decided to reinforce the annuity aspect of the existing system, whereby, as it was argued, contributions were no longer unambiguously to be considered part of the overall tax-burden (Persson, 1991, Ståhlberg, 1997).

The basic point is that differences in expenditure levels do not give an adequate picture of the real economic costs associated with different pension systems. The more direct and transparent the link between contributions and benefits, the smaller the real economic costs – and here in particular the risk of seriously distorting labor supply decisions. For a given expenditure level, the economic costs of an earnings related social insurance scheme will tend to be smaller than the corresponding costs of a system based on flat-rate/means-tested benefits. Hence, under otherwise equal conditions, a higher level of average benefits and expenditures should be economically sustainable in a pension system based partly or totally on earnings related social insurance, as compared to a system based on flat-rate/means-tested benefits financed out of general taxation.[118]

In addition to this (micro-)economic argument there is a perhaps even more important political argument for the existence of a trade-off between benefit equality (progressivity) and benefit generosity. The political argument is rather obvious. It can be derived from a public choice perspective on social policy making, whereby the political support for the welfare state depends crucially on its capacity to cater to the social needs (income security) of broad segments of the population (the median voter). An altruistic pre-occupation with the poor, if existent, is likely to be fairly weak as a motivational force, and certainly not strong enough by itself to make the "middle class" accept a very high tax-burden. Hence, a welfare state that caters only to a poor minority is bound to be mean. Similarly, it is expected that very comprehensive welfare states are likely to show a low degree of targeting and progressivity in the benefit structure, as the bulk of the expenditure is channeled towards broadly shared social risks (see Øverbye, 1995; 1998 for an elaboration of the public choice/risk sharing perspective on social security).

---

[115] Often the link between contributions and benefits is not only rather weak in general, it is also extremely complicated, with all sorts of "kinks" and threshold effects making it very difficult to estimate the marginal gain associated with participation in the scheme at a particular point in time. It is difficult to say what the lack of transparency implies for individual motivation. Some people might over-rate the link between contributions and benefits, and some might simply assume that there is no link at all.

[116] OECD and ILO disagree about the classification of the Finnish superannuation schemes. In OECD statistics contributions and benefits related to this scheme are excluded from figures on the total tax-burden and public expenditures, while ILO include these figures in statistics on (public) social expenditure.

[117] This was a very prominent option in earlier phases of the debate.

[118] The British experience in the postwar period shows that the particular (Beveridge) version of social insurance, based on flat-rate benefits and flat-rate contributions, is a model in which benefit levels are doomed to be extremely meager, due to the political impossibility of raising (regressive) flat-rate contributions. See Abel-Smith and Townsend (1955).

This is sometimes called the middle-class inclusion thesis. Occasionally this thesis comes in an extremely optimistic version: The introduction of social insurance that promises to respond to the demand for income security among the middle and higher income brackets, will help to foster the necessary goodwill towards the overall system to allow even the minimum protection to be sustained at a higher level than would otherwise have been possible (see for instance Korpi, 1983; Korpi and Palme, 1994).[119] In the area of pension provision I suspect that this is unduly optimistic as a general hypothesis, with its complete lack of consideration for constraints on the overall financial burden. At a first glance the Scandinavian experience in the 1960s and 1970s could seem to support this hypothesis, but as I shall argue in the following, the empirical evidence is not all that convincing.

No conflict between minimum protection and earnings related benefits?

In the introductory chapter I referred to the policy debates in the Scandinavian countries and in the United Kingdom in the 1950s and 1960s concerning the possible introduction of earnings related social insurance pensions to supplement the existing minimum protection in the form of flat-rate (and means-tested) benefits. In these debates there was a tendency to take for granted (at least by the proponents of reform) that a possible second tier of earnings related pensions would come in addition to the already existing flat-rate schemes. Expenditure for supplementary, earnings related pensions should come from fresh sources rather than involve any redirection of the current expenditure on flat-rate schemes. This intention was clearly manifested in the suggested financial structure where new, earmarked individual and or employer contributions were supposed to carry the financial burden of the second tier of earnings related pensions, while general revenue financing should continue to carry most the financial burden of the first tier of flat-rate/means-tested pensions. When such second-tier schemes were actually introduced in Sweden and Norway, the real-value of flat-rate benefits was not only maintained, but the quality of minimum protection was even improved significantly in the years following the superannuation reforms (Elmer, 1988; Hatland, 1984).[120]

This pattern has led some observers to claim (or to implicitly assume) that superannuation schemes can be introduced without infringing upon the level of minimum pensions, or perhaps even facilitating improvements. The Swedish and Norwegian cases certainly provide a powerful illustration of the point that budgetary constraints on total public expenditure need not be entirely fixed, regardless of the structure of the system.

However, the assumption about complete independence between expenditures on the different tiers of the system is almost too convenient to be true. It hinges on a counterfactual question: how would the level of minimum protection in Sweden and Norway have developed in the medium- and long-term perspective in the absence of public superannuation schemes in these two countries?[121] This question can never have a definite answer. Nevertheless, I do not find it unreasonable to assume that the level of minimum protection would have been at least as high as it has turned out historically. Although the economic and political costs of the second-tier schemes are, arguably, less than the costs of flat-rate and means-tested programs per dollar spent, they are not zero, and it must be expected that some of these costs will infringe either upon the level of minimum protection that could otherwise have been offered, or upon other areas of public expenditure.

---

[119] It is difficult to see how any strict public choice model could account for this strong (optimistic) version of the middle-class inclusion thesis – see the critical discussion in Øverbye (1997).

[120] It was politically very difficult not to let the contemporary generation of pensioners take part in the radical improvement of replacement rates that the new systems promised to younger cohorts, and the new contributions that were levied on the economically active population (intended to help build up substantial public pension funds) meant that there was "easy "money around to pay for higher minimum pensions among the contemporary retirees. The priority conflict between flat-rate and earnings related pensions becomes tougher when the superannuation scheme approaches a state of maturation.

The development of minimum protection in Denmark, where a second tier of earnings related pensions was never introduced, is a possible source of information on the issue. As shown by Øverbye (1997), the level of minimum protection offered to old age pensioners in Denmark has continued to be at least as generous as the level found in the other Scandinavian countries throughout the 1970s and 1980s (see also Nordic Social-Statistical Committee, 1990). This is so, one might add, despite the fact that the Danish economy suffered worse from the international recession following the first oil price shock in 1973 (see Mjøset ed.,1986).

A simple model of the trade-off

I shall conclude this discussion by suggesting a very simple way to specify and illustrate the hypothesis about a trade-off between benefit equality and benefit generosity.

Obviously, I do not claim that this policy trade-off is the only systematic factor behind observed variation in national pension systems. The trade-off should rather be conceived of as working on the margin of structural and political factors responsible for the most important variation in national pension systems.

On several points I have anticipated the presentation in Chapter 5 of the available cross-national data, which show a very clear pattern, consistent with a negative relationship between benefit generosity and benefit equality in national pension systems. However, there are important outliers.

The United States and Denmark are a pair that seems to negate the general validity of a trade-off. In Denmark benefit equality is very high (public pensions are almost exclusively of the universal flat-rate and means-tested kind), but even so, benefit levels are higher, on average, than in the US, where public pensions are based primarily on social insurance and where, therefore, public pension benefits are allowed to reproduce pre-retirement labor market stratification. However, when these two country cases are compared to more similar cases (respectively), the apparent negation of a trade-off no longer holds. Average benefit levels are substantially lower in Denmark than they are in Sweden and Norway, where the public pension systems allow a greater degree of inequality in the benefit structure. Similarly, standard benefit levels in the US do compete rather well with the benefit levels offered in Canada, where a significant part of public pension provision is in the form of flat-rate and means-tested benefits.

In order to make sense of this pattern I suggest that the country cases differ on a latent variable that could be labeled their "potential for solidaristic pension provision". I assume this "potential" to be determined by a range of structural and socio-political factors. Drawing eclectically from findings in the comparative welfare state literature, I suggest including such factors as economic prosperity, the degree of labor market stratification and labor market segmentation (the level of pre-retirement income inequality), ethnic heterogeneity and ethnic cleavages (see Ragin, 1994), and the density and pattern of unionization. This "potential for solidaristic pension provision" will then in turn decide the level at which a trade-off between benefit equality and benefit generosity is played out, and it could also determine its particular shape.

---

[121] This thought experiment is not particularly far-fetched. In Sweden the ATP reform was carried through with the smallest possible majority in the Riksdag after a long a fierce political struggle – see Molin (1965) for a seminal study of the political process behind the ATP reform.

In Graph 3.1 I have attempted to illustrate some implications of this admittedly rather crude conceptual model. The Y-axis measures average benefit levels relative to, for instance, the mean income among the non-retired, while the X-axis represents variation in the balance between earnings related benefits on the one hand and flat-rate/means-tested benefits on the other. The "Bismarckian" pole is thus characterized by an exclusive reliance on earnings related (proportional) social insurance pensions, while the "Beveridge" pole represents a pure system of flat-rate benefits.[122] Each line is supposed to depict a kind of possibility frontier facing countries with more or less favorable structural and socio-political conditions for solidaristic pension provision. It might be imagined, for instance, that the three possibility frontiers represent the cases of the US (C1), Germany (C2) and Denmark (C3). For the sake of illustration I have tried to hint at the approximate contemporary placement of these three country cases, on the two dimensions of variation in public pensions provision, with a dot on each of their respective lines.

For the overall theoretical argument investigated in this thesis the most important feature of the model depicted in Graph 3.1, is that each of the possibility frontiers is downward sloping. They must be so, in order to be consistent with the assumption made here about a trade-off between benefit generosity and benefit equality. The most serious counter-assumption is the one that would require the frontiers to be drawn as horizontal lines, implying that the sustainable level of expenditure is fixed, regardless of the structure of benefits. I shall demonstrate graphically in the concluding section of this chapter that, if these lines were horizontal (or upward sloping), then inequality among the retired would always be minimized by a concentration of public expenditure on flat-rate benefits – at least under reasonable assumptions about the interplay of public and private pension provision.

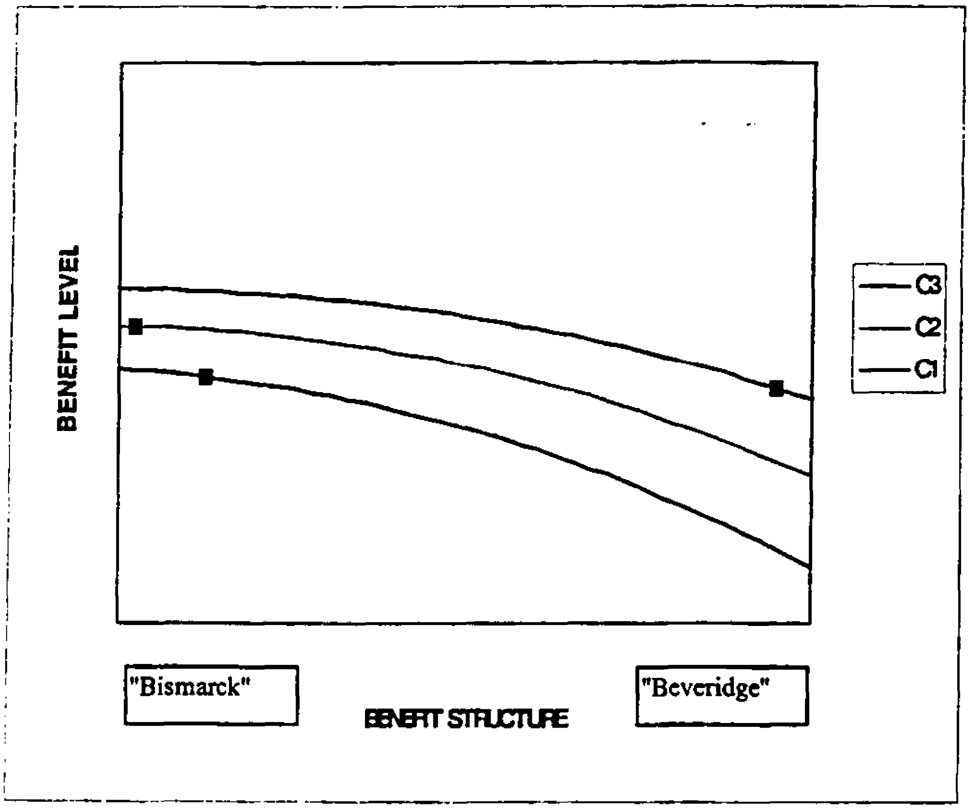
As a tentative hypothesis, I let the slope be steepest for countries with a very low "potential " (C1, exemplified by the US) and relatively flat for countries with a presumed high "potential" for solidarity (exemplified by Denmark). The intuition behind this is that structural and political pre-conditions have a stronger differentiating impact on sustainable spending levels when the benefit structure is closer to the flat-rate pole. Or to put it differently, in countries with a low "potential" there is relatively more to gain in terms of sustainable spending levels by moving away from highly solidaristic expenditure patterns. I suspect, for instance, that the US would have turned out as a more extreme low-spender, had the pension system after the New Deal reform been focused on a flat-rate or means-tested benefit system.[123] To discuss a counterfactual benefit structure for the US, where the present level of expenditure is spent alternatively on flat-rate or means-tested benefits, is blatantly unrealistic. For countries with a high possibility frontier (presumably all the Scandinavian countries belong to this category), I let the slope be much flatter, and thus the gain in sustainable expenditure levels that can be achieved by differentiating benefits is generally assumed to be more modest in these countries.

---

[122] The possibility of means-tested benefits is not considered explicitly in the graph or the accompanying discussion. Let me briefly suggest, however, that I suspect the implications for a mean-testing option could be depicted by extending the X-axis to the right of the "Beveridge" pole, with the maximum level of sustainable expenditure levels declining even further as compared to the flat-rate option.

[123] Apparently this was not entirely unthinkable, as the idea of social insurance was quite alien to American social policy thinking prior to New Deal (Berkowitz, 1997). Note that at the same time that old age pensions is one of the few areas where the US is much less of an outlier in terms of expenditure levels, as compared to other advanced economies.

Graph 3.1: The trade-off between benefit equality and benefit generosity for three hypothetical country cases. "Bismarck": 100 percent earnings related benefits. "Beveridge": 100 percent flat-rate benefits.



I also let the slope of each line approach zero the closer one moves towards the earnings related pole on the X-axis, i.e., the marginal gain in terms of sustainable expenditure levels is assumed to decrease the further one moves towards the "Bismarck" pole. One implication of this assumption is that the introduction of some level of minimum protection in countries that start out near the income graduation pole, can be expected to have rather low costs in terms of sustainable expenditure levels.

This model is clearly an oversimplification in many respects. Structural and political factors are likely to influence and interact with the terms of the trade-off in a much more complicated way than suggested by a one-dimensional, latent "potential for solidaristic pension provision". The model can also be accused of oversimplifying the distinction between structural constraints and political agency – with the latter seemingly confined to (unrestrained) decisions about points on a structurally determined possibility frontier. This is not a necessary implication, however.

Political agency might enter on two additional levels in this model: In the short run, political agency might be involved in determining whether a country is utilizing its full potential for pension provision, or whether the system is in fact situated below its proper possibility frontier.[124] In the more long-term perspective, political agency can also be allowed to influence the level and shape of the frontier itself. While the frontier must be assumed to be rather fixed in the short run, it is not necessary to conceive of it as completely determined by structural conditions in the medium or long-term perspective.

At the same time it should be recognized that policy-makers do not pick and choose freely among points along such a possibility frontier. It is well established that institutional legacies and inertia play a very important role in social policy developments (Heclo, 1974). Thus, the structure of public pension provision is not easily changed. It is therefore important to stress that the model does not presuppose that changes along the frontier are unrestricted. The model solely implies that, if and when such changes are made, they are constrained by the conditions of the trade-off.

A number of OECD countries have made significant changes in their pension formulas in the postwar period. The most prominent examples are the moves by the Scandinavian countries, the UK and Canada away from the flat-rate, "Beveridge" pole to more intermediate positions. It is also a fact that in these very same countries, suggestions for moving back to a more pure model of minimum protection have been emerging on the political agenda under the spectre of the "aging crisis" (see for instance Ståhlberg, 1989a; Ståhlberg, 1997; Salminen, 1993; Myles, 1991; O'Higgins, 1986; Erskine, 1997, Pedersen 1997). Significant movements along the "Bismarck-Beveridge" continuum often take place over time through incremental decisions concerning indexing and regulation of benefit levels in the different parts of the overall system. Countries like the UK, Sweden, Canada and Norway have in this way been sliding some way towards the "Beveridge" pole over the last decades. Note, however, that this tendency has been firmly reversed in Sweden with the recent pension reform.

Moves in the opposite direction, by countries that are traditionally positioned close to the "Bismarck" pole, are more rare, with Switzerland as an interesting exception. The Swiss case does seem to lend support to the trade-off hypothesis as the introduction of flat-rate minimum pensions in Switzerland has gone hand-in-hand with a strong (downward) divergence in average benefit levels, as compared to other European countries that have their historical roots in the continental social insurance tradition (Palme, 1990; Kohl, 1992).[125]

3.4 THE INTERPLAY OF PUBLIC AND PRIVATE PENSIONS

As we have seen in Section 3.2, the equalizing potential of public pensions depends on the scope and distributive profile of private income provision in retirement and how these might respond, in the aggregate, to variation in the nature of public pensions.

There is no general agreement, however, that we should necessarily and always expect private income provision to deviate sharply in its distributive profile from public social insurance pensions.

Some authors see private pensions as a functional equivalent of public provision, and they are inclined to argue that cross-national variation in the institutional mix between the two only masks an essential convergence among advanced capitalist economies. The total level of welfare production looks rather similar across countries when the role of private provision is considered (Katzenstein, 1984), and in the final analysis the performance of different welfare mixtures might not be all that different (Rein, 1983; Rose and Shiratori, 1985).

---

[124] In Graph 3.1, I let the three illustrative country cases be placed on the respective frontiers, but this is not a necessary feature of the model. The point is only that systems cannot move to points above the respective frontiers.

[125] On this issue Baldwin (1990) has developed an argument about path dependency, claiming that the move from "Beveridge" to "Bismarck" is more politically feasible than the move from "Bismarck" to "Beveridge".

Others maintain a clearly dualistic view of the two types of welfare provision. Private welfare providers and in particular occupational pension schemes, are assumed to be extremely inegalitarian in their distributive profile, tending to reproduce and further intensify inequalities that have their origin in labor market stratification (Titmuss, 1955; 1958). Thus, cross-national differences in the balance between public and private institutions are seen as a key symptom of welfare state variation (Esping-Andersen and Korpi, 1987; Esping-Andersen, 1990).

The latter view does seem to be supported by the finding, based on national income surveys provided by the Luxembourg Income Study, that private income sources are everywhere highly regressive components in the income packages of retired households (Pestieau, 1992). But then this could simply be a reflection of the fact that, in contemporary societies private retirement provision tends to be relegated to the role of complementing the more or less progressive systems of public income maintenance.[126] If the "regressiveness" of private income provision is merely a function of the progressivity of public pensions, then the hypothesis of "functional equivalence" could still hold up.

Substitution or complementarity?

Both these contrasting theoretical perspectives seem to entertain the assumption that public and private welfare are *close substitutes in quantitative terms*: that individuals and/or collective actors, like companies and unions, consider public and private pensions as alternative means to achieve "adequate" income levels after retirement. In other words, the scope for public and private pensions is determined by a fairly stable and well-defined need for retirement income. It is predicted that private actors will respond to increases in public pension benefits by relaxing their efforts through occupational pension schemes and individual pension insurance and savings.

This assumption of a clear-cut substitution between public and private pensions has recently been called into question by a number of authors. Some even argue that the relationship can, at least occasionally, work in the completely opposite direction: The expansion of public pensions might be a cause of growth in private pensions (Hannah, 1992; Dobbin and Boychuck, 1996). One possible mechanism behind such a *complementary relationship* concerns the process of preference formation and could be termed "the recognition effect" (Barro and MacDonald, 1979). As many scholars have pointed out, retirement is by and large a social invention of the twentieth century (Hannah, 1986; Myles, [1984] 1989), which suggests that the need for a certain level of retirement income is socially constructed rather than a natural constant. It is therefore not unreasonable to assume that the introduction and improvement of public pension benefits could in specific historical circumstances lead to inflated expectations about what constitutes an "adequate" income level after retirement, and therefore stimulate increased demand for private supplements. Dobbin and Boychuck (1996) have suggested an alternative, more concrete, mechanism behind complementarity with specific reference to employer financed occupational pensions. Improvements in public pension benefits will tend to make it less costly, on the margin, for employers to establish and run occupational pension plans that guarantee a certain income replacement in retirement.

---

[126] "Progressive" meaning here that the distribution of public pension benefits is less unequal than the distribution of pre-retirement incomes.

Hence, the introduction and improvement of public pensions could facilitate growth in coverage with occupational pension plans among the workforce.[127]

A different strand of critique regarding the hypothesis of substitution asserts that the development of private occupational pensions is largely *independent* of public pension systems and tied up with different causal structures. Von Nordheim-Nielsen (1988; 1991; 1996) has pointed out how occupational pensions are functionally related to institutions and processes in the labor market and the capital market. He argues, therefore, that the assumption that private pensions are filling a need for retirement income left over by public pensions is misplaced with respect to occupational pensions.

Some scattered empirical evidence

Settling the debate about substitution or complementarity would seem to be a fairly straightforward task for empirical research, but the existing literature conveys a mixed if not contradictory picture.

Both sociologists and economists have wrestled with the question whether the relationship between public and private pensions is one of substitution or complementarity. Do private pensions dwindle as public pension systems are expanded, and will they grow in importance if and when public provision is cut back?[128]

Many scholars have pointed to the simple and undeniable fact that in most developed countries public and private pension systems have grown in tandem throughout the post-war era (van Gunsteren and Rein, 1985; Hannah, 1992). Moreover, the notion of complementarity has found support in historical case-studies. For instance, Dobbin and Boychuck (1995) argue that coverage with occupational pensions increased in the US as a consequence of the introduction of social security pensions in the New Deal reforms of the late 1930s. Also Munnell (1982) and Blinder (1983) make note of the fact that the development of a private occupational pension scene in the US is by and large a phenomenon of the post-New Deal era. The provision of social insurance pensions in the US did not crowd out an already existing, well-developed system for private income provision in retirement. Rather it seems to have facilitated its growth.

Other studies have found evidence in favor of substitution. On the basis of time-series data for the US, Munnell (1982) found a strong substitution effect between public and occupational pension accrual among the work force. It is interesting to note that, while she found almost a one-to-one substitution between public and occupational pensions, individual savings behavior appeared to be largely unaffected by changes in public pensions.[129] Also some tentative studies of cross-national data have pointed to a negative relationship between the scope of public and private pensions (Esping-Andersen, 1987; 1990; Kangas and Palme, 1992; Hippe and Pedersen, 1992). However, the tendency for substitution revealed in these latter studies is rather weak. In fact, Esping-Andersen (1987) notes that no country changed rank-order in terms of spending levels when total pension expenditures was made the ranking criterion instead of just public spending (see also Rein and Rainwater, 1986:17).

---

[127] Note that the argument presupposes rather fixed expectations about the level of income replacement to be secured by an occupational pension plan including any public pension benefits. It seems most directly relevant to a situation where occupational pensions are organized as defined-benefit plans – see Section 3.5 below.

[128] I do not cite any of the numerous studies that contribute to the big debate, primarily among economists, about a possible negative relationship between the generosity of public pensions and the aggregate savings rate- see Magnussen (1994) for a good, recent survey. The issue of a possible impact on the savings rate is related to but not identical with the topic concerning us here, the scope of private income provision in retirement.

[129] According to some theoretical arguments made in favor of complementarity or independence we would have expected the opposite picture – see von Nordheim-Nielsen (1991:135).

The finding that differences in public pension systems explain rather little of the existing cross-national variation in private pensions could well be seen to support the thesis that they are not directly related. One could also argue that the recent decline in coverage with occupational pension plans in the US is a further indication of independence. Bloom and Freeman (1992) show that a significant part of the decline can be explained by the decline in union density and changes in the wage structure, while it is fairly obvious that changes in public pension benefits have no part in the story.

The glaring discrepancies among empirical studies in this area are of at least two different types. First of all, there is disagreement about which aspects of public pensions, is supposed to affect which aspects of private retirement provision, i.e., the operationalization of independent and dependent variables differs strongly. Concerning the independent variable, indices of benefit generosity (Kangas and Palme, 1992) or direct measures of pension accrual (Munnell, 1982) are likely to be more relevant than the more commonly employed expenditure data. With respect to the dependent variable, different studies focus on different aspects and indicators for the scope of private pensions: coverage with occupational pension schemes among wage earners, the relative size of contributions and pension funds, or the share of private pensions in the income packages of retired households, etc. The study by Munnell suggests that the dynamics of individual savings behavior might be quite different from the dynamics of occupational pension provision.

Secondly, the necessity to control for social and economic background factors is not always recognized or taken seriously. There is reason to believe that some important background variables have a positive impact on the scope of both public and private pensions. To the extent that this is the case, it will create a spurious impression of complementarity, or at least partly obscure a possible "real" tendency for substitution. In order to unravel a *ceteris paribus* relationship between public and private provision, it is necessary to control for factors that might jointly influence the two. The level of real income enjoyed by the general population is clearly one of the factors that needs to be controlled in both time-series and cross-sectional analysis, since both the politically and privately revealed demand for income security (replacement rates) in old age appears to grow with rising incomes. The strength and cohesion of trade unions is another factor that could be suspected to influence the scope of both public and private pension provision in a positive direction, and thus be a possible source of bias if the analysis is based on the simple bi-variate relationship. Finally one could mention the general trend over the last decades towards the lowering of effective retirement ages – arguably linked with conjunctural and structural pressures in the labor market – that has helped increase the overall need for retirement income, public and private.

The discussion in this section has been confined to rather general theoretical expectations taken from the welfare state literature and empirical observations at the macro-level about the relationship between public and private pensions. In order to proceed any further it is necessary to look more closely at the possible micro-foundations of the various hypotheses about the nature and dynamics of private retirement provision. In the following sections I shall first introduce theories about individual savings behavior and then go on to discuss different views to be found in the literature on the dynamics of occupational pensions.

3.5 INDIVIDUAL RETIREMENT PROVISION – MOTIVES AND INSTRUMENTS

The sources of private retirement provision are highly diverse. In the following I employ a rather simple and straightforward distinction between individual and collective (occupational) retirement provision. In the former, the individual or the household is the active agent, while occupational pension provision is distinguished by the fact that coverage depends – at least in the first instance – on the behavior of employers and/or unions in deciding whether to let pension provisions of a certain quality form part of the employment conditions in a particular company or a segment of the labor market. The instruments available for individual retirement provision, as thus defined, include the accrual of all kinds of financial wealth and housing equity, and the participation in various forms of individual insurance schemes that promise to pay out annuities or lump-sums once the insured has reached a certain age (or in case of death, to the surviving spouse and children).

The main part of this section is devoted to general theories about the use of private means for retirement provision. The theoretical discussion takes the pure and simple life-cycle hypothesis from neo-classical economics as the point of departure. Then I discuss its radical antithesis: the equally simple model of completely myopic individuals. Finally I consider various ways to allow for more complexity (read: realism) in terms of behavioral assumptions, and their consequences for the expected relationship between public and individual retirement provision. I conclude the section by turning to more concrete issues about the operation of the specific individual instruments and their implications for the pattern of income distribution in retirement.

Throughout this section I ignore the role of occupational pensions as an alternative to both public and individual/private pension provision. Occupational pensions are in their turn discussed in Section 3.6. However, there are obviously important interdepencies between the two forms of private retirement provision, and the theoretical discussion of individual motives for retirement provision in the present section is relevant also for understanding the dynamics of occupational pensions. The behavior of employers and unions on questions about pension provision is likely to be sensitive to perceptions about a (latent or voiced) "demand" for additional retirement income among the employees to be covered,[130]and to the extent that individual savings behavior is driven by the motive of retirement provision, changes in the coverage and quality of occupational pensions can be assumed to have consequences for efforts to save on an individual basis.[131]

The life-cycle hypothesis

In its most simple form, the life-cycle hypothesis holds that individuals allocate their consumption over the life-cycle in a way to maximize an inter-temporal utility function of income and consumption (for a non-technical introduction see Aaron, 1982).[132] Since the capacity for generating market income is unlikely to coincide with the optimal consumption profile over the life-cycle, saving and dissaving become necessary means to achieve the preferred (presumably relatively flat) time profile of consumption. It is a fundamental assumption of the life-cycle hypothesis that the primary motive behind individual savings behavior is to achieve a preferred consumption level in retirement, i.e., in the life-phase where the individual must expect that earnings are (close to) zero. It is an equally fundamental assumption that preferences are well defined and stable over time.[133] People do not change their taste for pensions over time, and thus they never end up in a situation where they regret earlier savings decisions, unless they have been exposed to external shocks that could not have been foreseen.

---

[130] You could even imagine that employees shop around in the labor market to find the employer/sector with just the right pension-wage package. The differentiation of the extent and quality of pension coverage across the different segments of the labor market could then be a rational (equilibrium) response by employers to a strong differentiation in preferences about the wage-pension trade-off among members of the labor force (Blinder, 1983).

[131] The finding of such a relationship has been reported by Munnell (1982).

[132] The specification of the agent is not always clear: is it the individual, the family, or the household that does the planning according to a shared utility function?

In the frictionless neo-classical environment stipulated by the hypothesis (at least in its most simple form), the individual has complete information on all aspects necessary to plan in a lifetime perspective, including information about her own future earnings capacity, interest rates, inflation, the timing of retirement which is given exogenously, etc. Capital markets function perfectly, and hence consumption can in fact be postponed – and if necessary – anticipated without any constraints or transaction costs. Individuals attempt to consume all of their lifetime earnings, and they only leave a bequest if they happen to die earlier than expected. There is not even a reason for the possibility of involuntary bequests to arise, since a perfect market for annuities will allow the individual to insure herself against the risk of longevity. By converting accumulated wealth into an actuarially fair annuity, total lifetime utility can be maximized.

This basic theoretical model has been the point of departure for the extensive debate – especially among American economists – about the effect of social security pensions on the aggregate savings rate. According to the model, people will react to the introduction or expansion of public pension benefits simply by saving less, or if necessary dissaving, in their economically active years in order to achieve the preferred consumption profile already revealed before the introduction or expansion of public pensions. Similarly, a reduction in public pension provision will be met by increased private saving in order to re-establish the preferred consumption profile. Since public pensions are generally not prefunded (based on pay-as-you-go financing), while all private retirement provision is assumed to take the form of individual saving efforts, the model predicts that the introduction and expansion of public pensions will tend to seriously depress the aggregate savings rate in the economy (Feldstein, 1974).

The issue whether public pensions have a negative effect on the aggregate savings rate is clearly related to the question that concerns us here, namely a possible effect on the scope and distribution of private sources of retirement income.[134] The simple life-cycle model predicts that attempts to redistribute income over the life-cycle are liable to fail. Behavioral responses, in the form of lower private saving or dissaving, will offset the effect of granting public pension benefits. Nothing happens to the distribution of income/consumption among retirees, unless the public pension system leads to some redistribution of lifetime incomes. But, even then, not much is likely to happen to the retirement distribution in particular, since the gain (loss) that some might have will, if anticipated in due time, be treated as any addition (reduction) to the individual's lifetime wealth, and it will presumably be re-allocated over the entire life-cycle. In other words, the model predicts very dramatic behavioral responses to changes in public pension provision, but changes of a kind that leave the income distribution among the retired largely unaffected. The distribution of income and consumption among retirees is, thus, a function of the distribution of lifetime incomes and individual variation in preferences about its allocation over the life-cycle, and there is not much a public pension system can do about it.

---

[133] See Stigler and Becker (1977) for a dedicated (heroic) defense of the presumption underlying most economic modeling that preferences and tastes are both invariable across individuals and stable over time, and daring claim that most human behavior can be accounted for within such a paradigm.

[134] The two issues are not completely equivalent, though. For instance, not all private retirement provision is funded, so the potential crowding-out of such components will have no effect on aggregate savings.

The basic model can be relaxed in a number of ways in order to achieve a higher degree of realism: allowing for a bequest motive behind private wealth accumulation and for uncertainty about the future earnings capacity, endogenizing the retirement decision and introducing imperfect capital markets, etc. Some of the more complicated and flexible models do lead to rather-different predictions about the effect of public pensions on the aggregate, private savings rate.[135]

There is general agreement in the literature that the markets for life insurance and retirement annuities are subject to serious imperfections. Because of classic market failures such as "adverse selection", "moral hazard" and informational constraints on the part of the individual purchaser, the markets for these financial services will tend to be imperfect, incomplete, and they will not necessarily operate in a way that is actuarially fair (Diamond, 1977; Atkinson, 1987; Feldstein, 1987). A public pension system can, thus, help to satisfy a need for insurance against longevity in retirement that will not be satisfactorily and efficiently covered by an unregulated market. The result might be both a higher level of income provision in retirement than would have appeared in the absence of public pensions, and less inequality in retirement incomes because of the ex-post redistribution that takes place even within an actuarially fair insurance scheme.

The life-cycle hypothesis cannot easily account for the repeated finding that those among the elderly who have built up significant amounts of private wealth do not appear to dissave in retirement – at least not anywhere to the extent expected by the hypothesis (Venti and Wise, 1987; Hurd, 1990; Alessie et al., 1995). In particular, housing equity tends to be left untouched. In many countries, special insurance products have become available (inverse mortgages), allowing elderly people to realize their housing wealth while they maintain the right to live in the house for the rest of their lives. However, according to the available evidence, this option has not (yet) become widely used. This latter phenomenon could be explained with reference to a strong bequest motive (Barro, 1974), but as far as housing wealth is concerned, it might also indicate that many home owners do not consider their house as simply (a less liquid) equivalent to any financial asset.

However, not all extensions to or modifications of the life-cycle hypothesis represent unquestionable improvements in terms of realism. In models where the timing of retirement is assumed to be endogenous, the individual will continue to work until lifetime wealth is sufficient to sustain a preferred level of lifetime consumption. The increasing generosity of public pensions could then explain the observed tendency from the last decades for effective retirement ages to decline. In practice, however, the timing of retirement seems to be much more readily explicable in terms of the specific incentives created by public and occupational pension systems to retire at a certain age, individual and contextual factors affecting the supply and demand for labor (health status, unemployment, etc.) and expectations by employers/employees as to the "normal" retirement age (Zabalsa et al; 1980; Kotlikoff and Wise, 1987; Johnson and Falkingham, 1992:96ff).

---

[135] Barro (1974) is a "classical" contribution, showing that the presence of a bequest motive could lead to the prediction that private savings would be more or less unaffected by the expansion of public pensions. For a good and up-to-date summary of this debate see Magnussen (1994).

Myopic behavior

The radical antithesis to the life-cycle hypothesis is a model with *myopic individuals*. According to this model, individuals do not plan their income/consumption in an intertemporal perspective at all. They simply decide on labor supply and savings behavior according to short-term considerations. It is possible, at least from a formal point of view, to interpret such a behavioral disposition in rationalistic terms by allowing for people to have an extreme preference for the present over the future, i.e., to have an indefinitely high discount rate on future income/consumption (Elster, 1989:42ff).

The myopic model is not necessarily incompatible with the fact that some people do accumulate wealth in various forms that can in turn be a source of income and consumption in retirement. The point is that such wealth accumulation is assumed to be based on other types of motivation than considerations for a re-allocation of consumption over the life-cycle. People might buy themselves a house, pay mortgages and eventually become owners of a housing asset that is a potential source of retirement income without being driven (primarily) by the motive of retirement provision. Once they enter retirement they might or might not decide to exploit such sources of wealth. As I have already noted, the observation that people do not tend to reduce their housing wealth over retirement is a strong indication that the acquisition of housing wealth is linked primarily with a different set of motives.

Thus, a model of myopic behavior does not necessarily exclude that private income sources are available in retirement or that their distribution might be systematically related to pre-retirement income levels. The general notion of a decreasing marginal utility of income and consumption might be relevant here, as it could help explain why other motivational forces – like the desire for prestige and power flowing from the accumulation of wealth – tend to come more easily into play among members of high-income brackets. Still, the model is clearly more relevant for explaining why some people do *not* built up retirement wealth than for explaining why other people in fact do so, given that retirement provision is not part of the motive. Economic man might well be myopic, but then it is difficult to understand why she would not decide to consume all her current income. However, peculiarities of the housing market and limits on the possibility to borrow against future income streams might provide a partial explanation.

The myopic model leads to the prediction that there will be little behavioral responses to variation in the public pension system – except perhaps in terms of the economic behavior displayed by people once they have reached retirement.[136] Changes in the generosity of public pension benefits will directly affect the level of income enjoyed by retirees as well as the distribution of retirement income. Means-tested and/or flat-rate benefits can, thus, be expected to do an effective job in alleviating poverty and truncating the income distribution from below. However, the prospects for an equalizing impact of social insurance benefits are more discouraging since they cannot be expected to have a significant crowding-out effect on private income sources.

Mixed and relativistic models

These two extreme models are better thought of as heuristic devices than serious attempts to capture the complex motivational structure behind observable behavior in the area of individual (or for that matter, collective) retirement provision.

---

[136] For instance, means-tested benefits and taxation could still affect the labor supply of people above the normal retirement age.

There is ample evidence that the propensity to save for old age – through occupational pension schemes, individual annuities, or the accumulation of other forms of private wealth – tends to increase sharply with the level of income enjoyed prior to retirement (Mayer, 1972; Diamond and Hausman, 1984).

> *[O]ur most important finding is the extent to which the savings to permanent income ratio rises with permanent income. Not only does the savings (wealth) rise with permanent income, but it does so in a sharply non-linear fashion. (Diamond and Hausman, 1984).*

The "preferences" for postponing income and consumption to retirement seem to be highly income elastic, if judged by the way they are revealed in people's behavior – especially in cross-sectional data. Evidence from many countries shows that a substantial portion of the population, primarily those people with comparatively low levels of pre-retirement income, do not built up any substantial financial wealth or claims on private retirement income (Diamond, 1977; Burkhauser and Wilkinson, 1983; Hurd, 1990; Falkingham and Johnson, 1992; Alessie et al., 1995).

This pattern, which appears to repeat itself under very different institutional conditions, is difficult to accommodate with a model of rational behavior where all individuals consciously plan their time profile of consumption, and hence it is difficult to reconcile with the life-cycle hypothesis. Within the framework of the life-cycle hypothesis, there is no reason to expect that people with low levels of lifetime income should be less concerned to reallocate income and consumption to achieve a rather constant consumption profile into and throughout retirement.[137]

A possible way to make sense of this pattern is to allow for different time orientations to be represented in the population, with, for instance, one segment behaving with foresight according to the life-cycle hypothesis, and another segment that is largely myopic in behavior (Diamond, 1977; Feldstein, 1987). A model where high-income groups plan over time according to the life-cycle hypothesis, and where people belonging to lower-income strata exhibit more myopic behavior, offers a neat explanation for the observation that the distribution of private retirement income tends to be extremely concentrated among the more well-off segments and characterized by a much higher level of inequality than the pre-retirement distribution. It is well suited to support a basically paternalistic argument for obligatory social insurance (Diamond, 1977). Under the conditions of the model, an actuarially fair social insurance scheme will force the lower- and middle-income strata to "save" at higher rates than they would otherwise have done, and the gap to higher-income brackets with a stronger initial propensity to save (either individually or collectively) will even be reduced, as the latter can be expected to respond to the forced saving by relaxing their private efforts.

However, the assumption about a tendency towards myopia among the less privileged strata of the population begs a further explanation. One type of explanation would simply refer to cultural differences between social classes, in the spirit of "culturalist" sociologists like Bourdieu, according to which one of the characteristics of working class (as opposed to middle class) culture is a tendency to be less oriented towards the future.[138] Alternatively, one could invoke more concrete social-psychological mechanisms like *resignation*, the subconscious downward adjustment of aspirations in the face of adverse conditions (Elster, 1989:40).[139] People who recognize that they will have severe difficulties in building up substantial private means to support themselves in retirement might be inclined to accept, and take for granted, the idea that retirement will be associated with economic hardship. Finally, one could explain what appears to be myopic behavior with a version of the poverty trap mechanism. People who already have a low capacity for saving will (rationally) anticipate at least some (means-tested) income support to be made available upon retirement, and thus their incentive to save the little they could by themselves is radically reduced (Petersen, 1984).[140] As I suggested in Section 3.2 above, means-tested programs for income maintenance in retirement have the potential effect of deterring private income provision, in particular among the lower-income strata.

---

[137] The facts of a lower life expectancy and higher mortality rates among the lower social strata do provide rational grounds for people belonging to such strata to employ a higher discount rate on future earnings and consumption, and thus to be less liable to redistribute income and consumption towards the later part of the life-course.

[138] This explanation fits very well with the historical, conservative argument for social insurance: that poverty in old age can be prevented by forcing members of the working class, in particular, to save for their own retirement

Both the last two types of explanation could imply that myopia is to some extent a (historically) contingent phenomenon. If public pensions are expanded so as to secure a universal floor of income protection for everybody, the economically less privileged strata of the population might become more inclined to think of retirement as a life-phase that is not necessarily condemned to poverty. As it comes within their reach to achieve a decent living standard in retirement, future-oriented preferences are more likely to develop. This is one possible interpretation of the "recognition effect" mentioned in the previous section, whereby broad segments of the population appear to increase their taste for retirement income, as the public pension system expands (see for instance Hannah, 1992).[141] The point is that the preference for retirement income is assumed to be in some sense endogenous, in sharp contrast with the core assumptions of the classical life-cycle hypothesis.

In the last section of the previous chapter, I suggested that the experience of economic well-being in retirement is likely to depend not just on the absolute level of income enjoyed by the individual/household, but very much on the associated relative position in the income distribution among the contemporary cohort (band) of retirees. This general notion can also be relevant as part of a positive theory of private income provision in old age.

According to a relativistic model of private retirement provision, people are concerned about their relative position in the intra-cohort income distribution as the cohort enters and moves through retirement. Contrary to the model of myopic behavior, the relativistic model assumes that people do tend to be future oriented, i.e., concerned about how they might fare in retirement. However, in sharp contrast to the life-cycle hypothesis, preferences for retirement income are assumed to be interdependent and fluid rather than independent, stable and well defined in absolute terms.

(see Rimlinger, 1971). This idea is, arguably, reflected in the German pension system of today, where high-income earners are allowed to opt out of the social insurance scheme and decide by themselves about the amount and means of retirement saving, while participation is obligatory for everybody else.

[139] Elster makes frequent use of the famous fable about the fox and the "sour grapes" to illustrate this type of subconscious preference adjustment.

[140] This touches upon one of the classical arguments for social insurance in the economics literature, sometimes called the Musgrave-Buchanan argument: Since society (the rich) can be expected to act on a humanitarian obligation to keep all elderly people out of severe poverty, there is a temptation for the poor to take this into account and refrain from any individual efforts to save. Hence, it can be preferable for everybody, and in particular for the rich, if everybody is forced to save for their own retirement in a public social insurance scheme (Petersen, 1984:9-11; Coate, 1995).

[141] Of course it is difficult to single out a particular effect of improved public pension provision, from an effect of increased economic prosperity in the pre-retirement life-phase.

A relativistic model implies that people are faced with a coordination problem in their attempt to prepare for retirement, introducing new strategic aspects and informational problems. The preferred level of retirement income depends on the perceived behavior of other members of the cohort, and the resulting average level of economic resources that will eventually be available when the cohort has retired. Aggregate behavior could in this way be expected to change rather easily, according to changes in (shared?) expectations within a cohort. Moreover, as it is difficult to monitor and predict the outcome of the savings behavior of others, the expectations themselves could be subject to fluctuations, and they could very well turn out to be wrong. Even a bequest motive could be subsumed under such a quest for a "satisfactory" relative performance. Instead of assuming that people are either altruistic vis-à-vis their offspring or not (as is the standard approach in economic models of retirement behavior), one can imagine that individual behavior is sensitive to expectations, held by both the older and younger generation, regardless bequest behavior among fellow cohort members.[142]

The relativistic model can be specified in different directions: One version would hold that people are concerned about their future retirement income relative to the average income level that is expected to prevail among the cohort at large. According to this version there is no immediate reason to expect that members of low-income strata should save relatively less than members of higher-income brackets. However, implications about an asymmetrical pattern of preference formation could follow from additional assumptions about the primacy of a defensive orientation towards status preservation and incomplete information about the behavior of others. Individuals who find themselves close to the bottom of the pre-retirement distribution have little reason to fear that their relative position could deteriorate any further, thus, a weak motivation for providing for their future retirement, while members of higher-income brackets are liable to save a lot in order to make sure that they can at least uphold their relatively privileged position.[143]

Needless to say, a purely relativistic model is as unrealistic in and by itself as the extreme versions of the life-cycle hypothesis and the myopic model. All three models capture at best aspects of the presumably highly complex pattern of preferences and behavioral dispositions in the area of retirement provision. If, however, preferences for retirement income (and the associated behavior) are to some extent interdependent, as suggested by the relativistic model, the introduction or expansion of public pensions is likely to trigger a change in expectations about average income levels, and thus members of the high-income brackets might react by further increasing their taste for pensions. Such a process of "leap-frogging", whereby members of more privileged strata seek to maintain their relative advantage, would imply that the crowding-out effect of (in particular flat-rate) public pensions on private income provision could be much weaker than otherwise expected. However, it is also possible to imagine that the introduction of earnings related public pensions on a substantial scale, could help stabilize expectations regarding the replacement rates offered by the public system, and at the same time satisfy the demand for status preservation among the more privileged strata. In this case the crowding-out effect should be quite strong, as any self-reinforcing tendencies for increased demand for private retirement income would be impeded. However, small changes in expectations and the (perceived) behavior of groups and individuals could easily re-open a spiral of leap-frogging.

---

[142] A common feature of behavioral models that allow for relativistic preferences is the likely presence of multiple equilibria and hence a basic tendency for indeterminacy and instability of predicted outcomes.

[143] This type of behavioral model has been suggested in the sociology of education. The "positional theory of aspirations" holds that members of various social strata define their aspirations in relation to their initial (inherited) position in the class structure (Boudon, 1974; Gambetta, 1987; Goldthorpe, 1995). The theory offers a quasi rationalistic account of systematic differences in preference formation among different social strata. If the fear of downward mobility is stronger as a motivational force than the hope for upward mobility, then one has explained why the offspring of lower classes appear not to make much of an effort to improve their lot, while middle-class children strive to make sure that they will do at least as well as their parents.

Instruments for individual retirement provision

So far I have discussed the individual motives for private retirement provision that might find an outlet in demand for collective (occupational) pensions as well as in strictly individual means to reallocate income and consumption possibilities towards later parts of the life-cycle.

The three most important (groups of) instruments for individual retirement provision are financial wealth, housing wealth and life-insurance/pension annuities. They are all associated with risks and uncertainty about the real returns to be expected from the investments made. Thus, the ex-post distribution of private retirement income depends not only on variation in the propensity to save for old age, but also on the performance of these various instruments in transferring income and consumption possibilities over a significant time span to provide a stable and secure source of income/consumption throughout the retirement years. In addition to differences in taste for retirement income, chance and perhaps skills play a substantial role for the ex-post distribution of economic resources that are made available through these instruments. In particular these various instruments are all vulnerable to inflation – both in the period of accrual and over the retirement phase.

At the same time these instruments differ strongly in their degree of exposure to risk. Certain types of financial assets are characterized by a high risk/high return profile, and here chance will play a significant role in determining the ex-post distribution of economic resources that will eventually become available in retirement. Other types of financial wealth are less risky – like ordinary bank deposits and government bonds – but they often give a low real return, in particular in periods of inflation. In the high inflation environment that prevailed throughout the OECD area during most of the 1970s and 1980s, wealth held in these more liquid types of assets could be decimated over a relatively short time span.

Housing wealth is probably one of the potential means for private savings that has performed relatively well on average over the last decades in many countries – even in the face of inflation – and with a fairly low risk of more dramatic losses. As I have already pointed out, the acquisition over time of a substantial housing wealth is not always the result of intentional efforts to provide for retirement, and thus early decisions about behavior in the housing market (to become an owner-occupier or to become tenant) might turn out to have critical but unexpected and unintended consequences for the economic resources that are available in retirement. In addition to the (theoretical) possibility of transforming the stock of wealth represented by the house into consumption through active dissaving, the owner-occupier has an indirect income from imputed rent that puts her in advantage vis-à-vis retired tenants.

Life insurance and individual annuities are, quantitatively speaking, not the most important of the private instruments for income provision in retirement, but they have shown a strong growth in a number of OECD countries over the last decade (OECD, 1998). The market for such annuities is bound to be imperfect, and thus haunted by a range of pathologies and sources of inefficiency that can help explain why the demand for such services appears to be crucially dependent on active government support.

Throughout the OECD area, the participation in individual pension insurance, as well as occupational retirement provision, is strongly encouraged by favorable tax provisions. The model followed in most countries is to grant a tax allowance on contributions paid to such schemes, to exempt all interests earned on the pension funds from taxation and finally to tax the benefits as ordinary income as they are paid out the insured or his surviving family (Johnson, 1992; Duskin; 1992).[144] Basically the approach is to allow taxation to be deferred until retirement, but this deferral will in general amount to a very substantial indirect subsidy, because of the interests earned on money "borrowed" from the exchequer and because of the often lower marginal tax-rate applicable after retirement (Munnell, 1982; Knox, 1987). The implications of this approach differ between the OECD countries according to the general level and structure of taxation, as well as the more detailed conditions that are associated with the possibilities to defer taxation on contributions to individual pension insurance.

The presence of such strong tax-incentives is of course an important explanation for the participation of such schemes, and the individual motivation can at times have a stronger emphasis on avoiding/postponing taxation than on providing for retirement, in which case we might not expect a very strong decline in the demand for such services in the face of an improvement in the quality of public pensions. The incentives for contributing to such schemes will often tend to be stronger for members of higher-income brackets (with higher marginal tax-rates), and hence this might help explain why the participation tends to be fairly strongly concentrated among such groups.

The performance of individual retirement insurance in providing a stable income source, for those who do participate, depends on the specific conditions of the insurance (that again might be more or less strongly determined by government regulation). Payments sometimes take the form of lump-sums, or they might be annuities that run for a limited number of years after retirement. Survivors' benefits might and might not be included. This means that individual pension insurance cannot always be expected to provide a stable source of income – in particular for a surviving spouse. Most importantly, individual annuities are vulnerable to inflation. Often benefits are defined in nominal terms and a partial compensation for inflation depends of the performance of the funds administered by the insurance companies. The real value of benefits will tend to decline over retirement, in particular of course in periods with high inflation.

3.6 OCCUPATIONAL PENSIONS

The concept of occupational pensions covers a range of very different types of institutional arrangements. The common denominator is the relationship to the employment contract, with the accrual of pension benefits being an integrated part of the terms of employment – or perhaps more precisely, the package of remuneration offered to employees. It is characteristic that the initiative to establish a certain pension coverage lies with the employer and/or the unions involved in wage bargaining, and not with the individual employee.[145] Occupational pension schemes might therefore be looked upon as a kind of forced saving from the perspective of the individual, conditional of course on employment with this particular firm (or in this particular sector of the economy). The force is in this case not exercised by the state but by the employer or by the parties to a collective wage agreement.

---

[144] New Zealand is a notable exception to this pattern, with no special tax-privileges for retirement savings.

[145] The distinction between individual and collective/occupational pension provision is not always as clear-cut as suggested here. Often employer financed pension arrangements for top executives are tailor-made, negotiated individually and administered as individual accounts. It should also be noted that there have been important recent tendencies to individualize occupational pension schemes more generally, with the introduction of the concept of "portable" pensions in the UK being one important example.

In almost all OECD countries occupational pensions are a very significant source of retirement income, being in many countries second only to income from public pensions. The performance and dynamics of occupational pension provision is, thus, extremely important for the evaluation of the overall hypothesis of the present thesis. As a matter of fact, the historical proposals to establish a second tier of earnings related pensions in Scandinavia and the UK, discussed in the introductory chapter, were primarily conceived to provide an alternative to the observed proliferation of occupational pension schemes among the more privileged strata of the workforce. The equalizing potential of earnings related public pensions hinges very much on their presumed capacity to crowd out and replace occupational pension provision.

Theoretical perspectives

It is possible to distinguish between two strands of theorizing about the dynamics of occupational pension schemes in the literature: a labor relations and a retirement provision perspective. The latter would lead us to expect a strong substitution between public and occupational provision, while the former seems to imply that their respective developments are largely independent. The following quotations are typical of each of the two perspectives:

> *Why are there private [occupational] pensions? Because of tax advantages, and because pensions are a useful device for reducing labor turnover. (Blinder, 1981:66)*
>
> *Social security and private [occupational] pensions are alternative vehicles to achieve a targeted level of guaranteed retirement benefits. (Munnell, 1982:13-14)*

The labor relations perspective is, of course, represented by labor economists and students of industrial relations who put emphasis on the capacity of occupational pensions as a form of labor remuneration, and hence see pension benefits primarily as a supplement to or substitute for ordinary wages and salaries. The dynamics of occupational pensions should thus be sought in labor relations and the process of wage formation.

There can be little disagreement about the claim, made by Blinder in the quotation above, that the preferential tax treatment given to pensions vis-à-vis take-home pay is part of the reason why occupational pensions exist and grow. The labor relations perspectivee can provide different theoretical arguments why employers in particular could have special motives for including pension schemes as part of the compensation package. They generally focus on the role of occupational pensions as management tools (Quadagno and Hardy, 1996).

Some authors suggest that the granting of pension rights can be understood in the light of human capital theory. The motive for offering pensions as part of a long-term employment contract might be, first, to tie the employee to the company in order for the firm to get back investments in screening and training, and then to facilitate the termination of the employment contract at a time that is suitable to the employer, when the investment has paid off (Blinder, 1981). This explanation is consistent with the presumed fact that coverage with occupational pensions is relatively high among segments of the labor force with high educational credentials and high training costs.

The provision of pension benefits can also be rationalized in terms of efficiency wage theory, which is focussing on problems of monitoring and sanctioning the day-to-day performance of the workforce. In order to secure the loyalty of the employees and their continued commitment to the goals of the company, the employer might find it rational to offer a higher compensation than the employee could expect to achieve if she were to leave the firm, and by making part of the compensation dependent on a continuation of the employment contract (Lazear, 1983). A similar emphasis on the capacity of pensions to promote loyalty towards the employer can be found in the sociological and the historical literature (Hyman and Schuller, 1986; Graebner, 1980; Hannah, 1986; Quadagno and Hardy, 1996). The most clear example can perhaps be found in the history of civil service pensions – almost everywhere the true pioneer of occupational pension provision. The fact that the often extremely valuable pension right could be withdrawn in cases of infidelity or misconduct was an important feature of the retirement provisions for civil servants (Hannah, 1986). This line of theorizing can explain why occupational pensions are often granted first to personnel in staff functions and to occupational groups whose performance cannot be monitored mechanically or whose loss of loyalty could entail a particularly high risk (i.e., military personnel, railway workers, etc.). It can also help to explain the very robust finding that the coverage with pensions is relatively high among employees in large companies, where presumably the problem of controlling the labor force is bigger. The efficiency wage logic could also help explain the lack of success students of labor costs have had in finding empirical support for the strong theoretical expectation that pension benefits are, by and large, paid for by the recipients through lower take-home pay (Triplet, 1983).

A different strand of theorizing, which is also firmly within the labor market perspective, focusses primary attention on the demand side – i.e., the interests of employees and their organisations. It has been suggested that unions have a special preference for pensions because they correspond to the interests of senior workers, who tend to have an upper hand in the political control over unions and their bargaining strategies (Freeman, 1981; Freeman and Medoff, 1984; Freeman, 1985). This hypothesis can help explain the robust empirical finding of a higher coverage with occupational pension schemes in unionized companies that has been reported in several countries (Freeman, 1981; Hyman and Schuller, 1985; Hippe and Pedersen; 1992).[146]

Finally, one might add a further explanation associated with the logic of wage formation in modern economies. Pensions seem to be a form of remuneration that enjoys a high degree of legitimacy in the political realm. The almost universal pattern of preferential tax treatment of contributions to occupational pension funds, as compared to take-home pay, is a clear indicator of this. In sectors of the economy that are not strongly competitive, where the employers are either not really profit maximizing or operating under highly imperfect market conditions, wage bargaining will tend to follow a political rather than economic logic. In such a setting employees and their unions might be well advised to bargain for pensions as a strategy to maximize compensation.[147] This mechanism helps explain why occupational pensions are so prevalent in the public sector throughout the entire OECD area and in the often highly sheltered industries of banking, insurance and other financial services. It is also a possible, additional explanation for the difficulties in finding evidence of a trade-off between take-home pay and pension accrual among wage-earners in studies based on cross-sectional data (Triplet, 1983).

As for the competing perspective on occupational pensions, students of financial economics, public economics and social welfare tend to locate the dynamics of occupational pensions in the context of savings behavior and the quality of public pension systems. They emphasise the role of occupational pension schemes as vehicles for the provision of retirement income in competition with private insurance on the one hand and social security pensions on the other.

---

[146] But as we shall see, there are other ways to account for the interest unions often take in pension benefits.

[147] The low visibility and transparency of pensions as a form of remuneration, as well as their presumed legitimacy, might play a role here.

The pathologies of the market for individual annuities are usually invoked as standard arguments for social insurance, but they might also help to explain why the bulk of private pension provision takes the form of collective, work-related occupational pension schemes (Bodie, 1989). Because of economies of scale and the fact that participation can be made quasi obligatory, some of the most serious obstacles to the development of an adequate market for individual pension insurance can be bypassed in company-specific or broader occupational pension plans. Occupational pension schemes can thus be conceived of as outlets for a demand for retirement provision that happens not to be satisfied by the public pension system, and which cannot be adequately met by the available, purely individual instruments.

Of course, welfare state researchers tend to see the development of occupational pensions in similar terms, as linked with the quality of social security and public pensions. Occupational pension schemes are presumed to fulfill a demand for income protection in old age that is left uncovered by the public pension system. Hence, the natural expectation is that there should be a clear relationship of substitution between public and occupational pensions.

Trade unions can play a key role in this line of theorizing about occupational pensions, with their presumed capacity and interest to register and voice the demand for old age pensions vis-à-vis individual employers and employers' associations. While occupational pension provision has historically been introduced on the initiative of employers, trade unions have in many countries striven successfully to gain the right to negotiate the terms of such schemes. The best example is taken from the US, where unions gained the right to negotiate about pensions in the late 1940s after intense conflicts with employers (Stevens, 1984; 1996), and a rather similar process has been reported to have taken place in the UK in the 1960s and early 1970s (Hyman and Schuller, 1985). As we shall see below, an important category of occupational pension provision is comprised of schemes that are linked to occupation- or industry-wide wage agreements that cut across individual firms and companies. It is obvious that this particular type of occupational pension has a rather limited potential as a management tool, and hence the rationale for the existence of this type of scheme must be sought in a different domain, presumably in an unsatified demand for retirement provision among wage earners.

Historical studies in both the US and in Scandinavia show that trade unions have in many instances, at important policy cross-roads, considered public and occupational pensions to be close substitutes in the pursuit of a satisfactory level of income protection on behalf of their constituencies (Stevens, 1984, 1996; Dobbin and Boychuck, 1996; Pedersen, 1990; Kangas and Palme, 1996). Public sector unions, white-collar unions in the private sector and professional associations are often deeply engaged in defending and expanding occupational pension schemes for their constituencies (Molin, 1965, Pedersen, 1990; von Nordheim Nielsen, 1996).[148] While there appears to be a general tendency for blue-collar unions to harbor a primary preference for public pension provision, there are many examples where the development of occupational pension schemes has been willingly adopted as a subsidiary strategy or, on occasion, as the preferred alternative, even by union confederations of a social democratic persuasion (Pedersen, 1990; Hippe and Pedersen, 1996; Edebalk and Wadensjö, 1989; Kangas and Palme, 1996).

The so-called integrated pension plans, found in many countries, provide the clearest illustration of a mechanism of substitution between private occupational and public pensions. In an integrated pension plan, estimated benefits from the public pension system are taken into account as the occupational scheme promises to bring total compensation up to a certain standard – for instance, a percentage of the final wage/salary. Such integrated occupational schemes might then further be associated with explicit provisions securing that, if public pensions are expanded, the supplementary occupational benefits will automatically be reduced, and vice-versa. Integrated plans with this kind of clause have been common in the US (Dobbin and Buychuck, 1996; Stevens, 1984; 1996).

---

[148] The most spectacular recent example is the upheavals in November and December 1995 against the proposal by the French government to trim occupational pension schemes for public sector employees and to bring them more in line with the conditions in the mandated schemes for private sector employees.

Stevens (1984) reports that AFL/CIO unions were much in favor of such clauses. They give an impression of occupational pension schemes as being temporary arrangements in anticipation of more satisfactory public provision, and they can be expected to provide employers with motives to accept future improvements in public pensions and to resist proposals to cut back on public pensions. While not all integrated plans have explicit provisions for automatically compensating changes in public provision, they do help to focus expectations on a certain level of total compensation,[149] and hence they facilitate a logic of substitution.

It would be mistaken to assert a clear choice between the labor market and the retirement perspectives. The important lesson from the labor market perspective is that the pattern of occupational pension provision is likely to reflect variation in the general institutional context of labor relations. In order to explain the historical and present nature of occupational pension schemes, one has to take account of their (original) functions as management tools and their relationship to wage bargaining and labor relations more generally. Occupational pension schemes are complex institutional structures, and hence they are likely to be subject to forces of institutional inertia and to reflect specific historical legacies in different countries. Below I shall go somewhat more into detail about the high degree of diversity among the types of occupational pension systems that can be found in different countries, as well as within each country.

However, it seems obvious that the demand for retirement provision and the relationship to the public pension system does play a significant role in explaning for variation in the scope of occupational pensions. First of all, it must be recognized that, in order for the provision of occupational pensions to be an effective management tool, there must be a certain demand for (additional) retirement income among the employees covered. Secondly, the role of occupational pension schemes as discrete instruments in the hands of employers and their personnel managers has in many countries been eroded both by the involvement of trade unions, as described above, and by public regulations. Most OECD countries have legislated requirements about vesting, portability, funding, etc., in occupational pension schemes implying that the possibilities for employers to manipulate the conditions for actually receiving benefits have been severely curtailed. To the extent that trade unions become involved in negotiating the terms of occupational pension schemes, and as the schemes are subject to public regulations that inhibit their use as management tools, the retirement provision aspect is likely to become more pronounced.

It should be recognized, though, that the presumed centrality of a retirement provision motive for the development of occupational pension schemes does not necessarily lead to expectations about a clear-cut substitution between public and occupational pensions. As I have argued in the previous section, the demand for retirement income is not liable to be well-defined and fixed in absolute terms. It is likely to have a strong relativistic component, whereby individuals and groups adjust their preferences according to the perceived behavior and conditions enjoyed by other groups in society.

---

[149] After compensation levels in the public pension system were reduced in Norway in 1992, most private employers surrendered to the pressure to compensate the loss rather than lower the projected total compensation levels promised by their company pension plans (Fløtten and Pedersen, 1996).

The dynamic between public and occupational pensions seems occasionally to be characterized by a process of leap-frogging, whereby different occupational groups strive to close or maintain relative differences in the quality of pension rights. As pointed out by Øverbye (1996) with reference to the Scandinavian countries, the very generous pension provisions traditionally enjoyed by civil servants have served as a focal point for the aspirations of other socio-economic groups. The efforts by other social and occupational groups to get on par with the civil servants has been driving the agenda of pension policy developments in much of the postwar period. When public pension provision was extended in Sweden, with the introduction of a highly generous second tier of earnings related pensions in 1959, white-collar unions managed to secure a continuation of their occupational pension schemes as an integrated supplement to the reformed public system, and thus to maintain a significant relative advantage vis-à-vis blue-collar workers (Molin, 1965; Heclo, 1974; Salminen, 1993). Swedish LO made a further attempt to close the gap in the quality of pension rights between blue- and white-collar workers by negotiating a contractual, supplementary pension scheme for the LO constituency in the early 1970s, but a significant gap still remains (Edebalk and Wadensjö, 1989; Kangas and Palme, 1996).

The observation that the substitution/crowding-out effect associated with improvements in public pensions is often surprisingly weak could, thus, be explained with reference to processes of preference adjustment. More privileged social and occupational groups respond to the improvement in public pension provision by further increasing their taste for pensions. However, the relationship will not necessarily work in the same way if and when the process is reversed. As pointed out by Lieberson (1985), it should not be taken for granted that all causal relationships work in the same way for upward and downward changes in the treatment variable. One could very well imagine that preference formation is a domain, where such "asymmetrical" causal relationships are liable to appear. Cut-backs in a highly developed public pension system might, therefore, not have the same propensity to trigger adjustments in the preferences for retirement income as expansions from a low level of public provision appear to have had in many cases. This would imply that one should be careful about making predictions about the behavioral response to a contraction of public pension provision, based on data gathered on cases/units of analysis that have experienced only a more or less advanced expansion of public pension systems. While there is reason to believe that people have increased their taste for pensions as the public systems expanded in the golden postwar period, it does not follow that they will necessarily downgrade their expectations in tune with present or future cutbacks.

Distributive profile – shared characteristics

Occupational pension schemes have a number of common features that make them distinct from the typical social insurance scheme, justifying the expectation that the resulting distribution of benefits will be relatively in-egalitarian. Here I focus on characteristics that are shared by most or all types of occupational pension schemes in contrast to social insurance, while the very substantial differences that exist between occupational pension schemes will be explored later on.

- *Incomplete coverage.* Coverage among the workforce generally falls far short of the coverage achieved in obligatory public schemes. Without legal backing, the prevalence of occupational schemes will depend upon the bargaining strength of unions and on management strategies in individual companies and different segments of the labor market. Even within sectors and companies where pension plans have been established, coverage tends to be highly incomplete. In some instances only the managerial staff or salaried employees are included in company pension plans, and company plans rarely cover more than the core workforce of full-time employees. Part-time and temporary workers, employees in subcontracting companies, etc. are usually excluded (Duskin, 1992). Not all social insurance schemes do particularly well in terms of including various types of "a-typical" workers but occupational pension schemes tend on the whole to be even more exclusive.

- *Conditional entitlements*. In occupational schemes there is often a heavy punishment for periods of temporary absence from the labor market and for frequent changes of workplace. While in many countries, participation in social insurance schemes continues during periods of long-term sickness, unemployment and child rearing, these kinds of events will typically lead to interruption of contributions and sometimes even a loss of entitlements in occupational pension schemes. The very interruption of pension accrual during periods of sickness, etc., might be looked upon as a problem of incomplete coverage – in this case related to events in the life-course of workers rather than to the nature of job. The point is, though, that there is often also a direct loss of entitlements in occupational pension schemes, most clearly visible in the form of vesting requirements, i.e., a worker who leaves the job before a certain number of years are up will lose his pension rights. Even though the practice of vesting has been restricted by law in most countries, there remains in most cases a punishment for frequent job changes (Altman, 1992).

- *Perishable entitlements*. The most risky form of occupational pension provision is a system whereby the insured employee is given a claim in the form of book-reserves held by the individual company. Should the company go bankrupt the claim will be lost. Occupational pension schemes founded on book-reserves are prevalent in Germany, but here the employer is obliged to insure the pension liabilities against bankruptcy, thus minimizing the risk on behalf of the insured employees. A more prevalent way to organize occupational pension schemes is in the form of special funds or trusts that are kept separate from the mother company. However, mismanagement and abuse of pension funds still does occur despite attempts to regulate against this possibility.

- *Lack of stability in real benefit streams*. Occupational schemes can rarely guarantee full indexation of benefits after retirement in a way comparable to public social insurance schemes. In times of high inflation this can cause a radical drop in the real value of pensions throughout the "retirement career" (Munnell, 1982). Occupational pension schemes do not always include survivors' benefits, or the benefits are very poor compared to the pension benefit received by the insured (husband) when still alive (Hurd and Wise, 1989). To the extent that this is the case they will do less well in securing that surviving spouses can uphold the same living standard as before the death of the bread-winner.

- *Limits on risk sharing*. Typical social insurance schemes, although to a certain degree modeled on actuarial principles, seldom discriminate between groups and segments of the labor force with different observable risk profiles. This can imply a very strong redistribution of expected lifetime income from groups with a low risk of disability, early retirement or longevity to groups that are known to have a high risk for these types of events. Some of these risks tend to correlate negatively with income, so a possible redistribution among risk groups could also carry an important aspect of vertical redistribution.[150] In occupational schemes the sharing of risks will, of course, be less comprehensive and encompass much more narrow groups – the employees of a particular firm, a particular occupational group, or members of a particular national union or peak organization. Segments of the labor force with a high risk of experiencing relevant social contingencies (disability, early retirement, longevity) will generally have to pay for this by themselves – though either higher premiums or lower benefits.

- *Regressive benefit plans and contribution profiles.* I have already mentioned that it is very common for occupational pension schemes to be integrated with the benefit profile of public pensions, meaning that the occupational benefit plan somehow anticipates the amount of public pensions the individual is to receive.[151] The purpose of integration is then to build in some compensation for the progressiveness of public pensions. As we have seen, the distributive profile of public pensions is likely to be at least somewhat progressive compared to the distribution of earnings, thanks to presence of flat-rate universal benefits and a ceiling on maximum benefits that can be received from the social insurance scheme. Integration of occupational pension schemes with public pensions will therefore typically render the profile of the former more or less regressive, depending on the progressiveness of public pensions.[152]

Some of these features of occupational pension provision can be significantly modified by government regulation, and in many OECD countries, a more or less strict regulation of occupational pension schemes has been imposed – sometimes indirectly as a set of conditions for preferential tax treatment of contributions and interests earned in such schemes (see Altman, 1992 for a comparative overview). However, unless complete coverage among the workforce is enforced through mandating, the conditions of the schemes are very strictly regulated and mechanisms for intergenerational risk sharing have been imposed, very fundamental differences between the typical social insurance system and occupational pensions will remain.

Institutional diversity

So far I have tried to concentrate on features that are more or less common to all occupational pension schemes, but the presence of very substantial differences in such schemes within and between countries could not be completely ignored. Differences across countries in the shape and nature of occupational pensions schemes stem from three main sources: 1) public regulation, 2) the institutional context of labor relations in general and 3) specific institutional legacies of the occupational pension scene itself.

It is not the place to develop a detailed taxonomy of occupational pension schemes. But let me briefly suggest some of the dimensions that can be expected to have particular implications for the distributive profile of the benefits provided:

---

[150] Note, however, that longevity tends in general to correlate positively with income, so this particular type of risk sharing that is built into the standard social insurance program tends to favor ex-ante the more well-off segments, at the expense of people in the lower income strata with shorter life expectancies (see Aaron, 1977; Burkhauser and Warlick, 1982; Ståhlberg, 1989b).

[151] Integration is very common among pension schemes of the defined benefit type (see below), while it is probably less common in defined contribution plans. Still, it can be achieved in the latter type of scheme by letting contributions be proportional to earnings above a certain minimum level, on the presumption that earnings below the limit are already compensated in the public scheme (Andrews, 1993).

[152] In Canada, integration with the first tier of flat-rate benefits in the public pension system is prohibited, and hence occupational pension schemes are only allowed to compensate for the fairly modest progressivity of the second tier of earnings related pensions (the Canada and Quebec Pension Plans) (Coward, 1995).

ISTITUTO UNIVERSITARIO EUROPEO BIBLIOTECA

- *Firm-specific versus broader contractual schemes.* An important distinction must be drawn between schemes that are established by individual companies to cater to their (core segments of) employees, and broader contractual schemes that cut across individual companies. An extreme example of very broad occupational pension schemes can be found in Sweden. It is estimated that more then 90 percent of all Swedish employees are covered by one of four contractual pension schemes, two in the public sector and two in the private sector. The two private sector schemes are established by agreements between, on the one side, Swedish LO and the white-collar confederation (TCO), and the Swedish employers federation (SAF) on the other (Edebalk and Wadensjö, 1989). A more fragmented system of cross-cutting occupational pension schemes can be found in Denmark, where coverage with such schemes has recently risen to about two-thirds of the wage earners (Østrup, 1996 Pedersen, 1997). By contrast, in countries like the US, the UK and Germany (Schmähl and Böhm, 1996) occupational pension schemes are typically company-specific. Obviously, these strong differences in the nature of occupational pension provision have their roots in more general institutional characteristics of labor markets – in particular the system of wage bargaining – and they are likely to have important distributional implications. Broader cross-cutting schemes have a greater potential for providing uniform conditions (savings rates) among wage earners than a completely decentralized system of company-specific schemes, and the degree of segmentation/centralization also has important repercussions for the degree and pattern of risk sharing that takes place between the participating wage earners.

- *Defined benefit versus defined contribution plans.* A major technical difference among occupational pension schemes concerns the way entitlements and pension accrual are defined. Defined benefit plans have historically been the most common form in a number of OECD countries. In a defined benefit plan the employer takes on the responsibility to secure the employee a certain benefit level upon retirement – specified, for instance, as a percentage of the final wage/salary. In a funded scheme the employer will then each year pay a contribution to the pension fund to cover the estimated liability associated with this promise, based on actuarial calculations and under assumptions about the interest rate, inflation rate, etc. If these assumptions appear to have been too optimistic or pessimistic as the time for retirement moves closer, the employer will be obliged to adjust for this through the payment of premiums in the remaining years until retirement. In defined contribution plans it works the other way around: The employer promises to pay a certain premium on behalf of each employee, defined, for instance, as a percent of the payroll, and then the performance of the pension fund, the development of the risk profile among the insured, etc., will decide the final level benefits to come out of the scheme. In defined benefit plans the employer carries the risk associated with fund management and actuarial estimations, while this risk is carried by the employee in the case of defined contribution plans. Defined contribution plans seem to have become more popular in a number of countries – in particular in the US.[153] They are likely to lead to a higher dispersion of benefit levels enjoyed by a cohort of retirees, because of the risks/opportunities that are left with the individual employee. They are also more easily converted into individualized accounts where conditions for participation can be allowed to vary substantially even within the same scheme – thus approaching the definition of an individual instrument for retirement provision. Public regulation and historical legacies seem to be the most important factors behind cross-national differences along this dimension.

---

[153] Defined contribution plans are dominant also in Denmark (Østrup, 1996).

BIBLIOTECA ISTITUTO UNIVERSITARIO EUROPEO

- *Composition of the benefit plan.* I already mentioned that the presence and quality of survivors' benefits is an important feature for the distributive outcome of occupational pension provision. Survivor's benefits were often very poor in occupational schemes in the US, but recent changes in government regulation have attempted to correct this situation (Hurd, 1987). In some countries the payment of lump-sum benefits, as opposed to a life annuity, is very common. This is particularly true in Australia (Bateman and Piggot, 1997), but occupational schemes offering lump-sums have become still more popular in the US, and they are prevalent also in Denmark and the UK. Lump-sum payments do not offer the same insurance against longevity as the traditional life annuity, and hence they are likely to be associated with a higher degree of dispersion of economic security in retirement.

However, whatever the particular shape of occupational pension schemes, they are liable to reflect the pattern and degree of labor market segmentation and labor market stratification found in the various countries. Income differentials from the pre-retirement phase are likely to be strongly reinforced when projected in the distribution of benefits from occupational pension schemes.

3.7 CONCLUSION: AN OPTIMAL MIX OF FLAT-RATE AND EARNINGS RELATED BENEFITS?

In this chapter I have investigated the theoretical reasoning needed to support the main hypothesis of this thesis, that the presence of earnings related social insurance pensions can, under specific circumstances, help dampen the level of income inequality among the retired. If we were simply discussing the distributive impact of social insurance pensions in contrast with a hypothetical situation without public pensions, there would be little doubt about the answer, but the practical and theoretical relevance would be equally small. Comparisons with alternative models of public retirement provision, in particular a reliance on flat-rate or means-tested benefits, are much more relevant. Hence, the pertinent question is whether a mixture of flat-rate and earnings related benefits can be more conducive to equality than systems based purely on flat-rate or means-tested benefits.

In Section 3.2 I pointed to four conditions or mechanisms that play a crucial role in the overall argument in favor of such a claim:

1. Private sources of retirement income must have an inherent tendency to be very strongly concentrated – relative to the pre-retirement income distribution.
2. Total expenditure on public pensions should be allowed to expand as social insurance is introduced.
3. The presence of social insurance pensions must be assumed to reduce the scope of private retirement provision (more effectively than flat-rate benefits and with a more favorable profile).
4. The distributive profile of private pensions must not turn significantly towards a higher level of inequality as they become more marginalized in the income package of retired households.

In the following sections I have tried to evaluate whether a plausible theoretical argument can be developed in support of these assumptions In the main, the answer is affirmative. However, on a number of points plausible counter-arguments can be developed as well, and the overriding impression from the discussion is one of theoretical indeterminacy and contingency of important mechanisms that control the formation of retirement income. I have found good reasons to support the expectation that private income components tend to be highly concentrated as compared to the pre-retirement income distribution, and that there is likely to be a trade-off between benefit equality and benefit generosity in public pension provision. However, I have also stressed how these two claims must be conditioned on the structural and institutional context in different countries. The degree and pattern of labor market stratification is among the pertinent factors that are likely to cause significant variation in the distributive profile of occupational pensions.

The last two conditions, concerning the scope and nature of behavioral responses to public provision, are even more difficult to assess a priori. I have argued that the scope of private income sources, and in particular of occupational pensions, is likely to be subject to a demand-side logic. However, the presence of unstable and relativistic preferences for retirement income might on occasion prevent a clear crowding-out effect of public pensions.

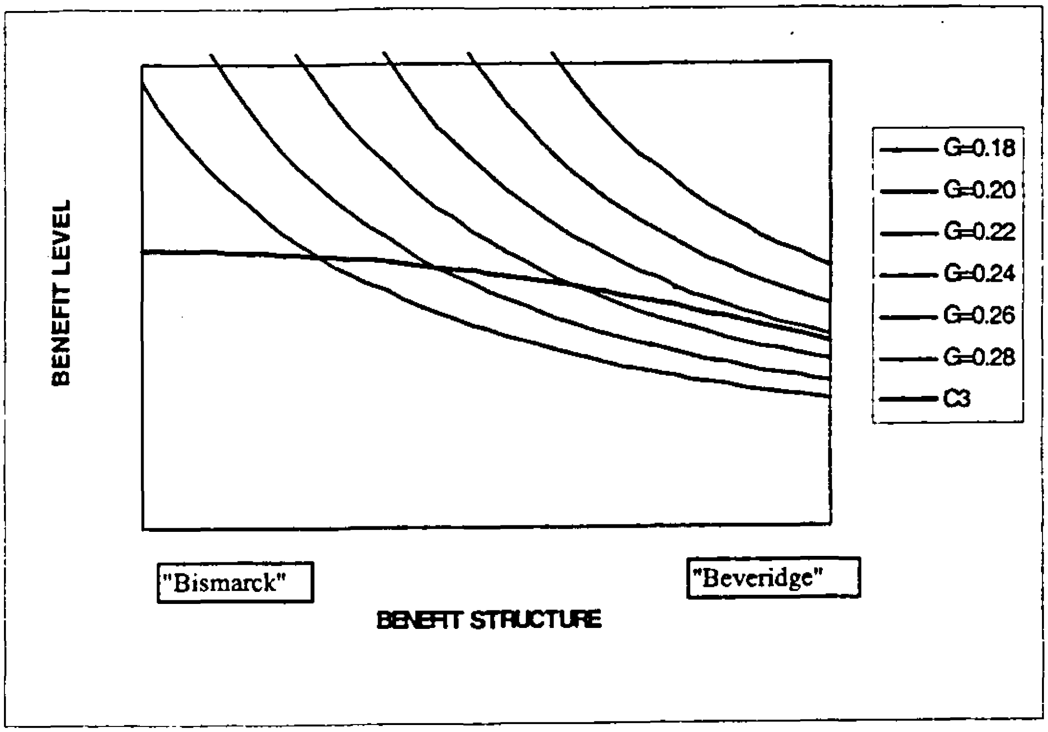
Let me conclude this section witrh a graphical illustration of the idea that an optimal mix of flat-rate and earnings related pensions might exist.

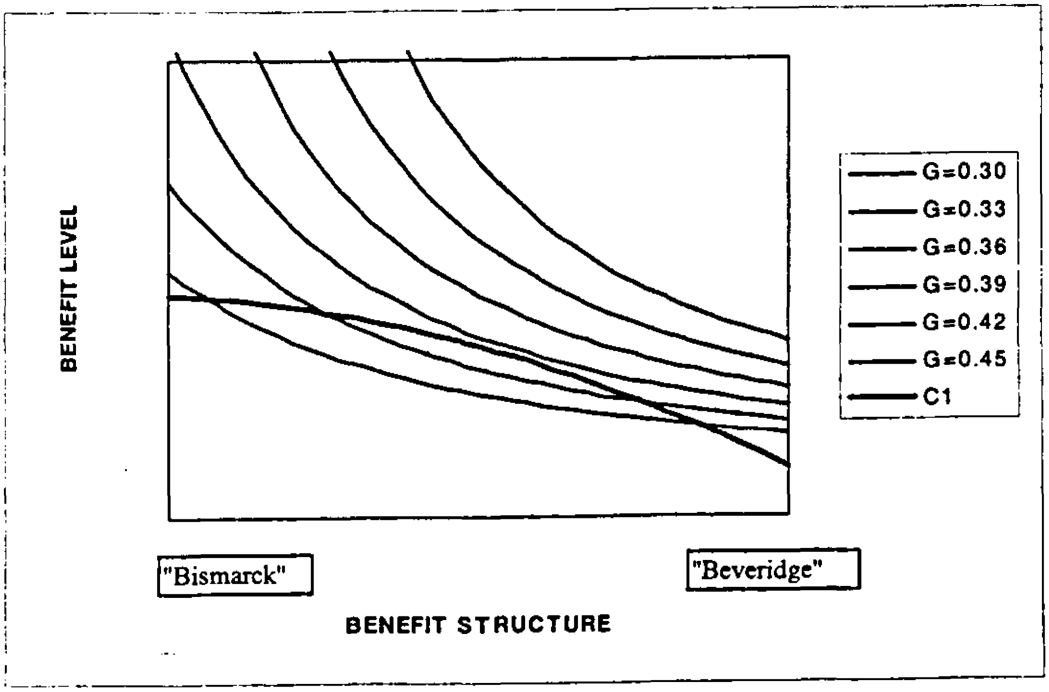
The panels in Graphs 3.2 and 3.3 are extensions of Graph 3.1 in Section 3.3. The X-axis measures the benefit structure of public pensions, going from a complete reliance on flat-rate benefits at the right-hand ("Beveridge") pole to a complete reliance on earnings related, social insurance benefits at the left-hand ("Bismarckian") pole. The Y-axis measures, once again, the average benefit level of public pensions, and the thick convex lines in each of the panels are the possibility frontiers, based on the assumption of a trade-off between benefit equality and benefit level, discussed in Section 3.3 above.

The new feature of these graphs is the addition of a kind of indifference curves that refer to the level of Gini inequality in total income to be expected among the retired. More precisely, these curves could be called "iso-Gini" curves, and they provide a mapping of the distributive outcome associated with different combinations of benefit level and benefit structure of public pensions. They have been drawn using the Gini decomposition tools presented in Section 3.2. The lowest level of inequality is found in the upper right hand side corner of the graphs with the combination of very generous and flat-rate benefits, while the highest level of inequality is found in the bottom left-hand corner with the combination of low and earnings related benefits from the public pension system.

The top panel in Graph 3.2 shows a hypothetical country with a relatively large potential for solidaristic retirement provision (C3), implying that the possibility frontier is relatively high and only moderately downward-sloping. The second panel represents a country with a low potential for solidaristic retirement provision, and hence the possibility frontier is lower and much more steeply sloping downward from left to right (C1).

Graph 3.2: Possibility frontiers and iso-Gini curves without behavioral responses. Two hypothetical country cases.





In order to draw the "iso-Gini" curves in the two panels of Graph 3.2 I have employed the method of gini-decomposition presented in Section 3.2,[154] based on the following assumptions:

- Gini inequality for the pre-retirement distribution is 0.2 for the first and 0.3 for the second of the two country cases. This means that if public pension provision is based fully on social insurance benefits (is situated at the "Bismarckian" pole), the Gini inequality for public pensions will reach a maximum of 0.2 and 0.3, respectively. The difference in the concentration of public pension benefits decreases as one moves right along the X-axis, and at the "Beveridge" pole the Gini inequality for public pension is in both cases equal to zero.
- The absolute size of the private income component is constant, and so is its concentration among the retired. In other words, no behavioral responses are allowed. The private income component in the first of the two countries is only 3/4 the size of the private income component in the second country, and the Gini inequality for the private component is assumed to be 0.6 and 0.8, respectively. In other words, it is assumed that the demand for private retirement income is higher and more concentrated in the country with a more in-egalitarian distribution of pre-retirement incomes.

Under these assumptions we obtain downward sloping and concave "iso-Gini" curves in both cases. However, since private income is in both cases assumed to be highly concentrated as compared to the pre-retirement income distribution, the level of public pension benefits has a positive impact on total inequality in combination with the structure of benefits. If the structure of public pensions is changed in favor of more earnings related benefits, a constant level of inequality in total retirement income can be maintained by increasing the total level of public pension provision. The closer one appoaches the earnings related pole, the bigger the increase in benefits levels is needed to offset an increase in the inequality of public pensions.

The optimal structure of public pensions can now in each case be found as the point on the possibility frontier that is associated with the highest "iso-Gini" curve (the curve representing the lowest Gini coefficient). Of course, the position of the optimum depends on the shape of the possibility frontier as well as on the shape of the "iso-Gini" curves.

In the first of the two country cases the optimal point is found at the "Beveridge" pole, since the slope of the "iso-Gini" curves is everywhere steeper than the slope of the possibility frontier. In the country with more in-egalitarian predispositions, the two curves touch somewhere to the left of the "Beveridge" pole, and hence the optimum is characterized by a combination of flat-rate and earnings related benefits. The main reason behind the different result for the two hypothetical examples lies with the slope of the possibility frontier, which is much steeper for the second country. However, the "iso-Gini" curves also differ significantly. For a certain level and structure of public pensions, inequality in retirement income is substantially higher in the second than in the first of the two country cases.

Note how the position of the optimum depends on two of the four conditions invoked above: The slope of the "iso-Gini" curves depends on the assumptions made about the concentration and size of the private income components. The bigger the scope of private income provision and the stronger its concentration, the flatter the "iso-Gini" curves will be, and the chances increase that inequality in retirement income will be minimized by moving somewhat away from the "Beveridge" pole. Similarly, the assumptions about the slope of the possibility frontiers are crucial. If the possibility frontiers were horizontal, in line with an assumption about fixed budgetary constraints, the optimum would invariably be found at the "Beveridge" pole, since the "iso-Gini" curves must always be downward sloping.

---

[154] The curves are calculated on the basis of the formula for the Gini inequality in total income shown in Section 3.2. For a given fixed level of inequality in total income, the formula can be rearranged to express the absolute level of public pension benefits as a function of the benefit structure of public pensions. For the sake of convenience I have discarded the r-terms, i.e., I have assumed the private income component is always perfectly rank-correlated with social insurance benefits.

It is now time to add the last two conditions, concerned with the nature of behavioral responses.

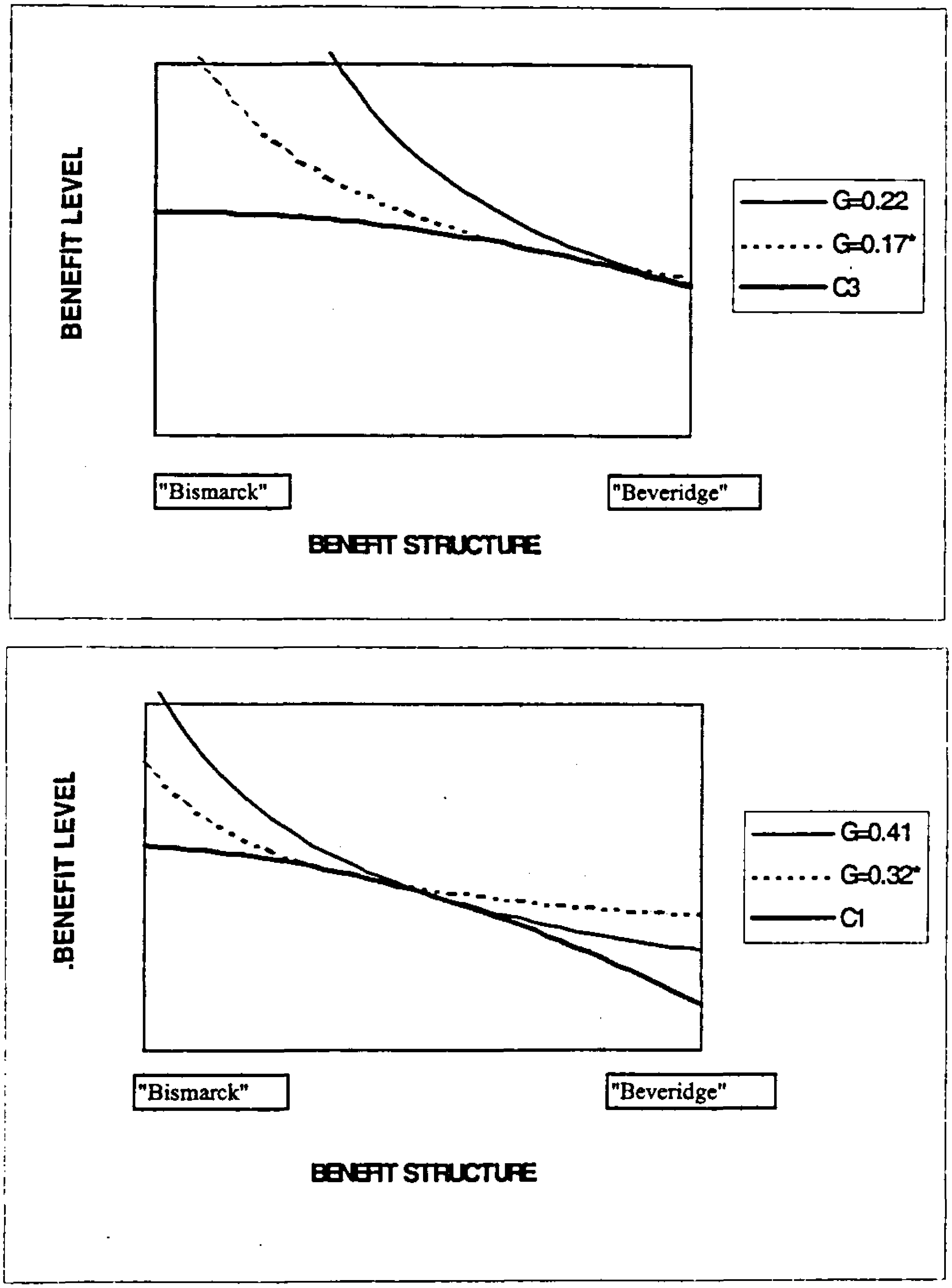
The "iso-Gini" curves in Graph 3.2 were based on the assumption that the size and the structure of the private income component is unaffected by the level and structure of public pensions. The unbroken curves in Graph 3.3 represent the optimum inequality level that can be obtained in the absence of behavioral responses – i.e., these curves are based on the same assumptions as in Graph 3.2. The dotted lines, however, represent a new set of "iso-Gini" curves in which I have attempted to build in some highly stylized assumptions about behavioral responses to public pensions: 1) The absolute size of private income components is assumed to decrease with the level of public pension benefits; and 2) the concentration of private income components is assumed to decrease somewhat when public pensions are allowed to reflect pre-retirement income differentials. In other words, I have built in exactly the kind of assumption that would be favorable to the overall hypothesis about a positive role for social insurance pensions. It is not surprising, therefore, that they cause the "iso-Gini" curves to become flatter, and the optimum to move closer towards the social insurance pole, in both of the hypothetical country cases.

Even in the first, more egalitarian country with a relatively modest share of private income components and a rather flat profile for the trade-off between level and structure of public pensions, the possibility line now touches an "iso-gini" curve at a point to the left of the "Beveridge" pole, and hence the optimum now involves a combination of flat-rate and earnings related pensions.

The graphs provide a specification of the claim that social insurance pensions might have a positive role to play in combination with a certain minimum protection in attempts to keep inequality low among the retired. But of course they are not more than heuristic devices. Logical plausibility does not imply empirical truth.

Nevertheless, despite their stylized and heuristic nature, these graphs allow enough complexity to highlight an important methodological point, one which will be addressed in the following chapter: Any attempt to test the overall hypothesis about a systematic relationship between the institutional set-up of pension systems and the degree of income inequality in retirement, using cross-national data, must take account of variation in the societal context in which the different national pension systems operate.

Graph 3.3: Possibility frontiers and iso-Gini curves. With (*) and without behavioral responses. Two hypothetical country cases.



CHAPTER 4

METHOD AND DESIGN

4.1 INTRODUCTION

The purpose of this chapter is to present and discuss the general methodological approach adopted in the present study.

There are different ways to approach an empirical study of the relationship between pension systems and income inequality in retirement. Different types of empirical evidence and different research strategies can be brought to bear on the subject. As a point of departure one can classify the potential data-sources and the associated empirical research strategies into four categories according to their score on two dimensions: micro versus macro units, and cross-sectional versus longitudinal data structures.

Table 4.1: Four types of data-sources and empirical research strategies.

Type of variation	Units of analysis/types of variables	
	Micro	Macro
Cross-sectional	Cross-sectional research	Comparative research
Longitudinal	Panel data research	Time-series research

In Part II of the present thesis, I shall pursue a comparative approach as the main research strategy. The comparative approach will be discussed more in detail below, but here it can be loosely defined to encompass research strategies that aim to draw causal inferences from differences and similarities between macro units (countries), i.e., from the analysis of cross-national data. This implies that observed variation in outcomes between a sample of country cases is used to justify (or reject) counterfactual claims. In other words, the variation between countries is used as an indirect source of information on the (unobservable) situation that would have obtained as a consequence of the hypothetical application of alternative institutional arrangements in each particular country case.

The chapter is organized as follows. In Section 4.2 I attempt to justify the choice of a comparative approach vis-à-vis the most pertinent alternative research designs. Section 4.3 contains a more general discussion of the merits and weaknesses of comparative research strategies. Section 4.4 offers a brief review of existing comparative studies in the field, while Section 4.5 concludes the chapter with a more specific discussion of the design of the present study, the choice of country cases and the hypotheses to be investigated in the empirical chapters of the thesis.

4.2 WHY COMPARATIVE ANALYSIS?

One of the fundamental arguments that can be made in favor of a comparative approach in the present context is related to the nature of the dependent and independent variables.

The main treatment variable(s) of the present study – the level and structure of public pensions – is defined at the national level and it shows variation between macro units only. In the terminology suggested by Przeworski and Teune (1970:51-57), the characteristics of a public pension system constitute a "setting", and more specifically it can be classified as an "institutional setting".

The main outcome variable, the level of income (Gini) inequality within a cohort of pensioners, is also a macro-level variable, although it is clearly of a different nature. Following Przeworski and Teune (ibid), one can classify the degree of income inequality within a population as a "context factor", since it is based on a sort of aggregation over the population studied. Przeworski and Teune (ibid.) make a further distinction between context factors that are aggregates of individual properties (called "population contexts") and aggregates of relational properties (called "structural contexts"). They mention that the degree of income inequality – together with phenomena like the division of labor and class structure – must be classified as structural contexts, since inequality in the distribution of income can be seen as an aggregation of relations between income units. "To characterize income inequality is to generalize the distance between pairs of persons" (Przeworski and Teune, 1970:56).[155]

Since both the treatment variable and the main dependent variable of the present study are defined at the macro-level only, it is fairly obvious, that one can only obtain direct empirical evidence about their relationship from cross-sectional or time-series data, where nation states (or time periods) are primary units of analysis.

Of course, this does not mean that I rely on macro-data only. In the comparative Part II of the thesis I make extensive use of micro-data to measure the relevant contextual variables like average income levels, shares taken up by different income sources and the degree of inequality prevailing among the respective pensioner populations. The point is that I do not use the micro-data to investigate micro-level causal relationships, and therefore the research strategy adopted in Part II is predominantly macro-oriented and comparative.

In Part III of the thesis, however, I shall leave the comparative ambition and settle for analyses of panel data that have been generated in one particular institutional and societal setting: Denmark in the 1980s.

Why not rely on micro-data from a single country?

There is no doubt that analyses of micro-data for a single country at a particular point in time can help to shed light on important subsets of the issues involved in the overall topic of the present thesis. For instance, data on individual savings behavior can be used to investigate the relationship between pre-retirement income levels and the propensity to save for retirement, the degree of substitution between different types of saving and retirement provision, etc. Many contributions to the big "savings" debate mentioned in Chapter 3 have been based on cross-sectional micro-data (see Aaron, 1982 and Magnussen, 1994 for an overview), while there has been a more recent tendency to bring in panel data in attempts to study variation the time profile of income, wealth accumulation and consumption (see for instance; Burkhauser and Wilkinson, 1983; Diamond and Hausman, 1984; Venti and Wise, 1993; Alessie et al., 1995).

---

[155] This passage fits particularly well with the nature of the Gini index. As I have mentioned in Chapter 2, the Gini index can be written as half the mean relative difference between all possible pairs of individuals that can be drawn from the population, and hence it is precisely an aggregation of relational properties defined over pairs of individuals.

Despite the obvious relevance of micro-data analyses, there is a basic argument to be made against an exclusive reliance on micro-data from a single country. Studies that are confined to data generated in a particular country at a particular point in time will inevitably suffer from a severe limitation in the present context: they will not contain variation in the relevant institutional variables.

I think that a strong case can be made for the claim that in order to learn about the effects of a particular institutional setting one should preferably have access to data that provide direct experience about the situation prevailing under alternative institutional arrangements.

Of course, this requirement is not always fulfilled in social policy research. It is very common in policy research to let variation in the conditions faced by individuals under a certain institutional arrangement serve as a proxy for the relevant variation in the very institutional conditions themselves. In other words, micro-level relationships produced under certain institutional conditions are used to make inferences about the likely effect of changes in macro-level variables/institutions.[156]

In other words, the estimates will be based on a type of natural experiment that does not match with the ultimate research question (see Atkinson, 1993; 1995:13). The use of aggregate, macro-level data to make inferences about micro-level relationships is known as the "fallacy of composition". The reverse, cross-level type of inference could also be problematic, however, in particular if one believes that human behavior is strongly conditioned by aggregation and reference group effects (Frank, 1985).

Why not rely on time-series data for a single country?

Time-series data can in principle be highly relevant in the present context, as an alternative or supplement to cross-national data. Like cross-national data, time-series data have the distinct advantage over micro-data that they allow variation in the relevant macro variables to be studied directly. Since countries do make changes their public pension systems from time to time, time-series data could provide highly relevant empirical evidence about the consequences of such variation.

In order for time-series data to be useful in this way, however, they must span a period with variation in the relevant treatment variable, and they must at the same time contain information on observed changes in the relevant outcome variables.

As a lead-in to discussing the strengths and weaknesses of time-series data for a single country, I shall describe an extremely interesting study that uses time-series data to evaluate the effect of postwar developments in the Finnish pension system.

Jäntti, Kangas and Ritakallio (1996) describe the development of the Finnish pension system over the period between 1950 and 1990 and they use six different income surveys collected over the period between 1966 and 1990 to trace possible changes in the income distribution among the population aged 50 or more.

---

[156] For instance, under a particular tax schedule individuals with different characteristics (income levels) will face different marginal tax-rates. On the basis of this variation and the observed variation in labor supply, the researchers estimate behavioral models that are in turn used to simulate aggregate responses to changes in the tax schedule itself.

On the institutional side they show how the Finnish pension system has moved from what they call a "marginal model" offering very modest flat-rate benefits to an "institutional model" with a combination of relatively generous minimum benefits and an encompassing system of schemes that offer earnings related benefits to the economically active population.[157] Both the level of minimum benefits and the typical level of income security for wage earners are shown to have increased very rapidly over the period between 1950 and 1975, while benefit levels (for newly retiring individuals) appear to have stabilized over the last 15 years of the period studied.

On the outcome side, the authors analyze changes in income packaging, poverty rates and the degree of income inequality found among elderly Finns over six successive cross-sectional data-sets. The most striking finding of the study is the radical reduction in the degree of inequality found among elderly Finns between 1966 and 1990 – most of the reduction being completed by the early 1980s.[158] It should be noted, however, that the reduction in inequality appears to be equally strong among the population segment aged 50-60. The explanation for the latter finding must be sought elsewhere than in postwar pension reforms. A longitudinal study of inequality trends in Finland and Sweden by Gustafsson and Uusitalo (1990) confirms the impression that income inequality among the Finnish population at large decreased very significantly during the period from the mid-1960s to the early 1980s.

From this pattern of covariation over time between changes in the Finnish pension system and changes in the degree of income inequality (and poverty) found among elderly Finns, the authors infer that the movement towards an institutional model of income provision for the elderly has had a strongly equalizing effect:[159]

> *The results (...) clearly indicate that statutory universal programs in Finland have equalizing effects, despite the fact that there is a certain degree of built-in inequality in the schemes in the form of earnings relatedness. (Jäntti, Kangas and Ritakallio, 1996)*

Despite its unquestionable merits, this study suffers from the general limitations of only having time-series/cohort data from a single country. During the period covered by the study, both the level of minimum protection and the general system of income protection for wage earners was expanded in Finland. Strictly speaking, the data and the analysis cannot tell us which of these fundamental changes in the Finnish pension system has been most significant in producing the "equalizing" effect.

It is not entirely clear what the authors mean by the term "statutory universal programs in Finland",[160] and more importantly, it is unclear what is meant to be the alternative institutional arrangement against which these programs are being evaluated. From a formal point of view the standard of comparison seems to be the public pension system that prevailed in Finland in the 1950s. However, as described by the authors, this system was characterized by an extremely modest level of minimum protection, and to evaluate the outcome of Finnish pension reforms after 1950 against a simple conservation of benefit levels and benefit structures from that period cannot be very interesting in itself.[161]

---

[157] The authors make explicit use of the classification of public pension systems suggested by Palme (1990), with a further reference to the famous distinction between ideal-typical approaches to social policy made by Richard Titmuss (1974).

[158] For example, they find that inequality – as measured by the squared coefficient of variation – is reduced from 0.48 in 1966 to 0.17 in 1990 for the age-group 70-74.

[159] Note, however, that the pattern of covariation hardly can be said to involve more than two independent observations: before and after the Finnish postwar pension reforms took full effect.

[160] It seems reasonable to assume that this term covers the second tier of earnings related schemes in the Finnish pension system, while it excludes the first tier of minimum protection. However, if this is the correct interpretation, it is questionable whether the conclusion is justified by the empirical analysis.

The interesting question is what would have happened to the subsequent income distribution among old age pensioners in Finland if the outcome of relevant political processes in the 1950s and 1960s had been to continue the reliance on a flat-rate or means-tested approach to income security in retirement, rather than building up a universal second tier of earnings related schemes. Such a scenario would surely have entailed significant increases in level of minimum protection offered in Finland – similar to or maybe even superior to those improvements in the minimum protection that have actually been realized in tandem with the expansion of a second tier of earnings related pensions. It is also very likely to have stimulated a further diffusion and proliferation of occupational pension schemes among core segments of the Finnish labor force.

The available Finnish data do not contain information about the potential outcome of such a hypothetical scenario, and hence they cannot provide us with answers to the question that also seems to concern the authors of the article – i.e., what has been the specific distributive effect of the introduction and maturation of statutory earnings related programs that cover the entire workforce. As long as we only have data for Finland, it is impossible to identify the effect of the most pertinent institutional choices.

Much could be gained if it had been possible to compare the Finnish data to similar longitudinal data for countries with a different postwar history of pension reform.[162] The first thing to look for in a cross-national comparison of longitudinal data sets would be if countries with an alternative institutional development show more modest decreases in income inequality among this segment of the population in the same historical period. It would also be important to check whether the large inequality reduction in Finland was driven primarily by a comparatively high degree of inequality in the 1960s or by a comparatively low level of inequality in last part of the period studied. If it should turn out that the reduction is comparatively strong in Finland (and in other countries with a similar level and structure of public pensions), and that it is associated with a comparatively low degree of inequality from the early 1980s and onwards, our confidence in the general argument would be strongly reinforced.

I believe that this discussion has shown that studies that are confined to time-series data for a single country are likely to face difficult problems in identifying the effect of the relevant institutional variables. Major pension reforms are rather rare phenomena, and it will typically take several decades before they take full effect. Even a time-series that spans a sufficiently long historical period will basically offer little more than two analytically relevant observations of the association between treatment outcome variables (before and after the reform). Vast historical changes in the societal context will of course have taken place over the same period, and the possibilities for identifying the specific institutional effect are bleak. Furthermore, the main interest will typically lie in an evaluation of a particular pension reform/pension system against its most prominent, contemporary alternatives. The historical predecessor of a current pension system is not likely to be the most interesting point of reference.

---

[161] No OECD country today has a public pension system that even remotely resembles the Finnish system of the 1950s.

[162] Denmark is obviously a very interesting candidate, since no second tier of earnings related public pensions was ever introduced in Denmark.

Two attractive but impractical extensions of the comparative approach: multi-level analysis and pooled time-series analysis

So far I have emphasized the limitations that would characterize an exclusive reliance on either micro-data or aggregated time-series data for a single country. I shall hasten to admit that very serious objections can be raised against the purely macro-oriented and static comparative research strategy that will be pursued here.

Before I turn to a more detailed discussion of the comparative method in the following section, let me briefly sketch the contours of two more ideal but at present impractical research designs that combine aspects from the comparative approach with either micro-level analyses or time-series analyses.

The first of these alternatives is a research design that combines causal analytical efforts at both the micro-level and the level of macro units. Within this very broad family of research designs, an important distinguishing factor is the type of analytical ambition that is attributed to the study of variation between macro units, and basically this ambition will depend on the underlying theoretical perspective.

At one end of the continuum we find studies where the main ambition is to test a favorite hypothesis holding that micro-relationships are basically the same across a universe of macro units. The question is "Does the macro-setting matter at all?", and the favorite hypothesis is "No". In the terminology of Tilly (1984) we might say that the theoretical ambition is to universalize theoretical propositions about micro-relationships ("universalizing comparisons"). This is the essence of the research program advocated by Przeworski and Teune in their by now classical contribution to the literature on comparative research designs (1970). In such a framework, the number of macro units involved is not terribly important (since a sample of two macro units could suffice to achieve a rejection of the favorite hypothesis),[163] but the macro units should preferably be as different as possible in order to make a rejection of the favorite hypothesis easier ("most different systems design").

At the other end of this continuum we find studies where the main theoretical interest is focussed on the way different macro settings (institutional configurations) influence micro relationships (that in turn produce aggregate outcomes). The question is, "How do macro variables matter?", and the favorite hypothesis holds that certain macro variables (institutional settings) have specific effects on the micro-level relationships that shape aggregate outcomes in the respective macro units. The most radical version of this approach would be represented by an application of statistical techniques for multi-level analysis/hierarchical modeling (see Iversen, 1991; Hox, 1994 and Ringdahl, 1991 for introductions to multi-level analysis). In order to be able to estimate effects of macro-level variables in a multi-level framework, it is necessary to include a large number of macro units, and for each macro-unit one needs a micro sample with standardized and compatible measurements of all the relevant micro-level variables. A more modest and pragmatic alternative to the full-blown multi-level framework, is represented by parallel analyses of micro relationships – preferably in a carefully selected sample of macro units that are known to differ on the most pertinent institutional variables, while they are as similar as possible in other relevant aspects ("most similar systems design").

---

[163] In a pooled data set with micro units from two countries, it is perfectly possible to reject a hypothesis that micro relationships are the same in both countries.

The research question and the theoretical perspective that motivate the present study clearly put it close to the latter end of this continuum where, unfortunately, the demands on the available data will tend to be extreme. I have suggested in the previous chapters that the distributive effect of pension systems could most adequately be seen as a contextual filter for the complex micro-level processes that link pre-retirement characteristics and behaviors with a certain income distribution in retirement. In order to model such a process at the micro-level one would need panel data where for each individual the level of retirement income can be related to information on the pre-retirement earnings history, savings behavior and private wealth accumulation, participation in occupational pension schemes, the timing of retirement etc. Despite the advances in the use of panel data to model savings and retirement behavior mentioned above, we are still a far cry from having an empirically grounded model of this kind – even for a single country. The task of arranging fully compatible data-sets of this kind for a large number of countries or even for a selection of a few (presumably similar) countries is of course impossible. Probably, the best one can hope for – along these lines – would be the development of parallel micro-level analyses for a number of different countries where the attempt to make inferences about the role of institutional factors is left to a secondary stage of pragmatic reasoning.[164]

The second extension of the comparative approach is represented by the combination of cross-national and time-series data. Also here one can talk about a continuum from the full-blown statistical analysis of pooled time-series data (see Janoski and Hicks, 1994) to more pragmatic attempts to compare time-series data for two or more countries. I have already suggested above that a replication of the study by Jäntti, Kangas and Ritakallio (1996) in countries with a different history of postwar pension reform could be highly valuable.

Unfortunately, time-series data of the kind used by Jäntti, Kangas and Ritakallio (ibid.), are hard to come by. Few countries could have provided a series of comparable income surveys spanning the 25-year period between 1966 and 1990 compatible to the one that was available for Finland.

This situation might change as income surveys are conducted more regularly in many countries. In particular it is promising that the Luxembourg Income Study database is gradually being expanded with successive waves of micro-data for a substantial number of countries. This will eventually make it possible to include longitudinal variation in each country alongside cross-national variation as a basis for analysis in various areas of research. However, we are still far from having the data needed in order to take full advantage of the statistical tools developed for pooled time-series data.

4.3 ON THE COMPARATIVE METHOD

There is no agreement in the literature about the proper definition and status of a specific comparative method. You might very well argue that all empirical research is comparative in nature, as it attempts to learn from observed differences between social units.[165] However, to equate the comparative method with the social scientific method in general is not very helpful, as it tends to make the term "comparative" redundant.

---

[164] See Shavit and Blossfeld (1993) for an example of this kind of two-stage approach applied to issues in the sociology of education.

[165] The term "comparative" could thus be taken to refer to the use of "natural experiments" as opposed to the "controlled experiment" associated with the natural sciences.

As already suggested, the comparative method is here taken to encompass research strategies that exploit variation between macro units (read: country cases) in attempts to support (or reject) causal claims about macro-level variables. I recognize that in particular the second part of the statement is controversial. Over the last three decades there has been a continuing debate about the role of comparative analyses and the possible status of a particular comparative method in the social sciences. To identify the purpose of the comparative method as causal inference, signals a leaning towards what is sometimes called the "variable-oriented" as opposed to the "case-oriented" approach to comparative analysis (Ragin, 1987).

This methodological debate can be associated with the classical Popperian distinction between nomothetic and ideographic approaches to the study of human society (Popper, 1957). The nomothetic philosophy is characterized by a belief that the social world is (at least partly) governed by general laws that can be discovered through the application of scientific (statistical) methods, while the ideographic philosophy rejects the existence of any law-like relationships in human society (or at least the search for them), holding that explanations for (or interpretations of) social phenomena must always be specific to the unit and the historical context.

One main position in the debate on comparative methods, the variable-oriented approach, is situated well within the nomothetic camp. It insists that the purpose of comparative analysis is causal inference, and that the logic of comparative analysis is similar to the logic of all causal analysis, where empirical regularities – the pattern of covariation between independent and dependent variables – are taken to be the only valid source of inference (for some of the most important contributions in this tradition see Przeworski and Teune, 1970; Smelser, 1976; Lieberson, 1992; 1994; King, Keohane and Verba, 1994, Janoski and Hicks, 1994; Goldthorpe, 1997). According to this view, it is the special nature of the units of analysis that makes comparative analysis a distinct (and in fact a rather problematic) branch of social scientific inquiry. Given the natural limitation in the number of country cases available, comparative analyses can at best be imperfect approximations to the ideal of multivariate statistical analysis:

> *Despite its limitations in terms of numbers of cases, the logic of systematic comparative illustration is identical to the [statistical] methods just reviewed in that it attempts to develop explanations by the systematic manipulation of parameters and operative variables. (Smelser, 1976:158).*

The other main position that can be identified in current debates among social scientists – the case-oriented approach – holds that the comparative method is (or at least can be) distinct in both its purpose and logic from variable-oriented statistical analysis (see for instance Skocpol, 1984; Ragin, 1987; Rueschemeyer, 1991; Rueschemeyer and Stephens, 1997). Scholars within this tradition tend to take a middle ground between a nomothetic and ideographic philosophy of social science.[166] On the one hand they deny that the only purpose of comparative analysis is to support causal claims, and in particular they tend to be skeptical about the potential for generalization. On the other hand they do not completely reject the ambition to provide (conditional) explanations for macro-social phenomena.[167] Proponents of this position insist on the advantages that can flow from a holistic – non-statistical – treatment of each country case or macro-social event. They claim that macro-social phenomena should preferably be studied in their dynamic, historical context, and that the information on each individual case cannot and should not be reduced to scores on a set of pre-defined variables, as required for the application of statistical techniques.

---

[166] Many historians take the more radical ideographic position, and the historical sociologists who represent the case-oriented approach are forced to wage a battle on two fronts, trying to maintain their identity as social scientists, while at the same time rejecting the mechanical, positivist excesses of the proponents of the variable-oriented approach.

[167] Proponents of the case-oriented approach typically adhere to a deterministic view of causality, in contrast with a probabilistic conception of causality that is inherent in the statistical, variable-oriented approach (see Ragin (1987) for a confession to a deterministic conception of causality and Lieberson (1992) for a critique of this position).

In the following discussion of the comparative method, I shall rely heavily on the first of these traditions and in particular on the interpretation laid out by King, Keohane and Verba (1994), KKV for short.

The logic of comparative analysis

KKV take as the point of departure the model of causality and causal analysis developed by Holland (1986) and Holland and Rubin (1983) (the Holland-Rubin model).

According to the Holland-Rubin model, the purpose of causal analysis is to estimate the effect of a given cause (treatment) rather than to try and trace the causes for a given effect, and a causal claim is always a claim about a clearly specified counterfactual experiment (Holland, 1986:959).

Following Holland (1986), KKV start their exposition by defining a causal effect for a particular unit at a particular point in time as the difference between the (expected) outcome that obtains given that the unit has been exposed to a specific treatment (X_1) and the (expected) outcome that would have obtained if the unit had instead – under otherwise identical conditions – been exposed to a specific alternative treatment (X_0). Note that this definition of a causal effect avoids any reference to regularity across units in space and time. It is open to the possibility that there exists a unique relation between treatment and outcome for each unit that could have been exposed to either X_1 or X_0, and for each social/historical situation in which the unit might be situated.[168]

However, since we can only in practice observe units that have either – at any given moment – been exposed to the treatment X_1 or to the alternative treatment X_0,[169] the causal effect is unobservable, and hence we face what Holland (1986) calls the "fundamental problem of causal inference".

While the strong nomothetic disposition of KKV is not reflected in this initial definition of causality, it is introduced or if you like "smuggled in" as a set of fundamental assumptions needed to make possible the inference of causal effects from empirical data. As KKV convincingly argue, it is absolutely necessary to assume that there exists some regularity across units in time and/or space, if there shall be any hope of ever uncovering causal effects on the basis of cross-case/cross-time comparisons. If causal effects were assumed always to be unique to the specific historical units/events, then they could never be observed, not even indirectly, with the help of external comparisons.

Given the fundamental problem of causal inference, the best we can do is to try to gain indirect information on the "average expected causal effect" across a set of units, but this requires in turn that we make certain fundamental assumptions: the Unit Homogeneity assumption and the assumption about Conditional Independence (KKV: 94).

---

[168] Hence, this definition is in itself rather ecumenical in spirit. It is capable of accommodating a wide range of positions in the classical schism between ideographic and nomothetic approaches to the study of human society.

[169] Or, for that matter, to some third alternative treatment, in which case one would have two counterfactual situations to consider.

The Unit Homogeneity assumption is the most fundamental. It implies that the (expected) causal effect stays constant across units that are separated by time and space, and it allows the researcher to draw inferences about the typical causal effect from available empirical information on different units. Conditional Independence implies that the values are assigned to the independent/treatment variable independently of the values taken by the dependent variable.

Weaker or stronger versions of these assumptions are necessary in non-experimental settings to get around the fundamental problem of causal inference. They allow the researcher to use variation in the dependent variable across units with different values on the treatment variable as an indirect source of information on the unobservable counterfactual outcomes connected with each individual case. One can say that cases with different values on the explanatory variables act as stand-in counterfactuals for each other.

Under ideal conditions, where these assumptions are fully satisfied, the causal effect can simply be estimated by comparing the average scores of units that have been exposed to the treatment (X_1) with the average scores of units that have been exposed to the reference treatment (X_0). Of course, this is not very realistic outside the realm of controlled experiments where the researcher can make sure that the treatment is being randomly assigned.

While some minimal satisfaction of these two assumptions is needed, it would be utterly naive to simply assume that they are fully satisfied in the natural experiments we encounter at the micro as well as the macro-level. Various statistical models and statistical techniques are available to handle a wide range of modifications to the Conditional Independence assumption and even some deviations from the assumption of Unit Homogeneity. The most simple deviation is represented by the existence of variables that exercise a linear influence on the dependent variable while they happen at the same time to be (linearly) correlated with the treatment variable. The standard statistical solution to this problem is of course to "control" for the influence of these factors through the application of multivariate techniques.

This is the fundamental logic behind all statistical analysis, and it is the claim of KKV that the comparative method should be understood as the application of this logic to the study of variation between macro units. Of course both KKV and other advocates of the variable-oriented approach immediately recognize that the application of statistical styles of analysis to samples of macro units is particularly problematic, first and foremost because of the natural limitation in the number of cases that are available for analysis (see the citation from Smelser (1976) above).

The main argument that can be made in favor of this interpretation of the comparative method is that it is built around a consistent and meaningful interpretation of the notion of causation and causal effects. You might very well choose to reject the Unit Homogeneity and the Conditional Independence assumptions even in their weakest form,[170] and hence argue that the application of statistical models is fundamentally misplaced. However, it seems that this position would imply that all attempts at causal inference are impossible – or at least that the comparison between country cases cannot play any role in efforts to support or reject causal claims.

---

[170] Such a claim could either be made with reference to macro-social units only, or it could be made with reference human society more generally.

Problems of statistical inference based on cross-national data

From the point of view of the variable-oriented approach, the problems facing comparative analyses are basically same as the problems facing attempts at causal inference based on micro-data with, for instance, individuals as units of analysis. What distinguishes the analysis of macro units is primarily the small number of cases available, and this will often imply that the statistical methods that might be available for larger samples of replicable data cannot be applied efficiently.

The main caveat of comparative analysis is the small-N problem – both in its own right and because it aggravates a range of other problems that haunt attempts at causal inference based on natural experiments. In the following I shall describe five of the most important of these problems and discuss their significance with respect to the present study: 1) measurement error and lack of comparability, 2) omitted variables and endogeneity, 3) dependency and contamination between country cases, 4) multiple and conjunctural causation, 5) asymmetrical causal relationships.

1) Measurement error and lack of comparability. The problem of low-quality data (measurement error) is likely to be particularly serious in cross-national research, where agencies and routines for data collection and data verification have been slow to develop. It cannot be denied that much quantitatively oriented, comparative research is flawed by an uncritical use of low-quality data, which often have been collected by international organizations for other purposes than research.

Whenever serious measurement error is present in a cross-sectional data-set, the implications are particularly serious, due to the small sample sizes. All systematic measurement error and random error in the measurement of independent variables is always a serious problem, as it will lead to biased estimates. Random error in the measurement of the dependent variable will not cause bias but only reduce the efficiency of estimation, and hence it can be considered a minor problem as long as sample sizes are big enough. But when sample sizes are as small as in typical cross-national data-sets, any loss in efficiency is of course a very serious problem.

The issue of comparability can concern variables as well as the cases themselves. Comparability of variables is primarily an issue of measurement. It is a basic requirement that variables should – as far as possible – be measured in an equivalent way in different countries. However, equivalence is not always maximized by a rigid replication of measurement procedures across country cases (Przeworski and Teune, 1970:107ff). Sometimes equivalence can only be approached by letting measurement be standardized according to certain particular aspects of the national context. The issue of equivalent measurement arises in many places in the present thesis. Take as an example the calculation of replacement rates offered by public pension systems. In order to do such calculation you need to decide on a set of "typical workers/retirees" in terms of family relations and labor market histories. However, what is typical in one country is not necessarily typical in another, and the question arises whether to do the calculation for similar types of individuals across countries or instead to let the definition of the typical worker/retiree vary.

Also the very comparability of country cases can be put into question. Can, for instance, small and homogeneous nation states like the Scandinavian countries be compared with a large and heterogeneous political entity like the US? Proponents of the variable-oriented approach are inclined to respond that the issue of comparability between cases can often be translated into a question of omitted variables (KKV and Goldthorpe, 1997): When we say that two countries are too different to be compared, we often mean there are important differences between the cases that could by themselves be responsible for the observed difference in outcome variables.

2) Omitted variables and endogeneity. Variables that influence the dependent variable and are correlated with the treatment variable will bias the estimation of the treatment effect if they are excluded from the analysis. The standard statistical remedy to this fundamental problem of all non-experimental data analysis is to include all variables that are suspected to influence the dependent variable (and be correlated with the treatment variable) in multivariate analyses. However, this standard solution of statistically controlling for all variables that could be a source of bias is almost impossible to apply to the typical cross-national data-set due to the small number of cases that are available for analysis. Unless you have more cases than variables it is logically impossible to identify the effect of each independent variable, and of course the practical requirements are much tougher than this. As a very rough rule of thumb you need at least ten cases per independent variable in order for the estimates of a multivariate regression equation to stabilize (Hox, 1994). With a sample of 20 cases, for instance, you can at the very best control for one variable in addition to the treatment variable. Furthermore, when the sample is this small, the linear dependence between regressors need not be very strong before multi-collinearity becomes a serious problem, and of course it is when the linear dependence between regressors is significant that we need multivariate control the most (Lieberson, 1985).

The problem – in relation to the present study – is that we cannot a priori rule out the potential influence on the income distribution among retirees of other social and economic factors that might even be systematically related to the observed variation in public pension systems. The list of potentially important factors can be made very long, but I will argue that the degree of income stratification prevailing in the general population is likely to be particularly important.

The application of linear controls for all possible observable covariates is no guarantee for the satisfaction of the assumption about Conditional Independence. *Endogeneity of treatment variables* represents a further, more subtle, violation. It refers to a situation where the process of assigning values on the treatment variable is somehow correlated with the dependent variable – perhaps due to some unobservable characteristic of the cases involved in the analysis, or to some type of causal feed-back (simultaneity). It is possible to imagine, for instance, that the divergence in public pension systems across the OECD area could to some extent be the effect of, as well as the cause for, variation in the coverage and scope of occupational pension schemes. There are statistical remedies available also for these groups of problems, but they tend to be highly demanding of the data (the most efficient solutions require longitudinal data) and/or to be dependent upon strong secondary assumptions (for a discussion of models with sample selection and endogenous treatment effects see Winship and Mare (1992)).

3) Dependency and contamination between (groups of) country cases. Standard statistical techniques for cross-sectional data assume that each case represents an independent natural experiment, where the forces responsible for the outcome are internal to each case – the structural part as well as the stochastic part. Put in more technical terms, it is assumed that the error terms of the dependent variable are not correlated across cases,[171] and more fundamentally it is assumed that the effect of explanatory factors is internal to each case. This is not always a realistic assumption to make in cross-national research. It is easy to think of examples where the scores/performance of one country could influence the outcome in other countries through, for instance, processes of diffusion and learning, efforts to regulate and to implement policies through international organizations, or perhaps through structural interdependencies created by international markets. In relation to cross-national research this is sometimes referred to as the Galton problem (see Goldthorpe, 1997), while others talk of a more general problem of contamination between cases (Lieberson, 1985:49ff).[172] This kind of interdependency is most likely to involve groups of countries that are closely related either geographically, culturally or economically,[173] but it could also concern various forms of wider, perhaps world-systemic, interdependencies (Hopkins, 1987; Przeworski, 1987; Usui, 1994). If the problem is restricted to a certain dependency of outcomes within certain groups of countries, the primary negative consequence is that the material available for statistical inference is even thinner than would appear from the number of country cases that are formally included in the analysis.[174]

---

[171] In time-series analysis this problem is known as auto-correlation, and when it appears in cross-sectional data it is sometimes called "spatial auto-correlation" (Johnston, 1991:305).

Fortunately, this problem might not be equally serious in all areas of comparative welfare state research. In Chapter 2, I made a distinction between research on the causes for variation in welfare state institutions, on the one hand, and research on the ultimate outcome/effect of such institutional variation on the other. I suspect that the problem of dependency/contamination is particularly relevant for the first type of welfare state research, which is concerned with explaining variation in policies and institutions, and that it might be less relevant for efforts to study the outcomes of institutional variation. While, for instance, there is good reason to suspect that the Scandinavian countries have strongly influenced each other in the development of policies and institutions, it is more difficult to imagine what mechanisms should be responsible for an autonomous convergence/dependency in the outcomes of these policies and institutions – at least for the type of outcome that concerns us here: the income distribution among old age pensioners.

4) Multiple and conjunctural causation. The most simple statistical models assume that causal effects are linear, additive and insensitive to context. They are therefore, as pointed out by Ragin (1987), unsuitable for handling two more complex types of causation which he calls "multiple causation" and "conjunctural causation", respectively. Multiple causation (or "plurality of causes") refers to a situation where a certain categorical outcome can be the result of a number of different causal conditions, i.e., different causes are by themselves sufficient (but not necessary) conditions for the outcome to materialize. By contrast, conjunctural causation refers to a situation where a categorical outcome is the result of a particular combination of a set of causal factors – i.e., each individual factor represents a necessary but not by itself sufficient condition for the outcome to materialize.

Ragin (1987; 1994b) claims that complex causal structures of this kind are likely to be common in macro-sociological research, and he has suggested a logical and inductive method for revealing such complex patterns of causation, called "qualitative comparative analysis" (QCA). Although proponents of the variable-oriented/statistical approach strongly question the alleged advantages of QCA (see Lieberson, 1992; 1994; Goldthorpe, 1997:6-8), it cannot be denied that the presence of more complex causal structures puts greater demand on the statistical modeling and (even more importantly) on the data needed in order to arrive at valid inferences.

---

[172] The problem of contamination, as discussed by Lieberson, includes situations where the outcome in one country (macro unit) is influenced by the scores on independent variables in another country (macro unit). This is a different (and far more problematic) situation from the direct dependency between outcomes (error terms) of different units. While the latter problem should only affect the efficiency of estimation, and hence significance testing, the former would – if ignored – represent a serious misspecification of causal forces in operation.

[173] In the recent welfare state literature, the concept of "families of nations" has received considerable attention (Castles (ed.), 1993). It involves the idea that contemporary OECD countries cluster in groups of countries with a common cultural/political heritage and strong links of diffusion and learning.

[174] If the statistical models and procedures are not adjusted to take account of a possible dependency between groups of cases (spatial auto-correlation), the estimation of standard errors will be flawed, and the researcher will get an exaggerated impression of the significance level associated with positive findings.

There is no problem for statistical reasoning to accept certain modifications to the assumption of Unit Homogeneity, that causal effects remain constant across units and contexts. For instance, Ragin's notion of conjunctural causation has strong affinities to the statistical concept of (positive) interaction, and interaction effects can easily be integrated in statistical models.[175] The problem is, however, that the estimation of more complex statistical models, that include interaction terms, puts even greater demand on the amount of empirical information (total sample sizes and cell frequencies) that must be available for analysis. Again we can see how the small-N problem of macro-analyses interacts with general problems of statistical inference to limit seriously the aspirations one can have regarding comparative analyses.[176]

In the context of the present thesis, the issue of conjunctural causation must be taken seriously. It seems highly plausible that the distributive impact of a certain pension system could vary according to the social context in which it operates. The degree of labor market stratification, female labor force participation and other structural features can be suspected not only to influence the final income distribution as such, but also to condition the contribution made by a particular pension system to overall inequality in retirement. In other words, a pension system that appears to perform well in one social context might not do the same in a different social context.

In order to do full justice to this kind of complexity one should preferably conduct separate analyses within subgroups of countries that share a similar structural background. Furthermore, one should be careful to generalize findings (however valid they might be for the given context) from one social and economic context to another. The first of these imperatives is difficult to meet, given the total sample sizes available and the number of potentially relevant contexts.

5) Asymmetrical causal relationships. Another aspect of the Unit Homogeneity assumption that is built into standard statistical techniques and is rarely questioned in practical statistical research is the assumption that causal relationships are always "symmetrical" or "truly reversible". Lieberson (1985:64) defines a symmetrical causal relationship as one where the effect of a certain increase in the independent variable will simply disappear if the independent variable is returned to the original level. Conversely, an asymmetrical relationship is one where the effect on the dependent variable of expanding the treatment variable is systematically different from the negative effect of a similar (subsequent) reduction in the treatment variable. Perhaps a return to the original value on the treatment variable simply has no effect at all, and hence we have a situation where the effect of expansion is irreversible[177] – or put another way, "the causes for a given condition can be removed but the consequences remain" (Lieberson, 1985:67).

---

[175] Some statistical models (log-linear analysis) are built around the concept of interaction effects – see Hout (1982).

[176] Proponents of the case-oriented approach would argue that this limitation only applies to statistical styles of reasoning, and that it can be overcome by turning to an alternative, more qualitative method of comparison (like perhaps QCA – see for instance Ragin, 1987). Proponents of the variable-oriented approach would claim that it affects all attempts to learn about causal effects from cross-country comparisons, whether quantitative or qualitative (Goldthorpe, 1997).

Lieberson argues that propositions about irreversible/asymmetrical causal structures have an important place in the social sciences, for instance in relation to processes of diffusion and in the study of historical and institutional dynamics.[178] Whenever this is true, the factors relevant for explaining the rise of a certain phenomenon are likely to be quite different from the factors that are responsible for a subsequent decline, and a failure to recognize this possibility will lead to false inferences in standard cross-sectional analyses.

If the problem is recognized, however, and the available data are sufficiently rich, it is easy to devise the necessary adjustments to standard statistical procedures. The main solution is to introduce some measure of dynamics into the analysis: for instance, instead of just estimating one parameter for the effect of a static score (high versus low) on the treatment variable, different parameters could be estimated according to the direction of change in the treatment variable that has preceded the presently observed value.

But what if the available cross-sectional data are restricted such that they contain only empirical evidence about one "side" of a potentially asymmetrical relationship: if the observed variation in the treatment variable has been produced by variation in the degree of expansion only – some units having changed from low to high while others have remained low? In this case no adjustment is needed to the analytical procedure itself, since all the cross-sectional evidence will refer to the presumably constant effect of variation in the degree of expansion in the treatment variable. However, in this situation the potential presence of an asymmetrical relationship implies that one should be careful not to generalize to situations where the process is reversed.

This is the situation with respect to the data available for the present study. Contemporary variation in public pension systems across the OECD area are largely the result of different types and degrees of expansion in public pension provision over the postwar era (see Palme, 1990 for a comprehensive account of postwar developments in public pension systems across the OECD area). Hence, while we do have empirical evidence that is relevant for estimating the outcome of variation in the degree of expansion in public pension provision, we do not have much direct empirical evidence about the outcome of significant cutbacks.

I suspect that the interplay between public and private retirement provision could be subject to the kind of asymmetrical relationships discussed by Lieberson (ibid.). As suggested in Chapter 3, one could imagine that the introduction of comparatively generous public pension systems is likely to trigger a rise in people's expectations and preferences for income in retirement, and that this effect could to some extent weaken the presumed tendency for generous public pensions to crowd out private sources of retirement provision. Such adjustments in expectations and preferences ("the taste for pensions") might not to the same extent work in the opposite direction, if public pension systems are cut back. Therefore, we cannot – as argued in the introduction to this chapter – take for granted that the effects of present and future retrenchments and cutbacks in public pension systems will be symmetrical to the presently observed effects of the historical process of expansion. I shall return to this issue in the concluding chapter of the thesis.

---

[177] Note that irreversibility here does not imply that the dependent variable can never return to the original value. It just implies that a return to the original value on the independent/treatment variable will not by itself be sufficient to cause a reversal of the original effect.

[178] There are strong links between the idea of asymmetrical causal relationships and the idea of path-dependency that is very prominent in the "new institutionalism" literature (North, 1990).

Among the five problems of statistical reasoning discussed here, the omitted variables/endogeneity problem and the problem of conjunctural causation appear to be the most serious – at least in relation to the present study. Although satisfactory solutions to these problems can be found within the framework of statistical analysis, they are practically unfeasible given the modest sample sizes that are available in cross-national research. The small-N problem remains, therefore, the most fundamental obstacle facing applications of a variable-oriented approach to comparative research.

Possible remedies

In the present study I shall try to make use of three different types of remedy to the problems outlined above.

According to proponents of the variable-oriented approach, an imperfect application of statistical styles of reasoning is the only defendable way to address issues of causality based on cross-national comparisons. The imperfect application of statistical styles of reasoning can take very different forms, however. Here I shall distinguish between two main alternatives: 1) the application of quasi statistical analyses to larger samples of countries, and 2) the controlled comparison of smaller, strategically selected samples of countries. A third type of remedy to the problems of comparative research, which will be discussed in the following, attempts to combine cross-national data with data and styles of analysis that are internal to each case. The key to this strategy is: bring in more data.

1) Quasi statistical analyses. The first main strategy to cope with the inherent limitations of cross-national data is to try and maximize the sample of country cases that can be drawn from the universe to which the theory/research question refers, and to apply very simple statistical techniques in a pragmatic and cautious manner. If the sample that can be drawn among the theoretically relevant countries is small[179] – say not more than 20 – a serious application of multivariate techniques is ruled out and most of the analysis must be based on the estimation of bivariate linear parameters, bivariate measures of association and not least the presentation of graphical plots, where each individual case can be identified. It is important to pay attention to outliers and – in particular – to "influential" cases. In very small samples, the performance of a single case can often be decisive for the value taken by a linear parameter or a measure of association, and whenever this happens it should be explicitly discussed. Sometimes the impression of a linear dependency might disappear completely if a particular case is removed from the data, and sometimes a single case could counteract or conceal a general pattern of linear association among the remaining cases.

Some measure of control for alternative explanatory factors can be achieved by inspecting the pattern of pair-wise association with the treatment and the outcome variables, respectively, and sometimes control for contextual factors can be established by standardizing outcome variables to incorporate variation in such contextual factors (Smelser, 1976).

2) Controlled comparisons (most similar systems design). In comparative research, maximization of the number of country cases is not a defining characteristic of the variable-oriented approach and statistical styles of reasoning. A second, alternative strategy is to make a careful selection of a smaller number of country cases, where the attempt to control for alternative causal factors is built into the process of sample selection itself. The classical version of this strategy is the so-called "most similar systems design", where the study is restricted to a selection of country cases known to be as similar as possible in all relevant aspects – except, of course, with respect to the treatment variable, where the cases should preferably show non-trivial variation.

---

[179] Availability of comparable data is of course a very important limiting factor – not the least when it comes to income data.

> *(..) when the number of cases does not permit statistical manipulation, the investigator can approximate it – though without the same degree of confidence – by systematic comparative illustration. (Smelser, 1976:157)*

It is characteristic of this strategy – as compared to the quasi statistical strategy discussed above – that the sample of country cases is often restricted further than might be required by purely theoretical considerations (to exclude countries not belonging to the theoretical universe) and by the availability and quality of data. The further restriction of the sample is dictated by methodological considerations – in particular, by the concern to keep third variables under control. Even if the sample is thus restricted to only two cases, it could, nevertheless, count as an application of a statistical logic, insofar as it attempts to address a statistically defined problem: control for omitted variables.

Of course, the degree of control that can be achieved by thus restricting the sample to include "similar" country cases will always be in serious doubt. While some countries are more similar than others, they are liable to show considerable variation in potentially relevant aspects. Even among relatively homogenous groups of countries, like the Scandinavian countries, there is considerable variation in pertinent socio-economic variables (see Mjøset ed., 1986).

In order for a sample of "similar" countries to be relevant for attempts at causal inference, the countries must of course show variation on the institutional variable that is under investigation.[180] This means that the researcher has to confront a rather tricky question: If the countries are as similar as suggested, how can it be that they deviate on the independent variable? Since we cannot simply assume that this deviation has been randomly assigned, there is always the danger that it is linked with forces – observable or hidden – that might also be partly responsible for observed variation in the outcome variable(s). In other words, omitted variables and endogeneity remain potential problems to be faced in applications of different versions of controlled comparisons.

The most similar systems design is not the only possible version of the controlled comparison strategy. More elaborated versions could include designs with a number of different groups of (among themselves) "similar" countries where, again, each group should show internal variation on the treatment variable. This kind of extension of the most similar systems design has the advantage that it might help to reveal potential interaction effects – whether the hypothesized relationship between treatment and outcome might be conditioned by the broader societal context.[181]

3) Combinations with internal analysis. Even the most enthusiastic proponents of the variable-oriented approach to comparative analysis would agree that cross-national comparisons are so invalidated by the small-N problem that they should, whenever possible, be supported with analyses based on other types of data.

---

[180] Some textbooks on research design emphasize that cases should be selected with a view to having significant variation on the dependent variable. However, according to the Holland-Rubin model of causal analysis, one should search for the effects of specific causes, rather than the cause(s) of specific effects, and hence variation on the independent variable must be the essential criterion for the selection of cases.

[181] It can be said to combine the logic of the most similar systems design with aspects of the most different systems design.

Janoski and Hicks (1994) have suggested a useful distinction between external and internal analysis in comparative research, and similarly one could talk of external versus internal sources of inference. A purely external analysis is one that focuses on the pattern of covariation between macro variables across country cases,[182] while internal analysis refers to attempts at causal inference based on case-specific information. In a purely internal analysis the comparison between macro units plays no direct analytical role, and the type of information used could be either qualitative (process-oriented, historical data) or quantitative micro-data.

KKV strongly recommend that the external comparison between macro units be somehow supplemented with what we can broadly classify as internal analyses. Even in situations where the main research question is focussed on theories that involve macro-level variables (like national policy institutions and their aggregate outcomes), the researcher should try and derive auxiliary or secondary hypotheses that can be tested on richer data-structures – be it qualitative or quantitative types of data (ibid:208ff). Similarly, Goldthorpe (1997:13ff) is concerned with the "black-box problem" of a purely external comparative analysis. Theoretical expectations about the relationship between macro variables must be based on hypotheses about a set of more specific mechanisms operating within each macro-unit, and the purpose of internal analyses could be precisely to try and test hypotheses about such more specific mechanisms.

Here we might even find grounds for a compromise with proponents of the case-oriented approach. The need to open the black-box of more specific micro-level or historical mechanisms is a strong rationale for case-oriented research. You could very well argue that good case-oriented research is characterized by a strong emphasis on internal analysis: a significant part (if not all) of the analytic effort is devoted to within-country information – like historical sequencing, the positioning and actions of relevant political agents, etc. – while the external comparison plays a very limited analytical role. Still, it can be maintained that this rationale for case-oriented research (opening the black-box of more specific micro-level mechanisms) is different from the position taken by the most prominent defenders of the case-oriented approach, where a "thick" holistic description of each case is combined with – and is claimed to justify – a strong confidence in the external, macro-level comparison of just a few country cases.

I have already in the previous section mentioned two different types of extensions of the comparative approach that combine external and internal analysis: pooled time-series and multi-level (micro-macro) types of analysis. Multi-level analysis that would combine causal modeling at both the macro and the micro-level, represents an ideal solution to the black-box problem but, as I have suggested, it will often remain an impractical ideal.

Internal analysis need not be of the causal analytical kind. It could also, for instance, draw on the logic of accounting. In Chapter 3 I showed how the overall hypothesis of the present thesis rests on a number of auxiliary hypotheses concerning the composition of the income packages of retired households and the distribution of particular income components (in particular private income sources in retirement). An investigation of the contribution made by public and private income components to the overall degree of Gini inequality in each of the country cases can be a useful supplement to the purely external analytical efforts.

Finally, there is one issue that cuts across these three basic approaches to remedy the inherent weaknesses of comparative analysis: the need to be extremely careful about issues of measurement. Concerns for data quality might very well be an argument for restricting the sample of countries used in cross-national studies. However, as pointed out by KKV (ibid.), there is likely to be a trade-off between efforts to avoid bias by restricting the sample to countries where the quality of data is known to be good, and the concern to increase efficiency that can only be met by including as many countries as possible. The theoretical solution could be to accept some risk of bias in order to gain efficiency (minimize the "mean expected error" of estimates).

---

[182] Ragin's QCA belongs to this purely external type of analysis, together with (quasi-)statistical analyses and "controlled comparisons" of a few - presumably similar - country cases (see Janoski and Hicks, 1994:20).

Before I turn to the more detailed description of the research strategies adopted in the present study, I shall briefly review some of the existing comparative studies in the field.

4.4 A REVIEW OF EXISTING COMPARATIVE STUDIES

In the following brief review of existing comparative studies I will concentrate on studies attempting to describe or explain variation in the income distribution among retirees in developed countries. All the studies mentioned in the following have been based on micro-data from the Luxembourg Income Study (LIS). The establishment of LIS – containing income surveys from a number of developed countries – has greatly enhanced the possibilities for comparative research in the field of income stratification. In particular it has provided new opportunities to study particular subgroups of the general population in each respective country – for instance, the retired. Among the studies which have been published over the last decade by users of LIS, a considerable number have dealt with themes specifically related to income and economic well-being among the elderly (see for instance Rainwater and Rein, 1988; Smeeding, 1988; Palme, 1989; 1993; Kohl, 1988; 1990; 1992; Hedström and Ringen, 1990; Achdut and Tamir, 1990; Pestieau, 1992; Smeeding et al., 1993; Delhausse et al., 1994; Hutton and Whiteford, 1994; Korpi and Palme, 1994; Whiteford and Kennedy, 1995; Döring et al., 1994; Hauser, 1997).

The studies can be grouped into three main categories: 1) *descriptive studies* that are primarily concerned with describing cross-national variation in the distribution of income among the retired or the older section of the population across OECD countries; 2) *analytical studies* that to some extent pertain to explaining variation in the degree of inequality/poverty found among the elderly in different countries with reference to institutional features of the respective pension systems; and a few 3) *internally focussed analyses* that mainly rest their argument on an analysis of the contribution made by different income components (public and private sources of income) to the level of inequality in total disposable income found among the retired in each respective country.

Descriptive studies: comparative income distribution

The first generation of LIS studies mainly sought to describe cross-national differences in the income position of the elderly, the composition of income packages, poverty rates, general indices of inequality etc., without attempting in a systematic way to provide explanations (Rainwater and Rein, 1988; Smeeding, 1988; Hedström and Ringen, 1990; Achdut and Tamir, 1990). [183]Five sets of conclusions from these studies, which all refer to the years around 1980, are nevertheless of direct relevance to the present study:

- The elderly (for instance, defined as people belonging to households with heads above 60) are almost nowhere a particularly disadvantaged group in terms of household equivalent income. The age profile of income seems in most countries to peak roughly at age 50, and there is only a fairly modest downturn in the years when one must expect that most people withdraw from the labor market. The timing of this downturn varies considerably with differences in the effective retirement ages between the countries studied.

---

[183] For a summary and discussion of four of the most important of these early works see Hauser (1993).

- The degree of overall income inequality (measured by the Gini coefficient and other summary indices, as well as the ratio of top-to-bottom decile/quintile income levels) among elderly households shows wide differences among developed countries. In some countries inequality among elderly households is greater than in the general population, while in some countries it is smaller. When country cases are ranked, one usually finds Sweden with the lowest inequality in disposable income among the elderly, and the US with the by far largest inequality coefficients and income differentials.
- In almost all countries public pensions make up a dominating share of the income packages of elderly households. Wages and salaries take the second position, while private pensions and capital income nowhere seem to play more than a fairly modest role (on average, a maximum 10-15 percent of total gross income, respectively). The composition of income packages of elderly households still shows significant cross-national variation; especially the role of earnings seems to vary substantially.
- There is a general tendency across countries for the income position of the elderly to "deteriorate" with the age of the household head. The group of individuals belonging to households with very old heads coincides to a large extent with another distinctly disadvantaged group: one-person households with a female head. There are, however, important cross-national differences in the extent to which these groups fall behind the other elderly households. In the US the disadvantaged position of elderly, single females (widows and non-married) is especially pronounced (Smeeding et al., 1988).
- Despite their descriptive intention a few of the studies mention findings that touch upon the question of substantive institutional explanation for the observed cross-national variation. Both Hedström and Ringen (1990) and Achdut and Tamir (1990) report that inequalities among the elderly tend to be least in countries where public transfers are responsible for a relatively large part of the total income package. In other words, it is indirectly suggested that more generous systems for public retirement provision are associated with particularly low levels of inequality in disposable income.

Among the more recent descriptive studies in the field, the study by Whiteford and Kennedy (1995) is by far the most comprehensive. The authors describe and compare a range of different aspects of the income distribution found among the elderly in 11 OECD countries with reference to LIS data from the mid-1980s. One of the distinctive features of this study, is the ambition to explore the consequences of a more comprehensive income concept, which is supposed to include both the value of public services provided for the elderly as well as the economic advantages associated with home-ownership (imputed rent). Whiteford and Kennedy (1995) find that a more comprehensive income concept tends produce a picture of the elderly being more privileged (less disadvantaged) vis-à-vis the non-elderly, and of inequality among the elderly being less severe, compared to findings based on the traditional concept of disposable income. Even more importantly, they claim that the shift in favor of a more comprehensive income measure reduces the scope of cross-national differences in important outcome variables such as the income position of the elderly and the degree of income inequality found among this population subgroup:

> *In general, broadening the concept of resources to encompass government noncash benefits and other forms of imputed income leads to a substantial narrowing of the apparent differences between countries in the outcomes of social policy interventions. (Whiteford and Kennedy, 1995:97)*

The highly tentative analytical observations that were surfaced in both Hedström and Ringen (1990) and Achdut and Tamir (1990) are countered in a subtle way by Whiteford and Kennedy:

> *It has been shown that the standard framework for assessing income distribution will tend to make countries with smaller welfare states look less equal than countries with higher levels of spending on social protection. (Whiteford and Kennedy, 1995:97)*

Finally, I should mention that, while all the descriptive studies that have been referred to so far focus exclusively on the distribution of household (equivalent) income, two fairly recent studies explore the distribution of personal income in conjunction with household income, and both with special attention to the relative income position of female pensioners (Hutton and Whiteford, 1994; Döring et al., 1994).

One of the most important conclusions that has emerged from both older and younger generations of descriptive studies in this area is of a methodological nature: The picture of cross-national variation in the income position of elderly households and in the degree of income inequality prevailing among this population segment is highly sensitive to a range of methodological choices: the income unit, the income concept, equivalence scales and the particular inequality index.

Analytical studies: covariation between institutions and outcomes?

Over the last decade a smaller number of studies based on the LIS data have been published that attempt more explicitly to link cross-national variation in the income distribution among the elderly with institutional features of national pension systems.

Among the most ambitious examples in this category we find the studies by Palme (1989 and 1993).[184] They draw on a combination of purely institutional data on national pension systems – used for the definition and measurement of the independent variable – and micro-data from LIS – used for the measurement of outcome variables like income inequality and poverty rates among the elderly.

Palme (1989) takes his sophisticated four-way classification of public pension systems discussed in Chapter 2 as his point of departure (see also Palme, 1990 for a more detailed discussion of his typologies and indices of institutional variation in public pension systems). The central analytical effort of the paper is to test whether this classification of pension systems is associated with systematic differences in outcome variables like poverty rates and income inequality. The analysis involves ten OECD countries and the relevant income data are taken from LIS data-sets from the first wave (referring to years around 1980).[185]

The results seem to confirm Palme's initial expectation that countries with public pension systems that combine universal minimum benefits with a second tier of earnings related pensions (belonging to the "Institutional Model") do best in terms of keeping both poverty and income inequality low:

---

[184] A number of works have been published that build on and reanalyze the material originally presented by Palme (1989 and 1993), reaching roughly the same conclusions: Myles (1989), Kangas and Palme (1993), Korpi and Palme (1994) and Stephens (1995).

[185] The sample includes Australia, Canada, Germany, the Netherlands, Norway, Sweden, Switzerland, the UK and the US.

> *Good basic pensions for every citizen might be enough for eliminating poverty. For reducing the general degree of income inequality, both between age-groups and among the elderly, it seems like the pension system to be "institutional", they have to provide for income security as well. (Palme, 1989:35).*

The study by Palme (1993) is basically a more sophisticated reanalysis of his original study, using the same sample of countries and the same data-sources both on the institutional side and on the income-data side.[186] Both zero-order correlation coefficients and regression analysis is used to test hypotheses about the relationship between institutional variables (indices of benefit generosity) and outcome variables (inequality indices and poverty rates). While more attention is given to both theoretical and methodological issues in this paper, the conclusions are basically the same.

In a paper from 1992, Kohl tries similarly to link cross-national variation in income inequality among old age pensioners with differences in the interplay between public and private retirement provision. He restricts his analysis to four countries with very different types of pension systems (Germany, Sweden, Switzerland and the United Kingdom). His analysis not only deals with the final distribution of net income, it also decomposes the income package into different income sources in order to highlight the mechanisms at work.

He concludes as follows:

> *So the paradox emerges from these findings that countries which have institutionalized earnings related public pension schemes (Sweden and Germany) are ultimately characterized by smaller degrees of overall inequality. (Kohl, 1992; p. 20)*

According to the findings by Kohl, the two countries where public pensions are distributed according to the universal flat-rate principle, show relatively high levels of inequality in the final distribution of income (Switzerland and the UK). The main theoretical explanation provided by Kohl is that generous earnings related public pensions tend to crowd out private provision, with the net result that inequality is kept at comparatively low levels. In other words, the different behavioral responses to the two types of public pensions work in the opposite direction than the direct effects, and the former effect outweighs the latter. Finally, Kohl makes note of the fact that his analysis of the role played by different income components in each of the four cases reveals a surprisingly strong progressive effect of taxes – in particular in Sweden.

You could say that both studies by Palme (1989 and 1993) are examples of the first main strategy to cope with the problems of cross-national analyses discussed above, the quasi statistical approach, while the study by Kohl (1992) could be classified as an example of a controlled comparison.

However, neither of these studies give particular attention to the need to control for factors that might influence the distribution of income among the elderly, in interaction with or independently of the particular features of the pension system. Kohl does not make an explicit argument for his choice of the four country cases in terms of attempts to control for competing explanatory variables.

---

[186] With the addition of France as case number 10.

Palme (1993) does relate to the issue of omitted variables, and he recognizes that there appears to be a strong positive correlation across the nine country cases between the degree of income inequality prevailing among the retired and the degree of inequality in disposable income found among the non-retired. However, he disputes that variation in pre-retirement income stratification can be responsible for the results obtained, on the grounds that the distribution of wages and market incomes among the non-retired shows only a very weak positive correlation with inequality in disposable income among the retired.

Palme (1993) pays considerable attention to outliers and influential cases. He recognizes that his most important regression results would be seriously affected if the Swedish case had been left out of the analysis, but he insists that Sweden does not constitute an "influential case" in a strict sense. It cannot be denied, however, that the positive regression parameters and correlation coefficients the author obtains for his favorite institutional variables depend strongly on the contrast (on both independent and dependent variables) between Sweden and the other countries in the sample – with Switzerland and the US being the most extreme and hence influential contrasting cases.

Internally focussed studies: the contribution to inequality by income sources

The last type of study to be reviewed here is mainly concerned with a static analysis of the contribution made by different income components to overall inequality in disposable income. The studies cover a sample of countries similar to the one covered in Palme (1989), but the logic of analysis is one of accounting rather than causal analysis, and hence the comparison between country cases only plays a secondary role.

Pestieau (1992) is particularly interested in studying the role and distributive impact of private pensions in the income packages of elderly households. In contrast with most of the LIS studies previously cited, he uses a second wave of surveys from around the mid-1980s together with surveys from the first wave. He is therefore able to identify a substantial increase in the share of private pensions between the two waves in most of the LIS countries, and he is ultimately concerned with the potential distributive impact of an increasing role for private pensions in the total income package of retired households.

For each country Pestieau investigates the role of private pensions in the income packages of subgroups of the elderly population, divided both according to age and according to total disposable income (quintiles). He confirms the rather obvious expectation that private pensions tend to be more prevalent among households with relatively high disposable incomes (the top quintile), and he finds that private pensions play a minor role in the income packages of the very oldest households.[187] This pattern is revealed in all the country cases studied.

From these findings, Pestieau draws the conclusion that the alleged trend – throughout the OECD area – for private pensions to increase their share in the income package of retired households is likely to be followed by a tendency for income inequality in retirement to increase, unless adequate policy responses are found and implemented.

---

[187] The latter finding he explains in the following way: "As private pensions are a recent development, it is not surprising that in some countries the oldest households benefit from them (private pensions) less than younger households" (Pestieau 1992, p. 43). A possible alternative explanation for this observation could be that private pensions tend to be insufficiently indexed, and that they tend to disappear when the household's breadwinner dies. On the background of cross-sectional data we just cannot know which explanation is closer to the truth.

The study by Delhausse et al. (1994) is even more explicitly policy-oriented. The study is based on a systematic method to decompose (Gini) inequality in total disposable income according to the contribution made by various public and private income components. Like Pestieau (ibid.), they find that private pensions and capital income is everywhere a highly regressive income component, but they also observe significant variation across their sample of LIS countries in the distributive role played by public pensions. In some countries public pensions show very little dispersion and might even be negatively correlated with total disposable income – hence in these countries public pensions play an equalizing role -, while in other countries public pensions appear to contribute significantly to the degree of inequality found in total disposable income.

The authors use the results from these estimates to simulate a range of different policy responses to the projected increase in the number of elderly over the coming decades, and they generally conclude in favor of more targeting (a turn to flat-rate or means-tested benefits) as the most effective strategy to avoid significant increases in inequality.

In other words, Delhausse et al. (1994) reach conclusions that can be said to contrast rather sharply with the conclusions drawn by Palme (1989), Palme (1993) and Kohl (1992):

> *A system in which the structure of retirement benefits is related to that of employment income, could encounter serious difficulty if the total amount of available resources were to decrease. (...) In those circumstances, a reform that went down the road of a uniform pensions scheme would lead to a more equitable distribution of income for senior citizens. (Delhausse et al., 1994:7)*

Of course, very serious objections can be raised against the methodological approach adopted by Delhausse et al. (1994). Their analysis of the distributive impact of different income components is completely static. It does not allow for any dependency of the scope and distribution across different income components. As discussed in Chapter 3, the overall hypothesis of the present study rests on a number of auxiliary hypotheses that precisely involve such interdependencies: a tendency for a trade-off between benefit equality and benefit generosity in the design of public pension systems and a tendency for substitution between the scope of public and private pension provision.

Concluding remarks

The studies reviewed here exemplify the three different approaches to comparative analysis that were discussed in Section 4.3. The studies by Palme (1989) and Palme (1993) are rather pure examples of the quasi statistical approach. The studies by Pestieau (1992) and Delhausse et al. (1994) are strongly focussed on internal analyses based on the logic of accounting, while the study by Kohl (1992) combines aspects of a controlled comparison with internal analysis. It is characteristic that the studies using a purely external perspective have reached conclusions that differ quite radically from the studies where a purely internal perspective is the dominating style of analysis.

The descriptive studies have suggested that there is considerable variation in the composition and distribution of income among the elderly in different developed countries, but they have also shown – in particular the more recent studies, with the work by Whiteford and Kennedy (1995) as the most elaborate example – that the results of cross-national comparisons can be strongly influenced by specific methodological choices. Valid description is a critical prerequisite for valid explanation.

4.5 DESIGN AND HYPOTHESES

I shall try, in Part II of the study, to take advantage all three strategies to cope with problems of causal inference in comparative research: quasi statistical analysis, controlled comparison and supplementary internal analysis. Furthermore, I shall devote significant effort and space to the issues of measurement – in particular to the measurement of cross-national differences in income inequality among the retired – the topic of Chapter 6.

The comparative analysis of Part II is based on a sample of nine countries: Australia, Canada, Denmark, Germany (the Federal Republic before unification with the former DDR), the Netherlands, Norway, Sweden, the UK and the US.

The countries have been selected with a view to secure substantial variation in the treatment variable: the character of the respective public pension systems. On the other hand, the sample is of course restricted to countries that can be characterized as highly developed political economies, and the most important practical criteria has been the availability of (presumably) reliable and comparable data-sets in the LIS databank.[188]

Despite the very fundamental similarities that do exist across these nine country cases (democracies with highly developed market economies), it is not difficult to point out important differences in political, economic, social and demographic variables. The full nine-country sample does not by any means satisfy the ideals of a most similar systems design. The problem of controlling for alternative explanatory factors must be addressed either by the use of (quasi-)statistical techniques or by breaking the sample down into more homogeneous subgroups.

For the purpose of controlled comparisons, the sample does contain at least one highly attractive sub-sample – namely, the three Scandinavian countries. It is generally recognized that Denmark, Norway and Sweden form a group of relatively similar macro units. They are small countries with a culturally and ethnically homogeneous population, post-industrialized economies with a large public sector employment, a highly unionized workforce, a relatively compressed wage structure, high female labor force participation, "modernized" family relations, etc. These three countries have even shared a rather similar history of public pension policy (from the 1930s and onwards) with a traditional emphasis on universal minimum provision. Nevertheless, as I shall hasten to emphasize once again, although it is difficult to think of a more ideal group of "similar" country cases, pertinent differences could very well exist, which would bias the results of a simple comparison of outcomes.

The remaining six countries do not form equally convincing groupings of "similar" country cases. However, I shall tentatively speak of a group of European countries consisting of Germany, the Netherlands and the UK, and also of a group of non-European OECD countries with Australia, Canada and the US.

Both in quasi statistical analyses based on the full nine-country sample and in a controlled comparison of the three Scandinavian countries, Denmark is a strategically important case. Unlike her Scandinavian neighbors, Denmark failed to introduce a second tier of earnings related social insurance pensions in the 1950s and 1960s, and has instead remained faithful to the traditional Scandinavian model of flat-rate minimum protection. The Danish exceptionalism on this point provides us with an interesting natural experiment to contrast with the situation in other countries, and in particular with the situation in the other Scandinavian countries. Information about the income distribution among Danish old age pensioners should be highly valuable for an evaluation of the main hypothesis of the present thesis.

---

[188] Since I analyze variation in the income packaging among retirees and the contribution made by different income components, it has been necessary to include only countries where a sufficiently detailed break-down of total disposable income can in fact be achieved. For instance, in some of the LIS data-sets all income figures are net of taxes, and hence no estimate of gross income or of taxes paid can be made.

Micro-data for Denmark have only fairly recently (autumn 1994) become available in LIS, and none of the existing studies (descriptive or analytical) that were mentioned in the previous section,[189] have included the case of Denmark. The very fact that Denmark is included in the present study will ensure that the main hypothesis is subject to a much stronger test than was provided in the studies by Palme (1989 and 1993) and Kohl (1992).

Given the inherent limitations of both quasi statistical analyses based on the full nine-country sample and of more controlled comparisons, considerable emphasis will be put on internal analyses of the way income packages of retired households are composed in each country and on the contribution made to overall inequality by different income sources. Below I shall restate a number of auxiliary hypotheses about these more specific mechanisms, which will be confronted with the available empirical evidence in Chapter 5 and Chapter 7 of Part II.

Definitions and demarcations of the micro-data used in Part II

Throughout the analysis of LIS data, I follow mainstream practice concerning the unit of analysis and the concept of income. The unit of analysis is individuals, and their income is always measured and evaluated in terms of the total household income, divided by a factor (an equivalence scale) to adjust for different household sizes.[190] I use the so-called LIS equivalence scale as the default choice in most of the analysis in Part II, but occasionally alternative scales will be applied in order to test the sensitivity of the results obtained.[191]

It is in line with mainstream practice to measure the economic well-being of individuals as if it were a simple function of the total economic situation of the household to which he or she belongs. Of course, the implicit assumption that household members share their resources equally, or that any intra-household inequalities are irrelevant for the overall measurement of inequality, is not entirely satisfactory. However, I find that the most convenient alternative approach, to analyze the distribution of personal income while completely ignoring the household context, would involve even more unrealistic assumptions about the sources of individual welfare and the allocation of resources within households.[192]

The household/family definitions differ to a considerable extent between countries as represented in the LIS material. For some countries one is given the choice between families and households as units of analysis – the difference being that families belonging to multi-family households are treated as separate units in the former while they are kept together in the latter case. For those country surveys that do offer a choice, I decided to use the family option, which implies that the pooling of resources within households is restricted to members of the same family. This decision is based on considerations of comparability rather than theoretical preferences. In some country surveys, notably the Swedish, the units of observation are defined very strictly in terms of the nuclear family.[193]

---

[189] Except for Hauser (1997).

[190] Technically, this is achieved by using household level information while weighting each household according the number of household members (see for instance O'Higgins et al., 1990; and Ringen and Uusitalo, 1992; Atkinson et al., 1995).

[191] The LIS scale assigns a weight of one to the first household member and a weight of 0.5 for each subsequent household member. This is a middle-of-the-road choice between scales assuming large economies of scale and scales approaching a per-capita weighting (see Buhman et al., 1988). The issue of equivalence scales is discussed more in detail in Appendix I.

[192] The intra-household distribution of income is a rapidly expanding area of research – see for instance Jenkins, (1990); Sutherland (1996).

I have made two choices with respect to the population under study that differ somewhat from the previous descriptive and analytical studies in the field. First, the population selected for this study, the "pensioners", are defined as individuals belonging to households in which the household head has reached 65 *and* for which earnings (wages, salaries and self-employment income) constitute less than 1/3 of total household income.[194] The primary motive for this additional criterion is to clean out the effect of different effective retirement ages in the respective country cases from the picture of income inequality among those who have made the transition to retirement (for a suggestion in this direction see Achdut and Tamir, 1990).[195]

I have also decided to further exclude the very old where the household head has reached the age of 80 years or more. There are a number of reasons for this: First of all, it is a way to limit the possible influence of differences in mortality patterns that are likely to exist between countries (see Chapter 8 and 9 below). Secondly, the exclusion of the very elderly will prevent possible differences in the sampling procedures from adding a serious bias to the analysis. I am not confident that the country data-sets, based as they are on radically different methods for data collection (public register data versus household surveys), are equally liable to include all categories of the very elderly population. As shown by McIsaac and Wilkinson (1995), response rates to income surveys appear to be systematically linked with income and health status, and the lower the response rate for a particular group the larger the potential bias from systematic sample selection.[196] Finally, there are some clear analytical advantages connected with the imposition of an upper limit to the age of the cohorts that will enter the analysis. The very elderly birth cohorts will often have lived most of their active life under a type of pension regime that differs strongly from the experience of their somewhat younger "colleagues". During the first three postwar decades, the public pension systems in many OECD countries were radically reformed, and the systems have not everywhere reached complete maturation. Hence, the broader the cohort span chosen for analysis the more difficult it is to characterize precisely the relevant pension system, and the more the observed income distribution will reflect processes of maturation rather than a steady-state outcome of the contemporary system. It should be recognized, however, that this choice also involves serious costs, primarily in terms of reduced sample sizes.

Hence, the samples used in the following analyses include only individuals that belong to households where the household head is between 65 and 80 years of age, and where earnings constitute a minor share of total household income.

---

[193] In the Swedish data only married (or cohabiting) couples and parents and their dependent children under 18 are considered to belong to the same unit. People who live together without fulfilling these criteria are treated as belonging to separate families/households.

[194] In LIS the household head is taken to be the (eldest) adult male if present, and in the absence of an adult male, the (eldest) adult female.

[195] The specific limit chosen here (1/3) is of course to some extent arbitrary. It is meant to strike a compromise between two concerns: on the one hand to exclude households in which either the head or the spouse are still participating full time in the ordinary labor market, and on the other hand to include households in which members continue a certain economic activity after their withdrawal from standard participation in the labor market.

[196] Needless to say, standard weighting procedures based on age and sex will not solve this problem.

Restatement of hypotheses

As suggested in the introductory chapter, a main source of inspiration for the present study is policy debates that took place in the Scandinavian countries and in the UK in the 1950s and 1960s, concerning the possible rationale for adding a second tier of earnings related social insurance pensions on top of the existing flat-rate minimum pensions. Contemporary advocates of these reform proposals often argued that such a two-tier system with a certain built-in differentiation according to pre-retirement income levels would, at the end of the day, produce less income inequality among the retired than the existing flat-rate schemes that were increasingly being supplemented with occupational pension schemes for the more privileged strata of the workforce. Similar – egalitarian – arguments in favor of income graduation are often voiced by present-day defenders of these kinds of systems – both in the countries where they were implemented and in countries where they were not.

Among the countries covered by the present study, Sweden and Norway did introduce such second tier schemes in the 1950s and 1960s, while similarly ambitious reform-proposals were defeated or abandoned in Denmark and the UK.[197]

Taking these arguments as a point of departure, one can formulate two very specific propositions about the degree of inequality prevailing among old age pensioners in these four countries. The propositions refer to the late 1980s, where the relevant pension reforms can be supposed to have taken (almost) full effect:

- The degree of income inequality prevailing among Swedish and Norwegian old age pensioners today is lower than it would have been if a generous second tier of earnings related public pensions had not been introduced in the 1950s/1960s.
- The degree of income inequality prevailing among Danish and British old age pensioners today is higher than it would have been if a generous second tier of earnings related public pensions had been introduced in the 1950s/1960s.

In each case, the counterfactual situation needs to be specified more precisely in order for the hypotheses to become meaningful. What exactly is the counterfactual institutional arrangement against which the actual development in each case is compared? What developments in the quality of minimum protection should we assume to have taken place in Sweden and Norway, if a second tier of earnings related pensions had not (for some reason) been introduced? What assumptions should we make about developments in the quality of minimum protection in Denmark and the UK, if the early proposals for second-tier reforms had in fact been implemented? One possibility is to take the institutional arrangement actually found in a different country as a specification of the counterfactual treatment. This points to an important role for a comparative perspective that is prior to any attempt at causal inference, simply as an aid to the formulation of precise and meaningful counterfactual questions vis-à-vis each individual country case (Mitchell and Castles, 1992).

Even if precisely stated, however, these are of course counterfactual hypotheses that can never be tested directly. Still, I find it useful to formulate them explicitly. I would argue that the two propositions are logical implications (at least in terms of expected outcomes) of any general (causal) claim that such two-tier systems have "equalizing effects". Following the Holland-Rubin model of causal analysis, a general effect on income inequality in retirement of a two-tier public pension system (vis-à-vis a system concentrated on minimum provision) is defined as the average difference in outcomes associated with these alternative (and for a large part counterfactual) treatments across the relevant universe of country cases.

---

[197] In the UK modest reforms in this direction were in fact carried out. The most important was the introduction of SERPS in 1978 (see O'Higgins, 1986; Hannah, 1986 and Baldwin, 1990).

Although each of these preliminary hypotheses are impossible to test by themselves, they can be tied to a hypothesis about a more general causal mechanism that remains constant across a universe of cases (i.e., invoking the Unit Homogeneity assumption), and the presence of such a general mechanism is in principle testable. This leads us to the more general proposition that motivates the present study:

> *H1: A public pension system that combines minimum provision with a second tier of earnings related social insurance pensions will generally produce lower levels of income inequality among each generation of old age pensioners than will a public pension system based on flat-rate or means-tested benefits only.*[198]

Put in the terminology that was developed in the last section of Chapter 3: A certain mixture of flat-rate and earnings related benefits – a compromise between "Beveridge" and "Bismarck" – is optimal with respect to the goal of minimizing income inequality in retirement.[199] One of the essential mechanisms behind this general hypothesis is a presumed trade-off between generosity and equality in the distribution of public pensions. A change in the structure of benefits towards the Bismarckian pole should in general allow average benefit levels to be raised (see the discussion in Section 3.3). An extremely optimistic version of this notion of a trade-off between equality and generosity would imply that the introduction of an earnings related second tier does not infringe on the possibilities to maintain (or improve) the existing quality of minimum provision.

However, this general hypothesis needs to be operationalized before it can be confronted with data that are available for the nine country cases. As discussed in Section 5.2 below, variation in contemporary pension systems across the OECD countries does not fit easily into the clear-cut dichotomy presumed in H1. Instead, it will be argued, it is possible to conceptualize the treatment variable in terms of the joint distribution of two indices of institutional variation in public pension provision: "Benefit Level", representing the generosity aspect and "Benefit Range", representing the (in-)equality aspect.[200] I suggest that the general hypothesis can be operationalized in terms of expectations concerning the relationship across the nine countries between Benefit Level and Benefit Range on the one hand and inequality in the distribution of total disposable income among the retired on the other:

---

[198] This proposition is intended to take into consideration the (varying) economic and political constraints that define the limits of a feasible pension policy in each country. If an exact copy of the Danish pension system – with its comparatively high level of minimum provision – had simply been implemented in the US, it would undoubtedly have led to a substantial reduction in income inequality among the retired in this country. However, such a thought experiment is not particularly interesting, as it does not take into consideration the highly plausible proposition that the US faces a rather different possibility frontier in the trade-off between "Beveridge" and "Bismarck" from that of Denmark- see the discussion in Section 3.3.

[199] Of course, the general idea of an optimal mixture of flat-rate and earnings related benefits also implies that a complete reliance on social insurance pensions (without a universal minimum guarantee) will be sub-optimal and associated with higher levels of income inequality in retirement.

[200] As described in Chapter 5.2 below, Benefit Level is a weighted average of three (after-tax) benefit ratios calculated for newly retired pensioners in 1985: minimum, standard and maximum benefits divided by the net average wage of an industrial worker. Benefit Range measures the distance between minimum and maximum benefits.

> *H1.1: It is expected that the degree of inequality found among the retired will show a strong negative correlation with the scores on Benefit Level (the generosity of public pensions), despite a presumed tendency for Benefit Level to be positively associated with Benefit Range (the degree of dispersion allowed in the distribution of public pensions).*
>
> *H1.2: It is expected that the degree of inequality found among the retired will show a modest negative correlation with Benefit Range, despite the fact that the dispersion of public pension benefits will necessarily be positively related to Benefit Range.*

It is also possible to derive a relatively clear-cut expectation concerning the more qualitatively oriented comparison among the three Scandinavian countries:

> *H1.3: It is expected that the degree of income inequality found among Danish old age pensioners will be significantly higher than the degree of inequality prevailing among old age pensioners in Norway and Sweden.*

These hypotheses concerning the final distribution of income among old age pensioners are central to the study. However, it is also possible to specify a set of auxiliary hypotheses referring to the more specific macro-level mechanisms that were discussed in Chapter 3. Each of the following four auxiliary hypotheses can and will be tested separately in the comparative analysis of Part II:

> *A.1 Private sources of retirement income should be strongly concentrated in all the country cases – and far more strongly than the distribution of income among the economically active population.*
>
> *A.2 According to the hypothesis about a trade-off between equality and generosity in the distribution of public pension, one should expect to find a strong positive correlation between Benefit Level and Benefit Range across the nine country cases.*
>
> *A.3 According to the hypothesis about substitution between public and private retirement provision, the scope of private retirement provision should show a negative correlation with the relative generosity of public pensions.*
>
> *A.4 The crowding-out of private income sources should not be associated with a tendency for increased concentration among well-off segments of the pensioner population; i.e., the degree of concentration of private income sources should not increase significantly with the generosity of public pension systems and hence with the dominance of public pensions in the income packages of retired households.*

Finally, let me formulate a set of hypotheses for the analysis of longitudinal data on the income distribution among Danish old age pensioners in Part III of the thesis.

The role of Part III within the larger framework of the thesis is to refine and supplement the measurement of inequality that has been done in Part II based on simple cross-sectional data, and to investigate important micro-level mechanisms that are assumed to influence the way income inequality is structured among the pensioner population – in particular in a pension system like the Danish one, where it is assumed that the old age pensioners rely relatively heavily on private sources of income provision.

Chapter 8 explores the implications of a more refined measurement of within-cohort income inequality among Danish retirees – taking account of between-cohort income differentials, income mobility and mortality.

> *B.1 Since younger generations of old age pensioners in Denmark are entitled to the same flat-rate/income tested benefits as their older contemporaries, it is expected that between-cohort income differentials will be relatively small among Danish old age pensioners, and hence that such differentials do not account for much of the cross-sectional picture of inequality*
>
> *B.2 It is expected that intra-cohort inequalities among Danish retirees will tend to be particularly strong in the early years of retirement and taper off with the aging of the cohort.*[201]
>
> *B.3 It is expected that the picture of income inequality found among Danish old age pensioners will only be moderately affected by an extension of the accounting period and a control for earnings related variation in mortality rates.*

Chapter 9 is concerned with an analysis of processes that shape the intra-cohort income distribution over the retirement phase. As discussed in Chapter 3, one could expect public and private income components to show a very different performance with respect to two important risks in retirement: longevity and widowhood. More concretely, it was argued that private income sources can be expected to provide little protection against such risks and that this (presumed) characteristic has significant in-egalitarian implications.

> *B.4 It is expected that individual pensioners in Denmark will experience a significant tendency for income levels to decline over retirement, and that this tendency will involve private income components in particular.*
>
> *B.5 It is expected that Danish female pensioners will experience a significant drop in income standards at the death of their spouse, and that this drop will primarily be triggered by a drop in income from private sources.*

---

[201] The rationale for this hypothesis is related to hypothesis B.4 below. In the Danish context, with flat-rate/means-tested public pensions, overall income inequality will be driven by the distribution of private income sources and the tendency for these income sources to be concentrated among the well-off segments. However, if private income components show a strong tendency to decrease with the duration of retirement, this source of inequality will decrease in strength with the aging of the cohort.

PART II:

COMPARATIVE ANALYSIS

CHAPTER 5

INSTITUTIONAL VARIATION AND INCOME PACKAGING

5.1 INTRODUCTION

The comparative analysis in this second part of the study is organized in three chapters. The present chapter is focussed on a description of cross-national variation in the primary *independent variable* – institutional characteristics of public pension systems – and a discussion of the relationship between the scope of public and private income provision in retirement. Chapter 6 is devoted to a study of variation in the ultimate *dependent variable*, the degree and pattern of income inequality among the retired, while Chapter 7 links the two together in a discussion of the causal inferences that can be made.

Hence, the purpose of this first chapter of Part II is to provide a more systematic (parsimonious) institutional description of the retirement systems in the nine country cases, and to combine the purely institutional information about the public pension systems with information on variation in aggregate income conditions and income packages of pensioner households, obtained from the Luxembourg Income Study micro-data.

The chapter is organized as follows. In Section 5.2 I discuss and use institutional information on the respective national pension systems – obtained from the so-called SCIP data files – to develop ordinal measures of the generosity ("Benefit Level") and the distributive profile ("Benefit Range") of benefits provided for old age pensioners. These two measures will serve as the primary independent variables in the remaining part of this chapter and later again in Chapter 7. Section 5.2 also addresses the first main analytical question of the present study, namely the potential existence of a trade-off between benefit generosity and benefit equality (the negative of Benefit Range) in public pension provision.

Section 5.3 embarks on the presentation of results from analyses of the LIS micro-data. It focuses on variation in the composition of income packages across the nine country cases, and is mainly descriptive in orientation. The relative significance of different income sources in the income package of old age pensioners can be viewed from an aggregate as well as from an individual perspective. I explore both perspectives, and I also look at the income packages of specific subgroups of the pensioner population.

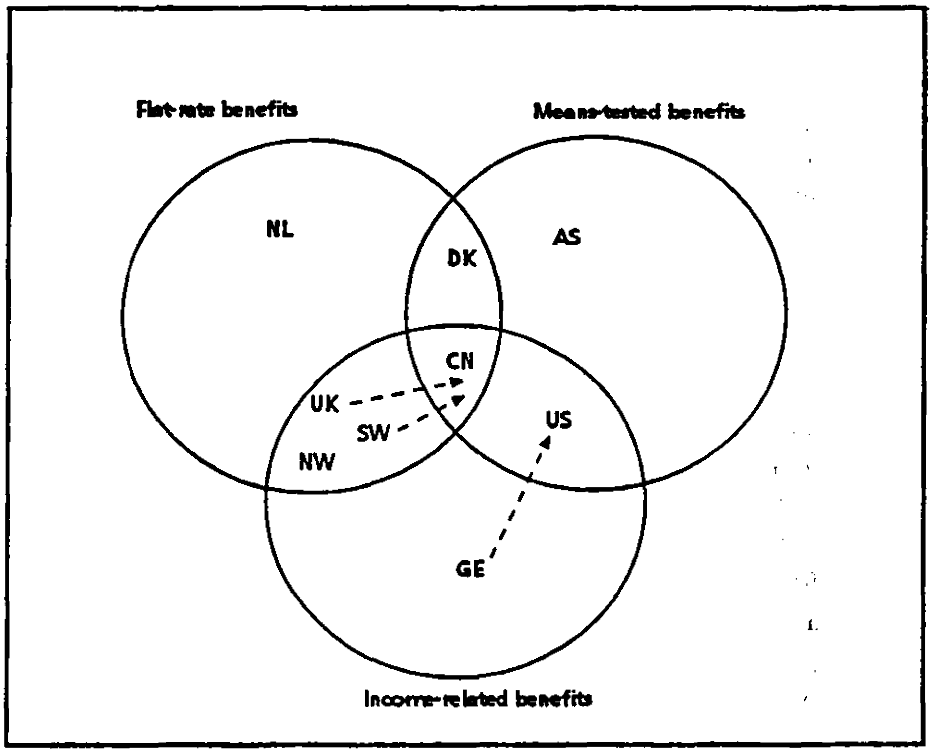
Finally, Section 5.4 investigates the pertinent hypothesis about substitution between public and private income provision in retirement. Do the more generous public pension systems tend to crowd public income sources from the income packages of retired individuals/households? The findings presented in the chapter are briefly summarized in the concluding section.

5.2 SUMMARIZING INSTITUTIONAL VARIATION: BENEFIT LEVEL AND BENEFIT RANGE

Contemporary pension systems within the OECD area show considerable variation, and hence they should provide rich material for evaluating the outcome of different policy responses to the problem of income security in old age. However, as I have argued in Chapter 2.4, many national pension systems display a rather complicated mixture of means-tested, flat-rate and income related benefit components. Although there are substantial differences in the way different countries have chosen to approach the problem of income provision in retirement, pure systems are rare, and this complicates the task of making inferences about the outcome of particular institutional choices. The natural experiments provided by the available set of public pension systems are not ideal for our analytical purposes.

A tentative classification of the nine country cases in terms of the particular mixture of transfer instruments is presented in Graph 5.1 below.[202]

Graph 5.1. Classification of the national pension systems according to the mixture of transfer instruments employed in each of the nine country cases.



Six countries (Canada, Germany, Norway, Sweden, the UK and the US) employ income related social insurance benefits as part of their public pension systems, while this type of scheme is absent in the three remaining countries (Denmark,[203] Australia and the Netherlands). Flat-rate, universal benefits are granted in a different set of six countries

---

[202] See also Table 2.1 in Chapter 2.

[203] I disregard an obligatory employment-related pension scheme in Denmark (ATP), since it is extremely modest and since benefits are flat-rate rather than earnings related.

(Canada, Denmark, the Netherlands, Norway, Sweden and the UK), while no universal minimum pension is offered in three countries (Australia, Germany and the US). Finally, means-tested benefits form a significant part of the public pension system, as narrowly defined, in four countries (Australia, Canada, Denmark and the US). It should be noted, however, that means-tested programs, organized alongside the public pension systems proper, play a significant role for income protection among the elderly in an additional group of three countries (Germany, Sweden and the UK). In both the UK and Germany social assistance schemes form an important part of the minimum income guarantee offered to the elderly. In Sweden a means-tested housing allowance program, targeted towards the elderly and administered by the municipalities, is relatively important (Håkansson, 1989, Hansen, 1997). The dotted lines drawn from these three country cases indicate how the classification would change if one were to adopt a more functional demarcation of the public institutions for retirement provision. Only in two countries, the Netherlands and Norway, are means-tested programs truly marginal as instruments used for income protection among the elderly.[204]

The pension systems in the Netherlands, Australia and Germany can be seen as rather pure examples of the universal, the means-tested and the social insurance approach, respectively, The remaining six countries are distributed across all possible combinations of two or three types of transfer instruments.

Some might argue at this point that the Netherlands and Australia have been mis-classified. The more or less complete coverage with mandated occupational pension schemes that has come to characterize both Australia and the Netherlands serves as a functional equivalent to public social insurance schemes. I would tend to agree that a system of mandated occupational pensions should under certain circumstances be classified as part of a public system, provided that coverage among the workforce is complete and that the private actors (companies, unions, individuals) are left with no discretionary powers to decide about the terms of coverage.[205] The systems of occupational pensions have moved in this direction both in the Netherlands and in Australia during the 1980s. In both countries, coverage with occupational pensions is coming close to 100 percent. In the Netherlands this has happened through a combination of contractual agreements backed by industry-wide mandating (The Dutch Ministry of Social Affairs, 1993; Lutjens, 1996), while in Australia it was decided in 1986 to mandate coverage with occupational pensions (Olsberg, 1995; Bateman and Piggot, 1997).

Fortunately, at least from an analytical point of view, the occupational pension systems in Australia and the Netherlands were far from fulfilling these criteria in the period relevant here: the decades prior to the late 1980. The pensioner population under study has been exposed to a pension system during their working life with less than full coverage with mandated and strictly regulated occupational pensions.

The pattern presented in Graph 5.1 provides a classificatory schema of contemporary pension systems, but the advantage of this schema are rather poor from an analytical point of view. Although it does offer an opportunity to replace "proper names of countries" with a kind of categorical variable, the reduction in complexity is modest. Nine country cases have been allocated into no less than seven (nominal) classes. What is more, these seven classes do not really capture more salient aspects of the respective public pension systems. The classification in Graph 5.1 fails to take account of cross-national variation in benefit levels and in the relative importance of the different benefit components that might be present in a particular national pension system. To take one example, the public pension system in Canada combines all three types of transfer instruments, but benefit levels are generally low and in particular the income related part, the Canadian Pension Plan/the Quebec Pension Plan (C/QPP), is very modest, as compared to the public superannuation schemes found in Norway and (in particular) Sweden (ATP).[206]

---

[204] Means-tested housing allowance programs for the elderly do exist in both countries, but they are rather insignificant, in particular in Norway (Hansen, 1997).

[205] The Finnish second-tier scheme that was introduced in the early 1960s conforms to these criteria (Kangas and Palme, 1992).

Benefit ratios

As an alternative I shall attempt to develop a more systematic description of the pattern of variation in the level and dispersion of public pension benefits across the nine country cases, using the so-called replacement rate or benefit-ratio approach.[207]

The question is, how do national pension systems differ with respect to the average level of benefits secured for the elderly, and with respect to the degree to which benefits are allowed to vary according to pre-retirement labor market participation and income differentials? Systems that are built on the social insurance approach will of course allow income differentials from the pre-retirement phase to be reproduced to some extent in the distribution of benefits, while this will not be the case for systems that rely exclusively on flat-rate or means-tested benefits. The average level of benefits (however measured) secured for the elderly can also be expected to differ across countries.

The level of benefits secured by a public pension system is logically separate from the issue of benefit structure, but it is one of the important auxiliary hypotheses of the present study that there should be a tendency for systems providing flat-rate or means-tested benefits to exhibit more modest levels of benefits as compared to (social) insurance based systems (see hypothesis A2 in Section 4.5).

The joint distribution, across the country cases, of these two dimensions of institutional variation, form the core independent variable of the present study. Below, I shall define two specific indices of institutional variation to summarize each of these important features of the public pension systems in the nine countries studied. The indices are labeled *Benefit Level* and *Benefit Range*, and they are both calculated on the basis of a set of *benefit ratios*, that have been obtained from an institutional database developed at the Swedish Institute for Social Research – the SCIP database.[208]

A benefit ratio measures the relative size of the retirement benefits that can be drawn by some typical case of an old age pensioner in comparison with typical wage levels in each respective country. For each country the relevant benefit formula is used to calculate the size of the pension benefit accruing for typical cases of old age pensioners. For each such case the timing of retirement, the labor market participation history, pre-retirement wage levels,[209] and the family situation have to be specified. The level of retirement benefits offered in the different countries could then be compared in absolute terms, for instance by translating them into

---

[206] See for instance Myles and Teichrow (1991) and Coward (1995).

[207] This approach has a long tradition in the comparative literature on old age pensions – see the discussion in Section 2.5 of the contributions by Myles (1989), Esping-Andersen (1990) and Palme (1990).

[208] I am indebted to Joakim Palme, who generously helped me to produce this and the following graphs based on information from the SCIP data.

[209] Ideally, you have to specify a time path of yearly earning levels over the pre-retirement years, but in practice this is most often solved by assuming that relative earnings levels have been constant over the entire labor market career.

OECD purchasing power parities (PPPs). However, in order to control for general differences in economic affluence across countries, it makes sense to translate these benefit levels into replacement or benefit ratios with reference to some country-specific income standard (see Whiteford (1995) for a discussion of these issues).[210]

In this case, the calculations refer to pensioners who retired in 1985 upon reaching the normal retirement age in 1985, and the reference income is taken to be the average wage of a production worker (APWW), as defined and measured by the OECD. I have decided to concentrate attention on the benefits and pre-retirement wages accruing to single pensioners/workers. The other family type, for which benefit ratios could have been calculated on the basis of information available in SCIP, is a one-earner married couple; i.e., a married couple where the female partner has never been active on the labor market. However, benefit ratios calculated for this family type are liable to exaggerate the degree of income replacement offered to married couples in some of the country cases, in particular in the Scandinavian countries that combine systems of universal minimum pensions with a high female labor force participation rate. Pension systems that provide some universal minimum benefits on an individual basis will tend to give relatively high replacement rates for the case of a pure one-earner couple: the numerator of the replacement ratio will include two pensions, while the denominator only one (male) earning. If, as is typically the case in Scandinavia, the female spouse has had some pre-retirement labor force participation, and hence used tp bring home earnings to supplement the husband's wage, the real replacement rate will often be very much lower. The denominator should in this case be adjusted to include the smaller or greater addition to total family earnings brought home by the wife while, typically, very little will happen to the numerator (the total pension benefits accruing to the couple). Even in countries like Norway and Sweden, where the wife starts to earn supplementary pension rights of her own once her income has exceeded a certain threshold, the average increment to the couple's pension entitlements will typically be relatively small.

Replacement rates and benefit ratios calculated for the case of one-earner couples give an inadequate impression of the actual variation in the relative generosity of contemporary national pension systems. Ideally, benefit ratios should be calculated for typical family types in each respective country, which today, at least in Scandinavia and North America, would mean something like a "1+½" earner couple.

Unfortunately, I do not have access to comparable data on the benefit levels and pre-retirement income levels enjoyed by typical cases of married couples, where the female spouse has had some labor market participation before retirement.[211] Therefore, I shall stick to calculations based on the single worker/pensioner type as a second-best solution. The replacement rate calculated for a single worker/pensioner will in most cases lie somewhere between the relatively high replacement rates offered to one-earner couples and the relatively low replacement rates typically offered to two-earner couples.

The benefit ratios are calculated for three ideal-typical "recipients", differentiated according to their pre-retirement income/labor market histories.

---

[210] See Kohl (1993), Whiteford and Kennedy (1995) and Hatland, Øverbye and Vigran (1993) for comparative studies of the level of minimum protection in old age, where absolute benefit levels are compared across countries.

[211] As discussed in Chapter 2, a strong argument could be made for also including information on the level of retirement benefits secured by the system for a surviving spouse.

- *Minimum pension.* The minimum level of benefit guaranteed to elderly citizens/residents, without pre-retirement earnings and social security contributions.[212] The minimum pension can be made up by a universal flat-rate retirement benefit and/or means-tested benefits.
- *Standard pension.* The pension benefit accruing to a newly retired worker with yearly earnings equal to APWW over 35 years of active labor market participation, prior to retirement in 1985.[213]
- *Maximum pension.* The maximum benefit paid out to a newly retired worker, with pre-retirement earnings levels at or above the social insurance ceiling and fulfilling the maximum contribution requirement prior to retirement in 1985.

In order to arrive at a common relative measure, the denominator is in each case the average wage of a production worker (single and without children).[214] The resulting picture of cross-national variation in benefit ratios is presented in Graph 5.2, with the first panel based on pre-tax figures and the second panel showing the, arguably more relevant, after-tax benefit ratios.

It should be noted that the figures presented in Graph 5.2 are based on a rather narrow and formal demarcation of the pension systems in each country. Benefits from social assistance schemes or housing allowance programs that might play an important role de facto in the overall system of income protection for the old are not included in the figures. I shall comment on some of the most important biases that could follow from this choice in the country-specific comments below.

Variation in benefit structures

Graph 5.2 shows the scores on these three benefit ratios for nine countries, summarizing a good amount of relevant quantitative information on the institutional design of the respective national pension systems.

In countries where public retirement provision is at least partly built on income related social insurance, the maximum pension should tend to be higher than the standard pension, and the standard pension higher than the minimum pension. Correspondingly, in countries offering a kind of minimum protection only, through flat-rate or means-tested benefits, all single pensioners retiring in 1985 should receive the same level of benefits irrespective of their prior labor market histories, and hence the three benefit ratios should be indistinguishable.

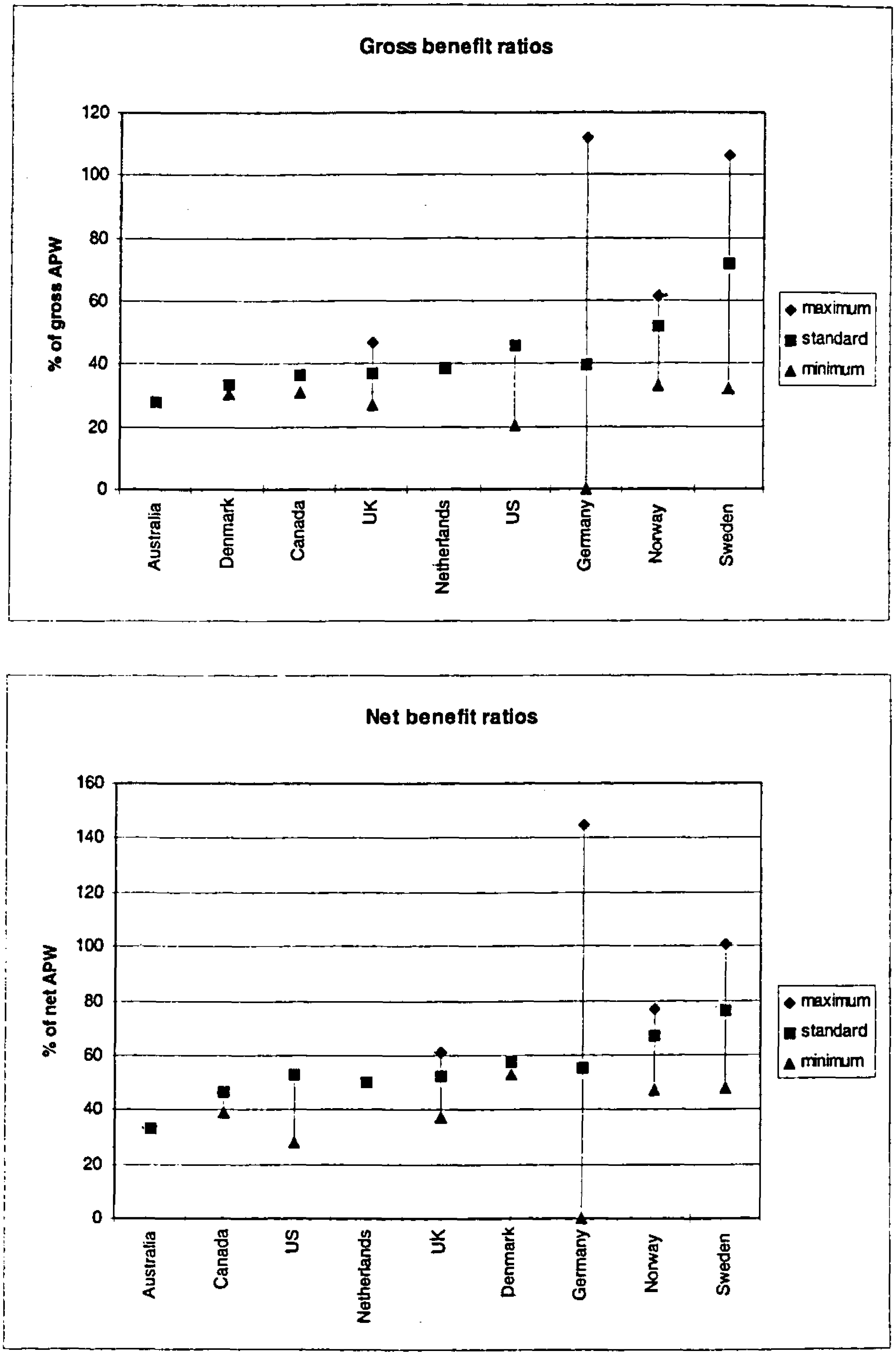
---

[212] The right to such a minimum benefit is seldomly truly universal. It is common (not the least among EU member states) to require that claimants have been resident in the country for 30 or 40 years, in order to receive the full minimum benefit. Here it is assumed that claimants fulfill such a test for residency.

[213] Note here that the figures recorded in SCIP are supposed to measure the actual benefit payable to a person retiring in 1985, and not to the hypothetical level of benefits that would be due after 35 years of active contributions to the scheme. In the cases where a social insurance scheme is younger than 35 years (inaugurated after 1950) or where the conditions for pension accrual have been seriously moderated, 35 years of active labor market participation will not imply 35 years of participation/contribution to the scheme.

[214] The use of a common denominator for each of the respective benefit situations distinguishes the benefit ratio approach from the more conventional use of replacement rates (see Myles, 1989). Note however that the "standard pension" ratio is in fact equivalent to the replacement rate for an average production worker.

Graph 5.2: Minimum, standard and maximum benefits for a single old age pensioner as percentage of the average wage of production workers (APWW). Before taxes (top panel) and after taxes (bottom panel). 1985.



Source: SCIP.

This pattern can be verified by inspecting Graph 5.2. The three benefit ratios coincide perfectly in Australia and the Netherlands, where public pension provision is based exclusively on either means-tested or universal benefits. Denmark comes very close to this situation, with a modest employment related (flat-rate) supplementary pension on top of a universal minimum guarantee based partly on flat-rate and partly on means-tested benefits.

In the remaining countries, social insurance schemes ensure that pensioners with a successful history of labor market participation will receive a higher level of benefits than the minimum benefit level guaranteed to all the resident elderly. The more heavy the reliance on income related social insurance and the higher the income ceiling of the social insurance scheme, the larger the distance between minimum, standard and maximum benefits; i.e., the larger the Benefit Range. The most extreme country in this direction is of course Germany where the public pension system does not operate with any universal minimum guarantee. Hence, in Germany, the minimum benefit ratio is recorded as being zero, and a relatively high social insurance income ceiling (combined with the absence of a maximum on the number of contribution years) helps to take the maximum benefit ratio far above the standard benefit ratio.

In Canada and the US, the standard and maximum benefit ratios coincide. The main reason in both cases is a relatively low social insurance income ceiling set just around the APWW level (Myles and Teichroew, 1991; Coward, 1995). The minimum benefit in the US is made up by benefits from the means-tested "Supplemented Security Income" (SSI), which are fixed at a level far below the standard benefit; i.e., the benefit secured for average production workers by the US social insurance scheme (OASDI). There is an incomplete take-up of this benefit among those eligible (Sieghenthaler, 1996), and this could be used as an argument against considering it as providing a minimum benefit comparable to minimum benefits in other countries, where the system ensures a more complete take-up.[215]

The very small difference between the minimum benefit and the standard/maximum benefit in Canada is due to the joint influence of three factors. First, the income related part of the system (the C/QPP schemes) is relatively modest, aiming to replace only 25 percent of pre-retirement earnings. Second, these schemes were introduced in 1965, and hence pensioners retiring in 1985 did not have a full contribution record. Finally, a significant part of the minimum guarantee in Canada takes the form of an income-tested benefit (GIS), with a steep tapering off in the income range above the minimum income. In other words, the tapering off of GIS serves as an implicit tax on benefits from the income related C/QPP schemes.

The benefit range appears to be somewhat wider in the UK, where the obligatory income related social insurance scheme (SERPS), which was introduced in 1978, takes the standard and maximum benefits somewhat above the minimum benefit. Like P/QPP in Canada, SERPS aims at replacing 25 percent of pre-retirement earnings. The level of minimum benefits in the UK would have appeared somewhat higher in Graph 5.2, if the means-tested scheme of "Income Support" had been taken into consideration. Pensioners who receive only the flat-rate minimum pension are entitled to Income Support, that can be seen to form part of a de facto minimum income guarantee (Kohl, 1993). Note that the inclusion, in Graph 5.2, of benefits in the form of Income Support would have produced a picture of a smaller difference between minimum and standard benefits, more in line with the situation in Canada.[216]

---

[215] As I argued in Chapter 2, neither the administrative classification of a transfer as a pension (like SSI in the US) or as social assistance (like in Germany), nor the mere presence of some kind of means-testing or income-testing constitute conclusive grounds for rejecting or including a certain benefit as a relevant part of the system of income protection in retirement.

The pension systems in Norway and Sweden combine universal flat-rate pensions with quite substantial income related superannuation schemes aiming to replace 45 percent (Norway) and 60 percent (Sweden) of pre-retirement earnings.[217] In both cases the minimum pensions consist of a, truly universal, Basic Benefit and a Supplementary Benefit that is targeted to individuals with insufficient earnings related social insurance benefits. The Supplementary Benefits have the effect of raising the minimum benefit level and of compressing the benefit structure, much like GIS in Canada. Unlike GIS and targeted minimum benefits in other countries, they are not subject to a general income-test.[218] The benefit range appears to be more compressed in Norway than in Sweden. There are mainly two reasons for this; 1) the rate of income replacement is higher in Sweden than in Norway, and 2) the Norwegian second tier system of income related pensions is younger (introduced in 1967 as compared to 1959 in Sweden). In 1985 the Norwegian system was still quite far from a state of maturation – in particular for high-income earners (Hatland, 1984). Finally, one should note that the picture for Sweden would have changed somewhat, if the rather important housing allowance program had been included in the calculation of benefit ratios. If benefits from this means-tested program had been included, the Swedish minimum benefit ratio would have been higher and the benefit range would have appeared to be more compressed (from below), since most of the housing allowance tapers off in the income range below the standard benefit (see Håkansson, 1989).

The general level of taxation and the extent of special treatment given to pensioners and pension income show strong variation across countries. The picture of benefit generosity could therefore change very significantly, depending on whether one looks at gross or net benefit ratios – especially in countries with high rates of taxation among the active population combined with a preferential treatment of pensioners and pension income.

Net benefit ratios are, arguably, much more relevant as measures of benefit generosity, and they are also more genuinely comparable across countries. As pointed out by Whiteford (1995), gross benefits ratios cannot really be compared between countries with a different reliance on employer contributions/pay-roll taxes, unless such contributions have been included in the gross wage figures.

A comparison of the two panels in Graph 5.2 shows how important the question of taxation is. The mean of the standard benefit ratio across the nine countries improves from 43 percent in gross terms to 55 percent, when calculated on disposable income figures. Denmark is the country where the shift from gross to net figures makes the most dramatic difference to the picture of overall benefit generosity. The replacement rate for the average production worker is 33 percent in terms of pre-tax income, while it improves to 56 percent when based on after-tax figures. Note also that the range between minimum and maximum benefits becomes significantly more narrow in terms of net figures – particularly in Sweden. A high level of fairly progressive taxation among Swedish pensioners explains that the benefit range becomes significantly more compressed when account is taken of the pattern of taxation.

---

[216] Like with SSI in the US, there is a problem of incomplete take-up of Income Support in the UK. The same arguments for and against including SSI as part of the public pension system in the US apply to Income Support in the UK.

[217] Only earnings in the range between a lower threshold, fixed at the level of the flat-rate basic pension and a social insurance ceiling well above average earnings levels, count in the benefit formulas.

[218] In practice, the difference to a minimum income guarantee as offered in the Canadian system might not be very great. The tapering off of these supplementary benefits creates an implicit taxation of earnings related pension rights. Their main effect is that participation in the earnings related scheme only becomes effective for earnings levels above the ranges affected by the tapering off of these conditional minimum benefits.

Two indices of institutional variation: Benefit Level and Benefit Range.

We can now define the two indices of institutional variation intended to measure respectively the generosity of public pension benefits (Benefit Level) and the degree to which the benefit plan allows for the reproduction of pre-retirement income differentials (Benefit Range). Both indices make use of net benefit ratios as shown in the lower panel of Graph 5.2.

Benefit Level is simply calculated as a weighted average of the minimum, standard and maximum benefit ratios, using the following weights: standard benefit=0.5, minimum and maximum benefits=0.25.

Benefit Range is calculated as the square root of the absolute difference between the minimum benefit and the maximum benefit provided by respective national pension systems.[219] Literally, it measures the range of variation allowed in the distribution of public pension benefits, and it will primarily reflect two central aspects of the respective pension systems: 1) the relative significance of flat-rate/means-tested benefits vis-à-vis income related benefits and 2) the relative height of the social insurance income ceiling.

It cannot be denied that the procedure chosen for the calculation of these two indices is partly arbitrary. The particular weights used in the calculation of Benefit Level do not have a strong substantive justification, and the same can be said about the transformation of absolute differences used in the calculation of the Benefit Range variable. This arbitrariness suggests that it might not be justified to see the two indices as providing more than an ordinal measurement of the respective dimensions of institutional variation.

Scores on Benefit Range are shown together with scores on Benefit Level in Table 5.1. Scores on Benefit Level vary from just above 33 percent in Australia to 75 percent in Sweden. Scores on Benefit Range vary from 0 (indicating perfectly egalitarian benefit structures) in Australia and the Netherlands to 12.03 in Germany.[220]

The trade-off between generosity and equality

Visual inspection of Graph 5.2 above should already have revealed a tendency for relative benefit levels to be highest in countries with social insurance schemes that allow benefits to vary according to pre-retirement income levels. Countries like Australia and Canada, with a highly "egalitarian" benefit structure, feature as the "meanest" countries in terms of the relative level of benefits. Countries like Germany, Norway and Sweden, with a strong earnings related component in the public pension systems, appear to provide the most generous benefits.

The pattern of association between these two institutional variables can be more systematically explored in Table 5.1. The correlation (Pearson's r) between Benefit Level and Benefit Range is 0.68, while the corresponding coefficient of rank-correlation (Spearman's r) is 0.71.

---

[219] This measure is roughly equivalent to the index of benefit equality that is employed by Esping-Andersen (1990:78) to describe one aspect of stratification in social transfers more generally – see the discussion in Section 2.5 above.

[220] It is, arguably, a weakness of this measure that it is insensitive to variation in the composition of minimum benefits – whether they are based on universal flat-rate benefits (like in the Netherlands) or on means-tested benefits (like in Australia).

This finding is consistent with the argument made in Chapter 3.3 and the hypothesis (A.2) in Chapter 4 about the existence of a trade-off between more egalitarian benefit structures and the average level of benefits secured for old age pensioners.

However, there are a number of countries whose scores are not entirely consistent with this general pattern, as can be seen from Graph 5.2 above and Table 5.1. Denmark and the Netherlands display relatively high (net) benefit levels, despite a strongly egalitarian benefit structure. Note, for instance, that Denmark scores higher on Benefit Level than both the US and the UK, where benefits are allowed to vary much more according to the prior labor market status of the recipient. Also, the US and Germany appear to be somewhat deviant cases – but in the opposite direction. Germany displays by far the highest degree of benefit dispersion, but the German pension system only ranks third in terms of Benefit Level. As I suggested in Chapter 3.3, such anomalies could be accounted for by assuming that some countries are characterized by a political economy with higher "potential for solidaristic pension provision", and that, in these cases, the trade-off is played out at higher level of benefit generosity. When Denmark is compared to the presumably fairly similar countries Norway and Sweden, the picture of a trade-off prevails. The same applies for a partial comparison of the Netherlands, UK and Germany, as well as for the remaining group of Australia, Canada and the US.

Table 5.1: Benefit Level and Benefit Range. Country scores and rankings. Bivariate correlations (Pearson's r) and rank-correlations (Spearman's r).

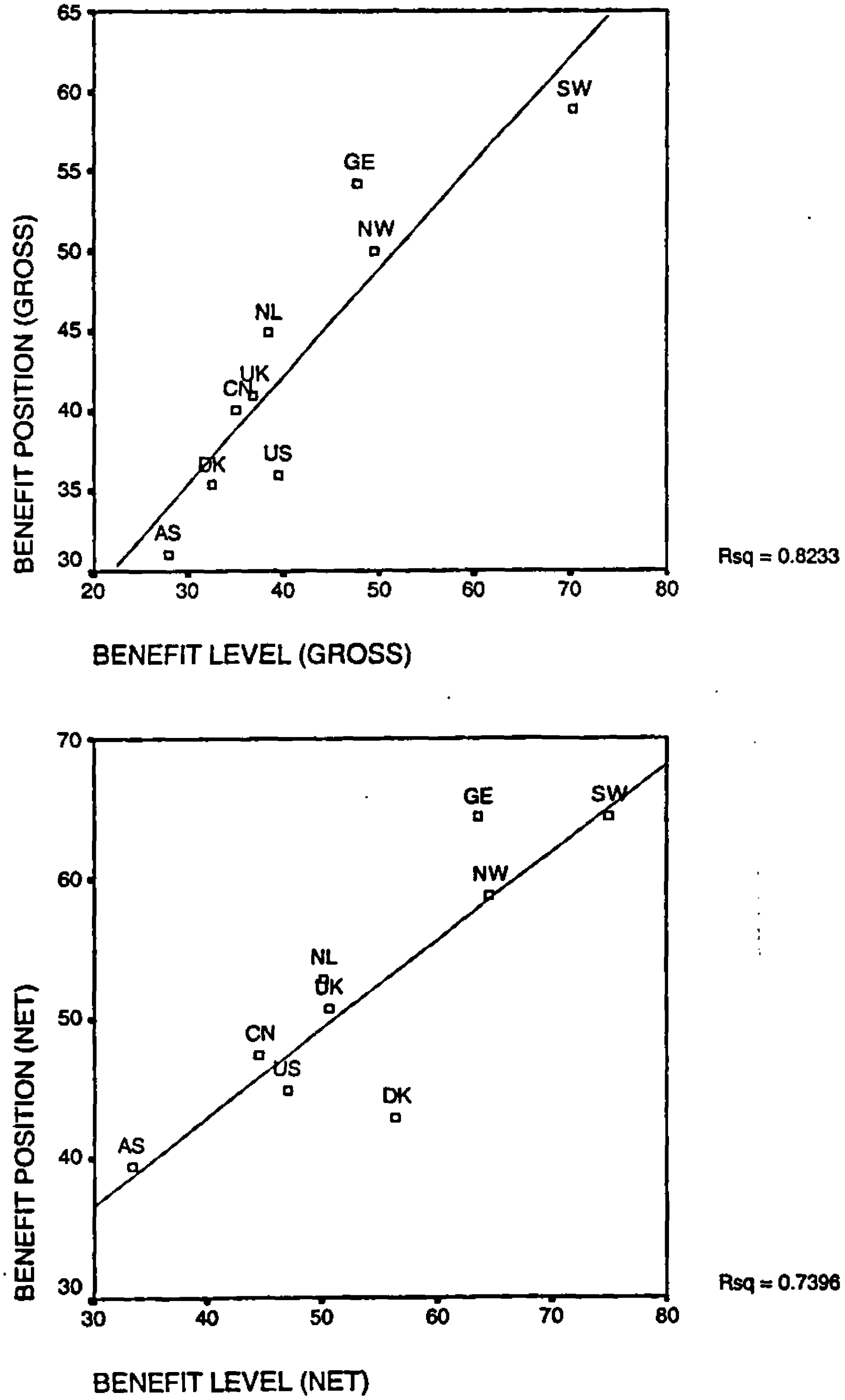
	Benefit Level		Benefit Range	
	Score	Rank	Score	Rank
Australia	33.3	9	0.00	8
Canada	44.5	8	2.70	6
Denmark	56.4	4	2.09	7
Germany	63.7	3	12.03	1
Netherlands	50.2	6	0.00	8
Norway	64.6	2	5.43	3
Sweden	75.1	1	7.28	2
UK	50.7	5	4.91	5
US	46.9	7	5.00	4
Correlation with Benefit Level			0.680	0.711

Source: SCIP

Agreement between institutional data and micro-data?

Before closing this section I shall anticipate the presentation in the following sections of material from the Luxembourg Income Study micro-data, in order to support the validity of these two variables of institutional variation. In his critique of replacement rates as measures of benefit generosity, Peter Whiteford (1995) points to serious discrepancies between standard replacement rate scores, on the one hand, and evidence from micro-data on the size and composition of household incomes on the other. Here I shall follow his lead and use information based on micro-data as a check on the validity of the two institutional variables.

Graph 5.3: Scatterplot of Benefit Level and Benefit Position. Average amount of public pensions received by old age pensioners, as percentage of gross income among the non-retired.[221]



Source: SCIP and LIS data-files.

---

[221] For Sweden the LIS figures have been adjusted to compensate for the fact that occupational pensions are recorded together with public pensions in the data-sets for these two countries. See the discussion in Section 5.3 below.

As Benefit Level is supposed to capture cross-national variation in the relative generosity of public pension benefits, one would expect variation on this variable to correspond roughly to observed variation in the relative level of public pension benefits received by old age pensioners. In countries that score high on Benefit Level, the average amount of public pension benefits received by old age pensioners should be high in comparison to average income levels recorded among the economically active population.

For each of the nine countries, I have calculated the average amount of public pension benefits received by old age pensioners as a percentage of the average level of income enjoyed by non-pensioners. In Graph 5.3 the country scores on the institutional variable (Benefit Level) are compared to the relative benefit positions of old age pensioners as recorded in the LIS data – using both before- and after-tax figures.[222]

It appears that the institutional and the micro-data are roughly in agreement. If we concentrate on the upper panel based on gross figures, the rank-correlation turns out to be reasonably high, 0.82. However, as can be seen from Graph 5.3, the correspondence is not perfect for all country cases. Germany is an outlier. The average level of public pensions received by the elderly in Germany is quite substantially higher than would be expected from the gross benefit ratios recorded in the SCIP data. Part of the explanation might lie with the rather arbitrary weighting procedure used to calculate the Benefit Level variable, where a weight of 0.25 is given to the zero score for Germany on the minimum benefit ratio.[223] It could also be that the criteria used for calculating the benefit ratios in SCIP assuming 35 years of active labor market participation are particularly unfavorable for Germany. A gross replacement rate for an APWW in the area of 40 percent, and a net replacement of 55 percent, are very much lower than the replacement rate figures that can be obtained from other data-sources (see for instance, Aldrich, 1982).

Old age pensioners in Australia, the US and Denmark appear to receive smaller average amounts of public pension benefits than could be expected given their respective (gross) benefit ratios. This has probably a rather straightforward explanation that does not threaten the validity of the benefit ratio figures. In all these countries a significant part of the income provision in retirement is founded on means-tested benefits. Means-tested benefits count for full in the benefit ratios, but only a larger or smaller fraction of old age pensioners actually receive them and in full amounts. Therefore, one will tend to find average benefit levels received well below the level guaranteed for those without alternative economic means at their disposal.

A rough test of the validity of the Benefit Range variable can be provided in a similar way. The Benefit Range is supposed to measure of the degree of inequality allowed to prevail in the benefit structure of a particular old age pension system. Hence, it should be expected to correspond roughly to the degree of concentration in the distribution of public retirement benefits among old age pensioners found in the LIS micro-data. The coefficient of concentration for public pensions that is measured along the Y-axis in Graph 5.4 is equivalent to the Gini index, except for the fact that the ranking of individuals is decided by total disposable income. A value of zero implies that the income component (public pensions) is evenly distributed across all income levels (in terms of total disposable income). The closer the value is to 1 (or -1) the more the income component is concentrated in the upper part (or the lower part) of the income distribution.

---

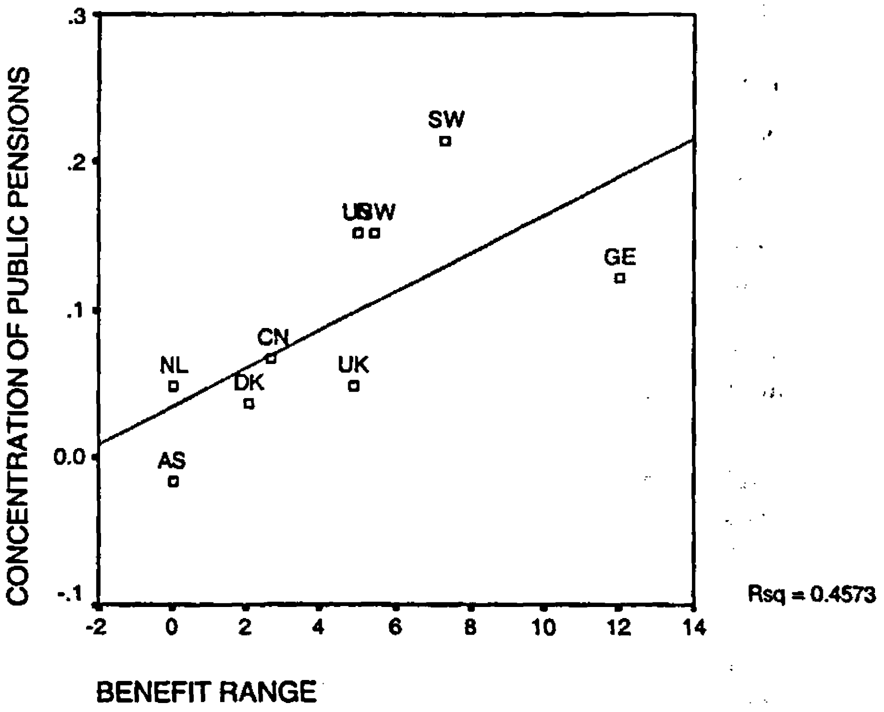
[222] The latter version of the graph is somewhat problematic. Ideally, one would need a detailed micro-simulation of the tax systems in each country, in order to calculate how much income tax the recipients would have paid on their public pension benefits if this had been the only source of income, and the marginal tax-rate paid on private supplements. The procedure used here is described in Section 5.4 below.

[223] The problem is not related to the questionable exclusion of the minimum income guarantee provided by social assistance in the calculation of the minimum benefit ratio. The (rather modest) amount of social assistance benefits received by German pensioners is registered separately in the LIS data and not included in the calculation of average public pension income.

As shown in Graph 5.4, the correlation between Benefit Range and the coefficient of concentration is weaker than one might have expected (Pearson's r=0.68).[224] However, closer inspection of Graph 5.4 reveals that in particular two countries, Germany and the UK, appear to perform inconsistently with respect to the expectation of a high degree of correlation. If these two countries are excluded from the material the correlation coefficient raises to 0.96.

The explanation for this anomaly can be found in peculiarities of the public pension systems and the way public pension benefits have been recorded in the micro-data for these two countries. In Germany the highly generous occupational pension schemes for civil servants (*Beamte*) are organized as a separate pillar outside the general social insurance scheme that covers the bulk of the workforce. Hence, former civil servants who tend to be found among the more privileged strata of the pensioner population, will be recorded with zero income from public pensions. Therefore, the German micro-data are not really comparable with the data from countries where occupational pension schemes for public sector employees are organized as supplements to the general public pension scheme.

Graph 5.4: Scatterplot of Benefit Range and coefficients of concentration for the distribtution of public pension benefits among old age pensioners.



Source: SCIP and LIS data-files.

Also the UK displays a surprisingly low level of benefit concentration, considering the fact that the Benefit Range registered for the UK is clearly higher than in both Denmark and Canada. The main explanation is similar to the one just outlined for Germany. Employees who participate in an occupational pension scheme can contract out of the general social insurance scheme, SERPS, under certain conditions. It is estimated that around a quarter of the UK workforce is contracted out of SERPS, and hence their occupational pension scheme will not only function as a supplement to SERPS but also as a replacement (Daykin, 1996). Thus, those who contract out of SERPS during their working life can generally be expected to end up as ranking among the more well-off pensioners, but they will receive only the rather low flat-rate public pension. Again it would have been preferable for the purpose of comparison, if the pension benefits payable under SERPS – if the pensioner had not contracted out – were recorded as part of the public pension rights, and only the actual increment to SERPS recorded as an occupational benefit.

---

[224] The figures on benefit concentration for Sweden are most likely somewhat inflated, since also occupational pensions are included in the variable used for the calculations.

One might also point out that, while both the Netherlands and Australia score zero on Benefit Range, they show different degrees of concentration in the distribution of public pension benefits. The benefit concentration in the Netherlands is moderately positive, while it is slightly to the negative side in Australia. This is obviously a consequence of the fact that minimum protection in Australia is based on means-tested benefits that should tend to be concentrated in the lower part of the income distribution. Minimum protection in the Netherlands, on the other hand, is based on universal benefits that at the outset should be expected to display a concentration around zero.[225] It is somewhat surprising that the concentration of benefits in Australia is not more strongly negative than what appears from the LIS data. The main reason is, as we shall see below, that the practice of means-testing in Australia only leads to the exclusion of a minority of well-off old age pensioners from receiving benefits.

I conclude that the institutional variables show a reasonable degree of correspondence with equivalent information obtained from the LIS micro-data. The joint distribution of the two variables, Benefit Level and Benefit Range, constitutes a theoretically relevant and empirically operational measurement of institutional variation in public pension provision across the nine country cases included in the study. The fact that the two variables can be interpreted as ordinal (if not cardinal) measures implies that a significant reduction in complexity has been achieved.

Finally, let me briefly point to a more general implication of the various arguments I have provided here, in an attempt to make sense of the apparent (minor) discrepancies between the two institutional indices and calculations based on the LIS micro-data. It cannot be taken for granted that calculations based on micro-data are necessarily ideal for representing the generosity of the respective national pension systems – unless, of course, one goes all the way to a full micro-simulation of the benefit schedule, the tax schedule, etc. of the respective systems. Whiteford's point (1995) that simple summary statistics based on micro-data sometimes appear to contradict the picture of cross-national variation emerging from the stylized calculation of replacement rates (and benefit ratios) could be turned both ways.

---

[225] The positive figure for the Netherlands and for Denmark might be explained by a number of factors, including the presence of people who do not receive full benefits because they do not meet the residency criteria, or disagreement between the implicit equivalence scale of these schemes with the equivalence scale used here.

5.3 INCOME PACKAGING

In the previous section, all attention was concentrated on measuring characteristics of the respective public pension systems. Obviously, old age pensioners will to a varying degree be able to draw on other income sources in addition to (or in rare cases, instead of) public pensions. I shall now turn to the LIS data in order to look at cross-national variation in the composition of total income received by old age pensioners. Throughout this section I let the total income received by old age pensioners sum to 100; i.e., attention will be focused on the relative size of different income components, while variation in the level of income received by the elderly will be totally ignored and left to be dealt with in Section 5.4 below.

It must be expected that the income received by old age pensioners in different countries will be characterized by a different mixture of income components. In the present context, I shall focus especially on cross-national variation in the public/private mix of income sources available to old age pensioners, i.e., the role played by public transfers vis-à-vis various private income components.

The concept of income packaging was elaborated by Rainwater et al. (1986) to capture the idea that claims to economic resources can be acquired in different arenas and from different sources, with politics (political rights), markets (exchange) and the family (care, altruism) the most clearly distinguishable arenas. Here I shall use the concept in a rather pragmatic sense, as a lead-in to describing variation in the interplay between different income sources in the provision for retirement in the nine country cases.

The LIS data files should in principle offer wide opportunities to investigate cross-national variation in the composition of income packages among retired individuals/households. However, there are a number of important ambiguities and inconsistencies in the way the income components are grouped and classified in the data-sets for different countries, and I shall try to deal with these in the following discussion.

In much of the analysis in the present and later chapters I shall employ a rough distinction between public and private income components, but in this section I start by presenting a finer breakdown of total gross income into the following five components:

- Public pensions
- Means-tested transfers
- Earnings
- Occupational pensions
- Income from capital

In addition I shall look at the scope of taxation among old age pensioners. It is possible to perceive taxes paid as a negative income component. Accordingly, the scope of taxation is an integrate part of the variation in the composition of total disposable income received by old age pensioners.

The issue of the relative importance of different income components can be approached on an aggregate as well as an individual level, with potentially very different results. In some of the existing comparative studies of the income situation of the elderly and old age pensioners, the choice of approach and its consequences is not explicitly discussed. Some use the individual approach (see for instance Kohl, 1992; and Smeeding et al., 1993), while others employ an aggregate approach (see Hedström and Ringen, 1990; and Achdut and Tamir, 1990; Pestieau, 1992).[226]

The two approaches address different questions. The aggregate approach is concerned with the following question: *How important is a certain income component for the total level (and distribution) of income received by the pensioner population as a whole?* Therefore, the amount of income from a certain source is summed over all individuals and divided by the total sum of income received by the population. This approach is highly relevant to the present study, as it is compatible with the methods used in Chapter 7 for evaluating the impact of each income component on the degree of inequality in total income.

The alternative, individual approach is probably more in line with the concept of income packaging as developed by Rainwater et al. (1986). It is intended to answer the question: *What is the typical balance between the various income components in the total income received among members of the relevant population?* According to this approach the ratio of each component in total income should be calculated for each individual and then averaged over all individuals in the sample.

The two approaches can produce very different results, in particular for income components that are highly concentrated in either the upper or the lower part of the overall income distribution. Income components that are more than proportionally concentrated among individuals with high total incomes will appear to be of minor importance according to the individual approach, while they can turn out to be important in the aggregate approach. The inverse is true for income components that are concentrated in the lower part of the income distribution. They could appear to be insignificant at the aggregate level, but play a rather substantial role according to the individual approach.[227]

In the following I shall present results based on both of these approaches. I shall also, as an extension to the individual approach to income packaging, look at the proportion of the pensioner population that is in fact in receipt of any income from the various sources, and I shall present calculations for particular subgroups.

Aggregate perspective

The division into different income components that can be achieved on the basis of the LIS data does not correspond entirely to the distinctions I have used so far and, more importantly, it is not always consistent across countries. For each of the nine country cases, Graph 5.5 shows the relative share of gross income among old age pensioners that is taken up by two categories of public transfers (public pensions and means-tested transfers) and three private income components (earnings, occupational pensions and income from capital).

As can be seen, public pensions is the single most important income source in all the nine countries. Public pensions take up at least 50 percent of gross income in all but one country, the US, where public pensions (OASDI) account for a relatively modest 45 percent of the total gross income received by old age pensioners.

Otherwise, Graph 5.5 demonstrates a high degree of cross-national variation in the share of public pensions. Old-age pensioners in Norway display the highest average share of public pensions in the mid-/late-1980s, with 74 percent. Sweden and Germany follow with a share of approximately 68 percent, Denmark with 60 percent, and the four remaining countries clustered with just above 50 percent.

---

[226] Only the study by Kohl (1992) contains an explicit treatment of the issue.

[227] The individual approach will produce the exact same results as the aggregate approach if each individual observation is weighted in proportion to the amount of total income he or she receives.

It should be noted here that in order to obtain comparable estimates for Sweden I have had to adjust the figures obtained from the LIS data-files. For this country, income from occupational pension schemes is recorded in the same variable as public pensions, and hence the separate contribution from these two components cannot be properly distinguished.[228]

As I shall discuss further below, Sweden has an extensive coverage with occupational pension schemes that aim to supplement the first and second tier of public pensions. In order to estimate the share taken up by public pensions proper and by occupational pensions, I have used figures presented by Kohl (1992), according to which occupational pensions were responsible for one-fifth of the total pension income received by elderly households in Sweden around 1980.

For the case of Germany, the figures presented in Graph 5.5 can be said to underestimate the role of public pensions. The problem is – once again – that public sector employees in Germany are fully served by a separate pillar of public sector occupational pensions. To count all income received from this separate scheme as occupational pensions produces an inflated picture of the role of occupational pensions (and a deflated picture of the role of public pensions) in comparisons with countries where similar schemes work as supplements to a general public pension system.[229] If only the true increment to the level of pension benefits that would have been accrued by public employees under the national pension scheme had been counted as occupational benefits, Germany is likely to have shown a share of public pensions that exceeds the levels found in Norway.

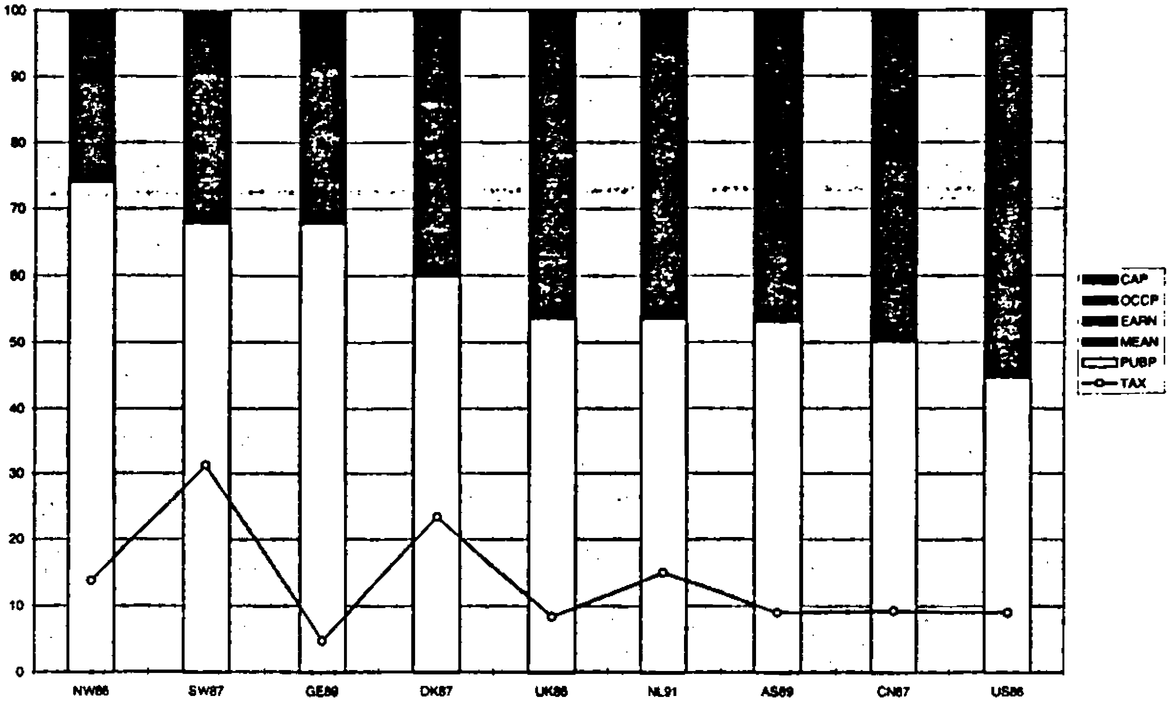
Means-tested transfers appear to play a fairly modest role in most countries – at least from the aggregate perspective. One should note here, however, that public pension benefits are generally means-tested in Australia and that a means-test also is applied to a significant part of the minimum pension in Denmark as well as in Canada. Even so, all benefits received from these three pension systems are classified as public pensions in the LIS data and in Graph 5.5. With these reservations in mind, means-tested supplementary transfers are relatively most significant in the UK, where they account for 7 percent of the total gross income received by old age pensioners. Denmark and Canada follow with 3 percent, and Sweden with 2 percent. In both Denmark and Sweden the main source is special housing allowance programs for old age pensioners, while the main contributor in Canada is social assistance. Considering the absence of a public minimum pension in Germany, the modest role played by social assistance as a source of income among the elderly is rather surprising.

---

[228] This point has passed unnoticed in a number of studies based on the LIS data, and hence the dominance of public pensions in Sweden has tended to be vastly overstated, with Kohl (1992) as a notable exception.

[229] A similar problem arises in the UK for those employees who were contracted out of SERPS, but here the potential scope of the bias is likely to be much smaller.

Graph 5.5: The share of different income components in the aggregate income package (gross income) of old age pensioners. Public pensions (PUBP), other means-tested transfers (MEAN), earnings and self-employment income (EARN), occupational pensions (OCCP), income from capital (CAPI) and income taxes paid (TAX).



Source: LIS data-files.

The role of earnings is also fairly modest and shows little variation across the samples – partly, of course, due to the criteria used in the selection of each country sample, according to which the share of earnings in total income was not allowed to exceed 33 percent. The share of earnings is highest in countries that are known to have comparatively high retirement ages: Norway with 5 percent, followed by the US and Canada with 4 percent. In the Continental European countries of Germany and the Netherlands earnings are truly marginal in the income packages of the elderly.

The two main private income sources are occupational pensions and income from capital/financial assets (the latter will in some countries include income from individual annuities). Occupational pensions account for 38 percent of the total income received by old age pensioners in the Netherlands, 25 percent in the UK and around 20 percent in Germany,[230] Denmark, Canada, the US and Sweden (18 percent). Occupational pensions take up a more modest share in Norway and Australia. In the case of Australia, one should note that most private sector occupational pension plans pay out lump-sums rather than annuities (Olsberg, 1995; Bateman and Piggot, 1997), and lump-sum payments are not recorded in the LIS income data. Lump-sum payments will only make themselves felt indirectly in the data if the money is invested in financial assets (or converted into a private annuity). The returns from such investments (or income from a life annuity) will be recorded in the last income category, income from capital.

---

[230] It should be kept in mind, though, that the data will tend to exaggerate the role of occupational pensions in the German case.

Income from capital/financial assets account for 34 percent of the income received by old age pensioners in Australia, 30 percent in the US and 23 percent of the income received by this group in Canada. Among the remaining six countries the share ranges from 14 percent in Denmark to 7 percent in the Netherlands.

Finally, Graph 5.5 illustrates how the level of taxation among old age pensioners shows very strong cross-national variation. The income taxes paid by Swedish old age pensioners amount to 31 percent of their total gross income. The income tax burden on pensioners is also relatively high in Denmark (23 percent), the Netherlands (15 percent) and Norway (14 percent). Old age pensioners pay between eight and 9 percent of their gross incomes in the UK, Australia, Canada and the US, while German old age pensioners hardly pay any income tax at all.

The aggregate figures presented so far are important because they tell about the potential for the various components to influence the degree of inequality found in disposable income in each of the country cases. In the country cases where private income components account for close to 50 percent of the total gross income received by old age pensioners, a presumed tendency for private components to be highly dispersed will make itself strongly felt in the distribution of total income. The interplay between the relative scope and the dispersion of each income component and its relationship to measured inequality in total disposable income will be systematically discussed and analyzed in Chapter 7.

Individual perspective

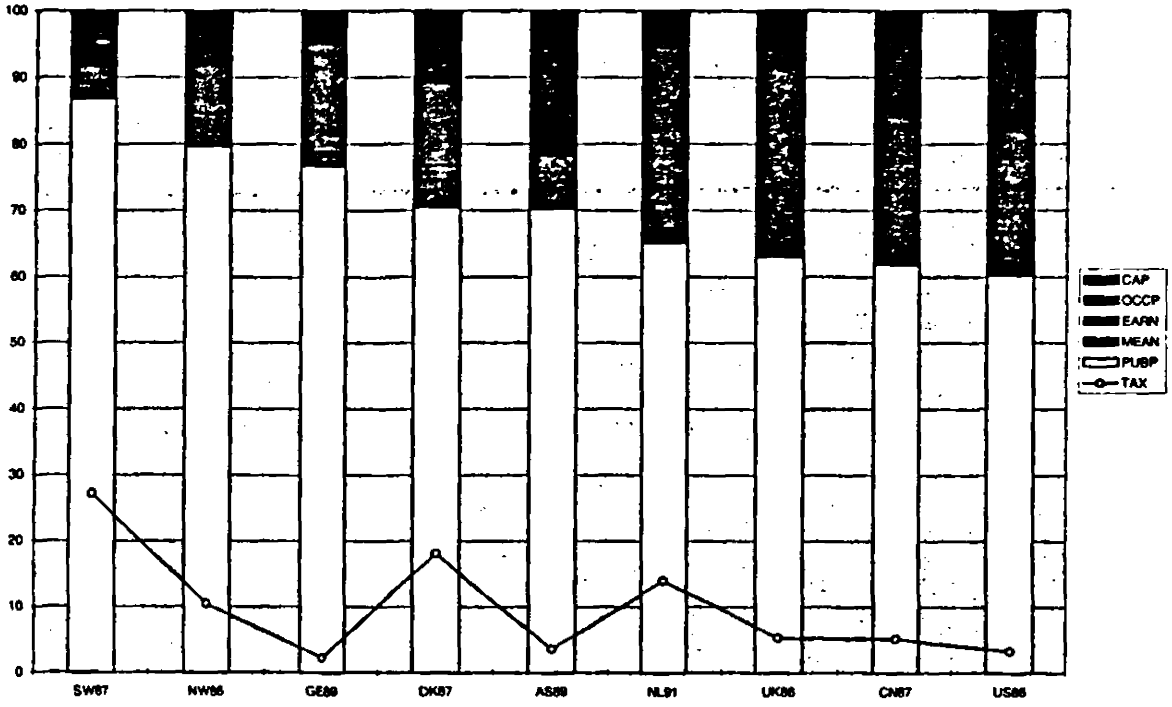
Turning now to the individual perspective, one would expect that public transfers will be more dominant in the typical income package of individual old age pensioners than they appeared to be at the aggregate level. The reason is that public pensions are likely to take up a larger share of the income packages of less well-off segments of the pensioner population. This expectation can be confirmed by inspecting Graph 5.6.

Unfortunately, the figures for Sweden presented in Graph 5.6 cannot be directly compared to the corresponding figures presented in Graph 5.5. It is impossible to make a similar adjustment to the mis-classifications of occupational pensions in the Swedish LIS data, as was done for the aggregate figures, and hence the figure for public pensions presented in Graph 5.6 includes also all income received from occupational pension schemes. Among the remaining eight countries, the share taken up by public transfers increases from an average of 57 percent to an average of 68 percent, when moving from aggregate to individual figures. The joint role of the three private income sources shrinks correspondingly.

The pattern of cross-national variation is roughly the same. Public transfers take up 64 percent of the typical income package of old age pensioners in the US, and they account for 81 percent in Norway. It is, nevertheless, noteworthy that even in the US the typical share of public pensions in the income packages of retired households is as high as 64 percent.

As could be expected, means-tested supplementary transfers appear to be less marginal from the perspective of individual income packages. They account for 10 percent of the typical income package in the UK, and 4 percent in both the US and in Denmark. On the other hand, they remain surprisingly modest in the typical income package of German pensioner households.

Graph 5.6: The typical share of different income components in the individual income package (gross income) of old age pensioners. Public pensions (PUBP), other means-tested transfers (MEAN), earnings and self-employment income (EARN), occupational pensions (OCCP), income from capital (CAPI) and income taxes paid (TAX).



Source: LIS data-files.

Private income components such as occupational pensions and income from capital take up smaller shares of the typical income packages because they tend to be concentrated in the upper part of the income distribution. Note also that the average income tax burden of old age pensioners is consistently and significantly lower than the tax burden on the pensioner population in general. The difference between the aggregate and the typical individual share is, however, fairly modest in Sweden (31 versus 27 percent), which suggests that the total tax burden among old age pensioners is not as highly concentrated in Sweden as in some of the other countries.[231]

It is also worth paying attention to the share of pensioners who actually receive any income from each of the different sources. Table 5.2 shows the share of old age pensioners who belong to households that are recorded with zero income from the various public and private sources.

One would expect that the receipt of public pensions is universal in the countries that were classified as providing universal minimum pensions in Graph 5.1 above, while countries without a universal public pension guarantee should exhibit some share of the pensioner population to be without public pension benefits. This is to some extent the case, but with a few curious anomalies.

Both in Norway and Denmark, a small minority of the sample is recorded with zero income from public pensions. One possible explanation for this phenomenon is that the official retirement age in both countries is 67. There could be a small group of people between 65 and 67 years of age who are not in receipt of public pensions and at the same time not sufficiently dependent on earnings to be excluded from the sample as non-retired. The figures might also include a group of immigrants who fail to meet the criteria of permanent residency to qualify for the minimum pension.[232]

---

[231] This is confirmed in the analysis presented in Chapter 7.

The share of old age pensioners who (live in households that) do not receive a public pension is surprisingly low in Germany. Despite the absence of a minimum guarantee in the German pension system, the system does achieve a high effective coverage among contemporary old age pensioner households. Of course the picture would be dramatically different if the analysis were done in terms of personal income. A large fraction of elderly married females do not personally receive any pension benefits, but are dependent on intra-family transfers and hence on pension benefits paid to their male spouses (Döring et al., 1994, Allmendinger et al., 1993; Daly, 1996).

Table 5.2: Share of old age pensioner households recorded with zero income from each of the five main sources and with zero income taxes paid.

	PUBP	MEAN	EARN	OCCP	CAP	TAX
SW87	0	78	76	100	8	2
NL91	0	73	96	18	40	1
GE89	4	97	92	59	16	70
NW86	2	76	69	58	38	21
US86	3	85	81	52	29	49
CN87	0	48	82	48	29	39
DK87	1	71	82	66	4	15
UK86	0	46	92	37	26	28
AS89	12	100	94	85	16	64

Source: LIS data-files.

Among these nine countries the lowest effective coverage with public pensions is found in Australia, with 12 percent of the pensioners living in households that are recorded with no income from the public pension system. The fact that this share is not higher illustrates how the system of means-testing in Australia is more directed towards excluding a minority of relatively well-off retirees, than towards seeking out and helping a poor minority (see Castles, 1985; Castles and Mitchell, 1991).

From Table 5.2 one should further note how widespread the receipt of at least some income from capital is among pensioner households in Denmark and Sweden,[233] and the wide effective coverage with income from occupational pensions found in the Netherlands and, to a smaller degree, the UK.

Income packages are likely to differ not only among countries but also across different subgroups of the pensioner population within each country. As a complement to the previous description of cross-national variation in income packaging, Table 5.3 shows the composition of gross income for four different subgroups of old age pensioners in each country. The first two subgroups are defined according the family/household type: single females and married couples.[234] The last two subgroups are defined according to the level of disposable income enjoyed by the individual, and here I have decided to focus attention on poorest fifth (the 1. quintile) and the richest fifth (the 5. quintile) of the pensioner population in each country. In Table 5.3 all private income components have been summed into one category (PRIV).

---

[232] It might be that the Danish and the Norwegian data are more liable to pick up such marginal groups because they are obtained from high quality public (tax) registers, as opposed to survey data.

[233] I suspect that the special nature of the LIS data-sets for the Scandinavian countries (public registers) could be at least partly responsible for these rather extreme figures, since the public tax-registers in Scandinavia tend to record even very small sums of income from capital.

[234] Numerically, these are by far the most important household types among old age pensioners in all countries.

One must, at the outset, expect that single females and the poorer segments of the pensioner population will be relatively more dependent on public pensions and means-tested benefits and less dependent on private income sources – as compared to the two other subgroups in each country.

The figures reported in Table 5.3 do confirm this expectation, in particular with respect to differences in the income packages of poorer and richer pensioners. There appear to be smaller systematic differences between single females and married couples in most of the countries. However, single females do appear to be more dependent on means-tested supplementary transfers in many countries. In the UK, for instance, single females receive 13 percent of their total income in the form of means-tested, supplementary benefits, while the corresponding figure is only 5 percent for married couples. Single females receive a smaller share of their total income from private sources than do married couples in all countries except for Sweden and Norway. In both Norway and Sweden, returns on financial assets is a relatively important source of income for the group of single females taken together. In Sweden, 11 percent of total gross income among single females stems from this source, while the corresponding figure for married couples is 7 percent. Most probably, this is to some extent a generational phenomenon (cohort effect) related to the incomplete maturation of the public pensions schemes in the two countries. The typical single female pensioner is older than the married couples (in particular, she is older than the typical female spouse of these married couple households), and hence she will be less likely to have earned any significant rights to income related public pensions.

Table 5.3: The typical share of different income components for subgroups defined according to family type (single females and married couples) and to the level of disposable income (bottom and top quintile). PRIV= earnings+ occupational pensions+income from capital. Percent of gross income.

		PUBP	MEAN	PRIV	TAX
NL91	Single female	62.3	2.1	35.5	13.9
	Married couples	63.3	0.9	35.8	14.1
	Bottom quint.	89.6	1.9	8.6	12.7
	Top quint.	34.9	0.2	65.0	17.5
SW87	Single female	86.4	2.0	11.6	28.9
	Married couples	89.1	0.6	10.3	29.1
	Bottom quint.	79.7	5.0	15.2	20.2
	Top quint.	85.8	0.0	14.2	37.0
GE89	Single female	80.1	1.2	18.7	1.9
	Married couples	76.3	0.1	23.6	2.1
	Bottom quint.	87.1	1.75	11.1	0.4
	Top quint.	52.9	0.1	47.0	6.7
UK86	Single female	60.9	12.6	26.5	5.0
	Married couples	63.2	5.2	31.6	6.0
	Bottom quint.	83.2	8.2	8.7	2.5
	Top quint.	35.7	1.3	63.0	14.3
NW86	Single female	77.8	0.7	21.5	10.8
	Married couples	78.1	0.9	21.0	12.9
	Bottom quint.	93.2	1.6	5.2	1.9
	Top quint.	63.4	0.6	36.0	19.1
DK87	Single female	72.6	5.6	21.8	11.2
	Married couples	71.1	1.6	27.3	23.5
	Bottom quint.	90.0	0.5	9.5	13.6
	Top quint.	38.3	1.2	60.5	30.5
US86	Single female	64.8	3.9	31.3	3.1
	Married couples	57.0	0.8	42.3	4.1
	Bottom quint.	74.5	13.9	11.6	0.2
	Top quint.	28.4	0.0	71.6	12.3
CN87	Single female	67.3	4.3	28.4	4.4
	Married couples	60.2	2.5	37.4	6.0
	Bottom quint.	78.3	9.1	12.7	1.2
	Top quint.	32.0	0.8	67.2	14.2
AS89	Single female	71.1	0.0	28.9	4.3
	Married couples	67.8	0.0	32.2	3.6
	Bottom quint.	83.5	0.0	16.5	0.7
	Top quint.	25.6	0.0	74.4	13.1

Source: LIS data-files.

The income packages of poorer and richer households show very strong and characteristic differences. Public pensions and in particular means-tested benefits are relatively more important among the bottom quintile (defined on the distribution of equivalent disposable income). Correspondingly, it is confirmed that members of the top quintile draw most of their total income from private sources in all countries except for Norway, Sweden and Germany.[235]

Finally, I would like to draw attention to two of the more surprising features of the findings presented in Table 5.3. First, one should note that even the more well-off of the Australian old age pensioners do rely to some extent on the means-tested public pension system. Public pension benefits take up a quarter of the total income received by the richest fifth of the Australian old age pensioners. Secondly, it is striking how private income in Sweden is as important in the income package of the bottom quintile as it is for the top quintile. This picture would undoubtedly have changed if occupational pensions had been properly classified in the Swedish data, but the fact remains that the other private income sources (primarily income from capital) are more important, relatively speaking, to the poor than they are to the rich. Income from capital takes up almost 14 percent of the typical income package among members of the bottom quintile, while the share shrinks to 8 percent in the top quintile (of course the absolute levels of income received from this source might still be higher in the more well-off group). I shall return to this point in Chapter 7, where we shall see that the distribution of income from capital is strikingly "egalitarian" among Swedish old age pensioners.

5.4 SUBSTITUTION BETWEEN PUBLIC AND PRIVATE PENSIONS?

The material presented in previous section has clearly demonstrated that the income packages of retired households show strong cross-national variation, in particular with respect to the aggregate share taken up by public as opposed to private income sources. The reader will probably also have noticed that the share of private income components tends to be high in countries that have been observed with a relative low score on Benefit Level, i.e., in countries where the average level of public pension benefits is relatively modest. Still, the material so far presented does not give any answer the pertinent substantive question whether high average levels of public pensions go together with low levels of private provision and vice-versa.

This is the topic of the present section. Does the pattern of cross-national variation in the scope of private retirement income help support, or refute, theoretical expectations about the existence and strength of behavioral and institutional responses to public pension provision?

As discussed in Chapter 3, the whole "egalitarian argument" in favor of earnings related public pensions hinges (at least partly) on the presumption that generous social insurance pensions will tend to crowd out private sources of income provision in retirement. Two extreme hypotheses can be formulated for the cross-national pattern of covariation between the scope of public and private pensions:

1) Perfect substitution. According to the life-cycle hypothesis people have stable and well-defined preferences regarding a preferred income level in retirement and we might, accordingly, expect that a high level of public pension provision will be completely and perfectly offset by reductions in private efforts. Despite strong differences in the scope of public pension provision, complementary, offsetting differences in the scope of private provision will produce a picture with small cross-national differences in the total level of income enjoyed by old age pensioners.

---

[235] Remember here that the classification of income sources into public and private is problematic both in Sweden and Germany. In Sweden a more valid measurement would obviously have produced a more significant share of private income in the top quintile, but it is impossible to guess about the resulting balance between public and private components.

b) Complete independence. This radical antithesis to the hypothesis about perfect substitution could come in two versions. Complete independence would occur if the scope of private income provision is fairly constant across country cases with very different levels of public pension provision. In this version the cross-national variation in the overall income position of old age pensioners should be driven by variation in the receipt of public pensions. Alternatively, the independence thesis could imply that any variation in the scope of private provision is unrelated to the nature of public pension systems. Here, we should find no signs of correlation between the scope of public and private provision, and we should expect very strong cross-national differences in the total level of income enjoyed by old age pensioners.

The figures presented in the previous section are obviously not suitable for addressing these issues. An increase in public pensions will trigger a reduction in the share taken up by private components, even if the income flow from private components were completely unaffected. A high fraction taken up by public pensions will by definition imply a low fraction for private components.

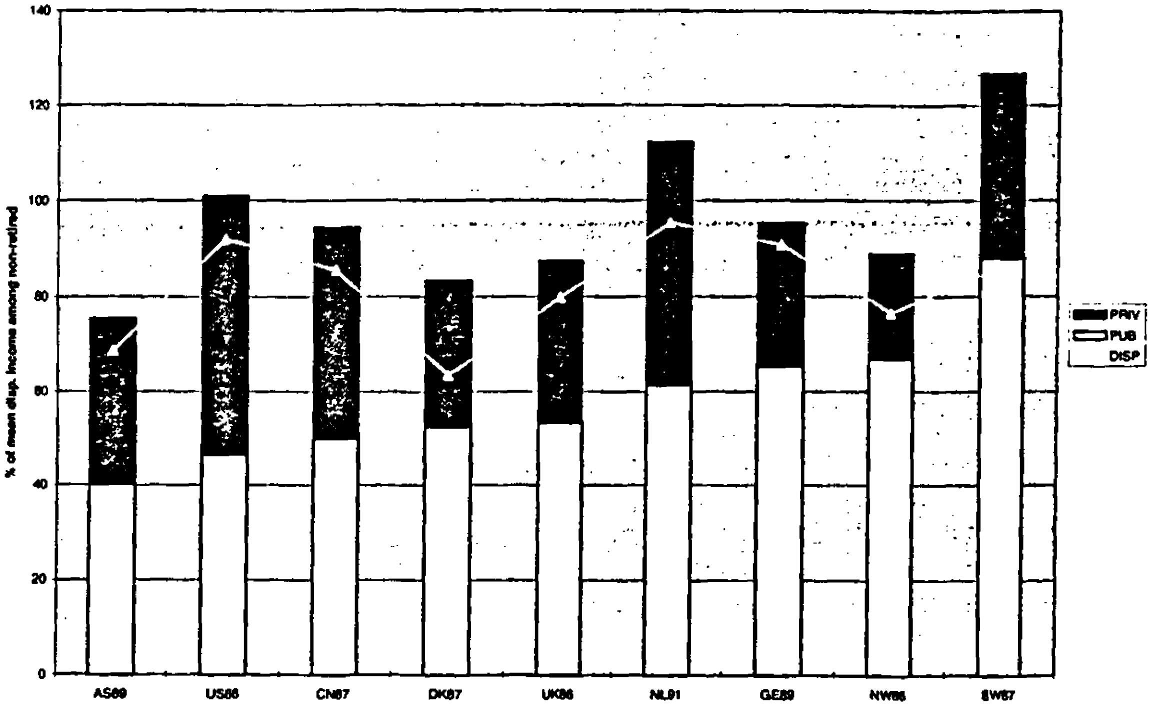
Hence, in order to address the questions of crowding-out and substitution, the size of each income component must be measured in absolute terms or according to some external, country-specific standard. The choice I have made here is to use mean disposable (equivalent) income among non-pensioners as the common yardstick for measuring the scope of public and private income components, and also for evaluating the total level of disposable income enjoyed by old age pensioners.

Table 5.4: Gross income from public and private income sources taxes paid and total disposable income received by old age pensioners, as a percentage of mean disposable income among the non-retired.

	Public transfers	Private income	Income taxes paid	Disposable income
AS89	40.1	35.5	6.9	68.7
US86	46.5	54.6	9.1	92.0
CN87	50.0	44.4	8.8	85.6
DK87	52.5	30.8	19.9	63.5
UK86	53.3	34.1	7.5	79.9
NL91	61.4	51.0	16.9	95.4
GE89	65.2	30.3	4.5	90.9
NW86	66.8	22.1	12.3	76.6
SW87	87.9	38.9	40.4	86.4
Mean	58.2	38.0	14.0	82.1
SD	14.2	10.4	11.0	10.9

Source: LIS datafiles.

Graph 5.7: Gross income from public and private income sources and total disposable income received by old age pensioners, as a percentage of mean disposable income among the non-retired.



Source: LIS data files.

A first impression of the results is presented in Table 5.4 and Graph 5.7. The mean level of (gross) public transfers received by old age pensioners shows strong variation when measured relative to mean disposable income among the non-retired. It ranges from 40 percent in Australia to 88 percent in Sweden.

The variation in the scope of private income sources is almost equally strong. Norwegian old age pensioners receive an average amount of income from private sources corresponding to 22 percent of the mean disposable income among the non-retired. In the US the corresponding figure is 55 percent.

However, inspection of Graph 5.7 does not seem to confirm the hypothesis about a strong and consistent tendency for substitution between public and private income components. Countries like Norway and Germany do fit into a pattern of substitution with their relatively modest score on private income, and so does the US and Canada with their relatively high score. But Sweden and the Netherlands in particular score far too high on private income, and Australia and Denmark far too low, for the levels of gross income to converge. Pearson's r between the level of public and private income is in fact negative, but it is quite weak at -0.23. It can be seen that the range of variation in the total level of gross income received by old age pensioners is very substantial – from 76 percent in Australia to 127 percent in Sweden. It is quite significantly modified, however, when the impact of taxation is taken into account.

The tax burden on pensioners is high in the countries with the highest level of gross income received by pensioners, Sweden and the Netherlands, and the range of cross-national variation decreases when viewed in terms of disposable income. The income position of pensioners – as defined by the level of disposable income – is, as we have already seen, most favorable in the Netherlands, followed by the US and Germany, and it is relatively least favorable in

Denmark, where the mean disposable income among old age pensioners is estimated at 64 percent of the level enjoyed by non-pensioners.

There is reason to believe that the results presented above cannot do justice to the hypothesis of a negative relationship between the generosity of public pensions and the scope of private retirement provision. So far, it has been implicitly assumed that the demand for private income takes no account of the level of taxation. This is not very realistic. The demand for private retirement income must be expected to depend primarily on the after-tax level of public pensions.[236] There is a similar strong argument to be made for looking at after-tax figures when measuring the scope of private income. The actors are likely to anticipate the marginal rate of taxation on private retirement income, and hence the higher level of gross income from private sources needed to reach a preferred level of after-tax income. In a country like Sweden, where the level of taxation among pensioners is very high, the gross benefit position will give a strongly inflated picture of the real generosity of public pension system, and at the same time it will produce an inflated picture of the real value of private income received by old age pensioners.

Hence, it would clearly be more appropriate to measure both public and private income received by old age pensioners in terms of after-tax figures. The problem is, however, that a full micro-simulation of the respective national tax systems would be needed in order to find out exactly how much tax is paid on public pensions (if this had been the only income received by each individual) and the additional (marginal) tax paid on the private income components.

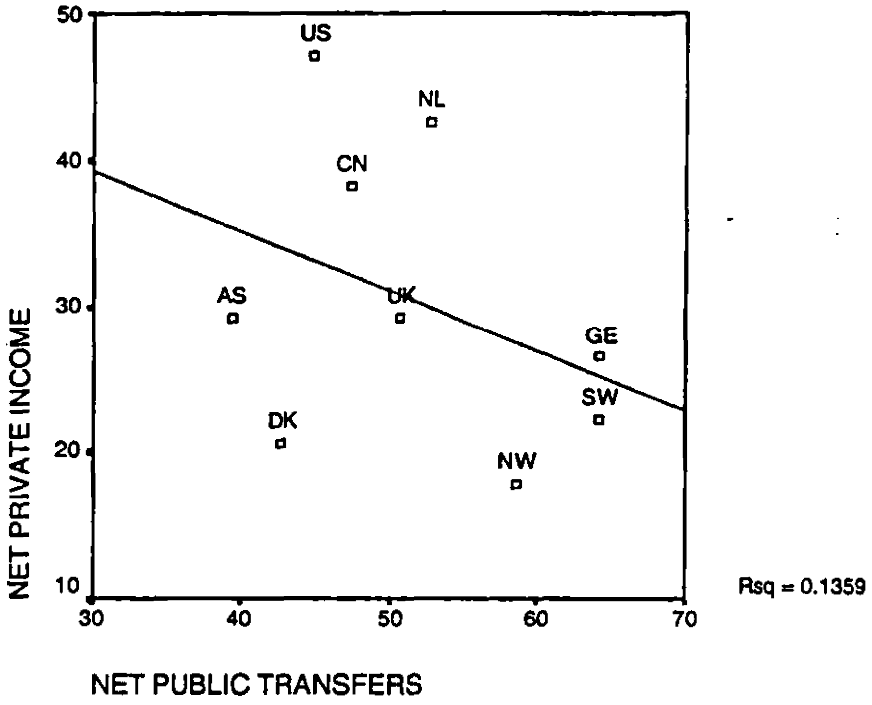
As a second-best solution, I have calculated net figures for the public and private income received by each individual in the samples, using the average tax-rate paid by each individual pensioners, and applied it to both types of income sources (for the use and justification of this approach see Rainwater, 1993: p. 7). This procedure is by no means ideal. Although it is clearly preferable to the use of gross income figures, it is likely to be biased in the same direction; i.e., to underestimate the after-tax value of public pension benefits (had they been the only source of income) and to overestimate the marginal increase in total disposable income resulting from private income sources.

The results are presented in Graph 5.8 (see also Table 5.5 below). The average amount of public transfers received by old age pensioners and the average amount of private income (both figures are net of taxes) show only a weak tendency to be negatively correlated across the nine countries. Variation in the relative generosity of public pensions – as measured by the micro-data – only appears to explain a very modest share of total variation in the relative amount of private income received by old age pensioners. Pearson's r between these two variables is estimated at –0.37, while the corresponding rank-correlation coefficient is –0.35. This does not amount to a very convincing support for the hypothesis of a strong relationship of substitution between public and private income components.

---

[236] Of course, this is the main reason why (net) Benefit Level and Benefit Range were chosen as the preferred independent variables of the present study.

Graph 5.8: Scatterplot of net amount of public transfers and net income from private sources reveived by old age pensioners, measured in % of average disposable income among the non-retired.



The problem might be, however, that this attempt to calculate the average (net) amount of public transfers received by old age pensioners does not adequately capture the relevant variation in the generosity of public pensions. In particular the method used for allocating taxes paid on public and private income sources might bias the measurement – especially in countries where the level of taxation on pensioners is generally high (Sweden, Denmark and Norway).

The picture changes significantly if we take the institutionally defined measure of benefit generosity, Benefit Level, as the point of departure, as in Graph 5.9 and Table 5.5.

One can immediately see from Graph 5.9 that the tendency for a negative relationship between the generosity of public pensions and the scope of private income provision is stronger and more consistent than it appeared to be in Graph 5.8 above. Pearson's r between the two variables is -0.57, while the rank-correlation is somewhat stronger at -0.77. In other words, it appears that variation in Benefit Level could help explain some of the variation in the scope of private income provision across these nine country cases.

Graph 5.9: Scatterplot of Benefit Level and net income from private sources received by old age pensioners, measured in % of average disposable income among the non-retired.

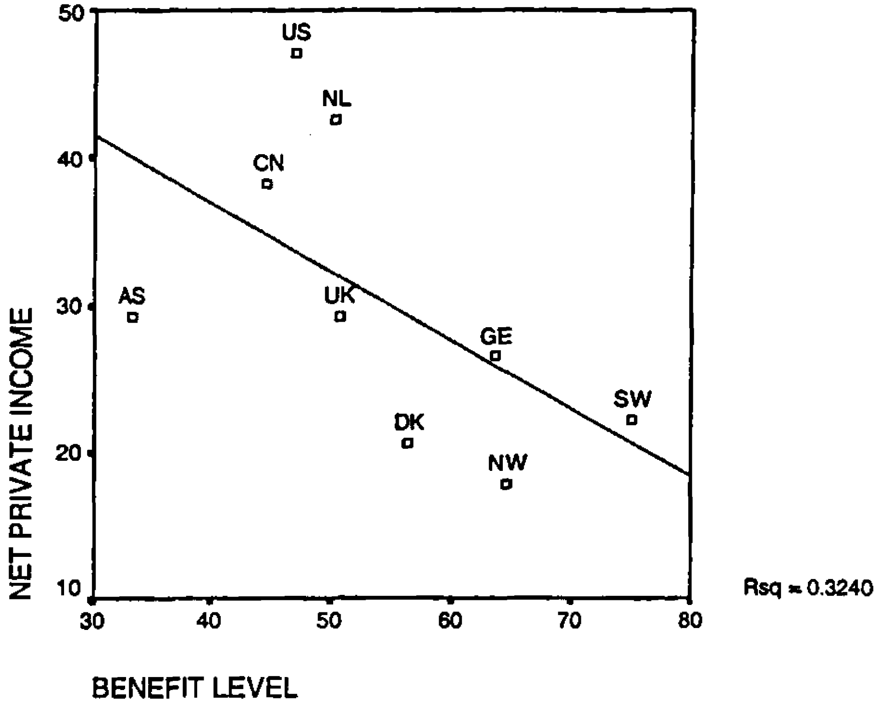


Table 5.5: Country scores and rank scores on Benefit Level, net amount of public transfers received, net amount of private income received and disposable income among old age pensioners, measured in % of mean income among the non-retired.

	Benefit Level		Net public transfers		Net private income		Disposable income	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
SW87	75.1	1	64.4	1	22.2	7	86.4	4
NW86	64.6	2	58.7	3	17.9	9	76.6	7
GE89	63.7	3	64.4	2	26.5	6	90.9	3
DK87	56.4	4	42.8	8	20.7	8	63.5	9
UK86	50.7	5	50.7	5	29.2	5	79.9	6
NL91	50.2	6	52.8	4	42.6	2	95.4	1
US86	46.9	7	44.9	7	47.2	1	92.0	2
CN87	44.5	8	47.4	6	38.2	3	85.6	5
AS89	33.3	9	39.4	9	29.3	4	68.7	8
Mean	53.9	-	51.7	-	30.4	-	82.1	-
SD	12.5	-	9,1	-	10.2	-	10.9	-
Corr. with Benefit Level			0.86	0.78	-0.57	-0.77	0.19	0.00
Corr. with net public transfers					-0.37	-0.35	0.49	0.47

Sources: SCIP and LIS data-files.

However, the relationship revealed in Graph 5.9 is still very far from perfect. The scope of private income provision is smaller among old age pensioners in Australia, Denmark and Norway than could be expected on the basis of a perfect linear relationship. At the same time, the level of private income is very much higher than could be expected in the US and the Netherlands.

The low score of Australia could – to some extent – be explained as an artifact. As already mentioned, most occupational pension schemes among private companies in Australia pay out lump-sums that are not recorded in the LIS data. If these lump-sum payments had been included in the data, the score of Australia on the scope of private income would undoubtedly have increased. This would not only have made Australia less of an outlier, but it is also likely to have led to an increase in the negative slope of the regression line, and hence to an increase in the estimated degree of linear correlation.[237]

As discussed in Chapter 4, one should also pay attention to the pattern of scores among the more similar country cases. Among the Scandinavian countries, the picture is blurred at best. The bivariate scores of Denmark and Norway are consistent with an – albeit weak – tendency for substitution, but the case of Sweden does not fit in very well. Sweden displays the clearly most generous public pension system, but the scope of private income provision is slightly higher than in Denmark and much higher than in Norway.

The scores of the Netherlands, Germany and the UK are largely consistent with the pattern that could be expected from the hypothesis of substitution, but it is highly inconsistent for the remaining group of Australia, Canada and the US. According to the measurements made here, the US has a more generous public pension system than do Australia and Canada, but the scope of private income received by the US elderly is by far the highest.

The more general pattern displayed in Table 5.5 can be summarized as follows: Benefit Level shows a strong positive correlation with the average amount of (net) public pensions received by old age pensioners, a moderate negative correlation with the average amount of (net) private income and, finally, virtually no correlation with the level of disposable income enjoyed by old age pensioners. In fact, the rank-correlation between Benefit Level and mean disposable income among the retired is zero across these nine country cases.

I conclude that the cross-national evidence presented here is consistent with a general tendency for substitution between public and private income provision in retirement. It seems obvious, however, that the scope of private income provision is responding to other forces as well – including, perhaps, the degree of pre-retirement economic stratification and more particular institutional legacies in the respective countries.

There does not appear to be a tendency for the relative income position of old age pensioners to converge around a certain level across the nine country cases. Differences in the generosity of public pensions are sometimes moderated by differences in the scope of private provision, but also in some cases reinforced. Neither of the two extreme hypotheses discussed above at the introduction to this section find support in the material.

The performance of the Scandinavian countries on the variables net public pensions received and disposable income among old age pensioners, deserves some further comments. All three display more modest scores on net public pensions received than could have been expected on the basis of the institutional data. Sweden, Norway and Denmark rank as numbers 1, 2 and 4 on (net) Benefit Level, but they drop down to the places 2, 3 and 8 when it comes to the average level of income received in the form of public transfers. If we go on to look at their ranking on disposable income, they are located even further down the list, in places 4, 7 and 9, respectively.[238]

---

[237] Technically speaking, Australia is a highly influential case for the estimation of regression parameters or correlation coefficients between these variables.

[238] If I had based the measurement of Benefit Level partly on the replacement rates for one-earner couples, as it has often been done (Palme, 1990, Esping-Andersen, 1990 – see the discussion in Chapter 2.5), the discrepancy between the institutional data and the income data would have been even wider.

To put the question more sharply: How can it be that Scandinavian old age pensioners are relatively poor as compared to the general population, if the Scandinavian pension systems are so generous as the institutional data would have us to believe (even in after-tax terms)?

Part of the answer might be the fact that private income provision appears to be relatively modest among the Scandinavian countries, in accordance with the hypothesis of substitution, and the comparatively high level of taxation that strikes private supplementary income. However, this would not explain the discrepancy between the scores on Benefit Level and the results from the LIS data concerning net level of public pensions received. My suggestion would be that the vast changes in female labor force participation that have taken place over the last two or three decades in Scandinavia is an important additional explanation. The reference group – the non-retired – increasingly base total household income on more than one earning, and the economically active population has in this way improved their relative income position more than you would expect from official wage statistics -- and thus in ways that are not compensated in the indexation of retirement benefits. The current pensioner population has only to a limited extent participated in this development, and when you compare their income position after retirement with the equivalent income of younger cohorts they appear to be losing out (or rather not improving their situation as much as might be expected from historical improvements in replacement rates).

Let me finally comment briefly on the scores and ranking of countries according to the level of disposable income enjoyed by old age pensioners (see Tables 5.4, 5.4 and Graph 5.7). The country scores presented here are highly sensitive to the choice of equivalence scale. Pensioner households are on average much smaller than non-pensioner households, and they seldomly contain any children under 18. If one chooses an equivalence scale that gives heavy weight to additional household members (like for instance the traditional OECD scale), the pensioners will appear to be more (relatively) privileged, and, if one instead uses a scale assuming stronger economies of scale (as is typically the case for scales built on the "subjective/consensual" approach), the pensioners will appear to fall more significantly behind the remaining population.[239] I have not presented any sensitivity analyses to bear on this issue simply because the choice of equivalence scale does not affect the picture of cross-national differences.

5.5 CONCLUDING REMARKS

A primary purpose of this chapter has been to develop and present a parsimonious *and* empirically credible measurement of the most relevant aspects of institutional variation across the nine country cases. The two resulting variables, Benefit Level and Benefit Range, have already been put into use in Sections 5.2. and 5.4, and they will play a central role in Chapter 7.

In Chapter 3 I argued that the overall hypothesis of the present study – the egalitarian argument in favor of social insurance – can be seen to rest on four more specific mechanisms andthat each can be subject to empirical scrutiny in the comparative context.

The first mechanism is in some sense internal to the policy making process, and it concerns the existence of a trade-off between benefit generosity and benefit equality. The idea is that a higher average benefit level is politically and economically sustainable if benefits are allowed to vary according to pre-retirement income levels/contribution records. In Section 5.2 it was shown that the joint distribution over the nine country cases of the two variables, Benefit

---

[239] See Buhman et al. 1988.

Level and Benefit Range, is largely consistent with this hypothesis. The countries where public retirement provision is based primarily on flat-rate or means-tested benefits tend to display low average benefit levels.

Of course, this does not prove the existence of such a mechanism as a binding constraint on policy making in the area of retirement provision. It does, however, imply that one of the conditions for a positive finding on the main hypothesis – that social insurance based systems can be associated with comparatively low levels of income inequality in retirement – is fulfilled within this cross-national sample.

The second mechanism concerns the relationship between the average generosity of public pensions and the scope of private income provision. The hypothesis is that generous public pensions will tend to crowd out private alternatives. The findings presented in Section 5.4 were less clearly positive on this point. There does appear to be a negative correlation in the sample between the level of benefits secured by the public pension system and the scope of private income sources, but it appears to be weak and somewhat inconsistent. It is particularly troublesome that the relationship appears to be partly contradicted in a comparison among the three Scandinavian countries. Again, this does not imply that a real mechanism of substitution does not exist in the sense that historical and future changes of policy in each country would not trigger changes in the expected direction in comparison with the relevant counterfactual development. However, it could eventually help explain why we may not find a clear pattern in favor of the main hypothesis across this particular sample of countries.

CHAPTER 6

THE DEGREE AND PATTERN OF INCOME INEQUALITY

6.1 INTRODUCTION

In Chapter 2.6 I developed a lengthy argument to justify the focus on income inequality among retirees as a central outcome variable in the context of pension systems and pension policies. Hence, the dependent variable of the present comparative analysis is the degree of income inequality prevailing within a generation of old age pensioners.

In this chapter I shall present results from attempts to measure the degree and pattern of income inequality found among the contemporary generation of old age pensioners in the nine country cases, based on the data from the Luxembourg Income Study (LIS). The chapter is primarily descriptive in orientation. No systematic attempts will be made to explain the observed cross-national differences in the degree of income inequality, with reference to the pattern of variation in pension systems that was discussed in the previous chapter. The main discussion of the possible links between institutions and outcomes is postponed to Chapter 7.

In this way, the chapter aligns with the existing literature that has focussed primarily on describing the degree and pattern of variation in income inequality among the elderly across OECD countries (see for instance Rainwater and Rein, 1988; Smeeding, 1988; Hedström and Ringen, 1990; Achdut and Tamir, 1990; Döring et al., 1994; Hutton and Whiteford, 1994; Whiteford and Kennedy, 1995). But of course, it also links up with the more analytically ambitious strands of literature, where a description of variation in inequality across countries is used as a necessary step in attempts to learn about the possible effects of variation in institutional arrangements (Palme, 1989; 1994; Kohl, 1988; 1992; Pestieau, 1992; Delhausse et al., 1994; 1996).

The empirical measurement of income inequality involves difficult choices on various dimensions: 1) the unit of analysis, 2) the population under study, 3) the accounting period, 4) the income concept, 5) equivalence scale(s) and last but not least 6) the very definition of inequality and the choice of a particular inequality index.

The first three issues and the choices made for the present study were discussed in Chapter 4.5. The complicated themes of equivalence scales and the choice of a particular inequality index are treated at length in Appendix I and Appendix II, respectively. Before I move on to present the results of the analysis, let me here devote some attention to the choice of income concept and the objections that can be raised against it.

Throughout this chapter all attention is focussed on the distribution of disposable income; i.e., total cash income received by the household minus taxes paid. As a measure of economic well-being, disposable income is far from perfect; but it is the best available and, arguably, it is good enough for the purpose of the present study. However, one should be aware of important items that are excluded from the measure of disposable income that can be established on the basis of the available LIS data.

First of all, no account is taken of wealth holdings and the potential they entail for consumption through dissaving. It is theoretically possible to integrate wealth holdings and income streams into a compound measure of economic well-being (potential for consumption). This can be done in one of two ways - either by annuitizing stocks of wealth, held by the individual/household and adding them to current income streams (Burkhauser and Wilkinson, 1983), or by discounting and summing current and future (expected) income streams and adding them to the present stock of wealth (Hurd, 1990). Strong arguments can obviously be made for taking full account of wealth holdings in a comprehensive measure of economic well-being, but in view of the data problems it is both meaningful and legitimate to limit attention to the distribution of income streams only.

Wealth holdings are not only important in their capacity as a potential source of dissaving. They can also be an important source of current income, and this aspect is only partially covered in the data. While income streams from financial assets should generally be included in the data and hence in the operational definition of disposable income, the income consequences of other types of assets, in particular housing wealth, are not.[240] This is a very serious problem. The accumulation of housing wealth might be used consciously as a means of retirement provision, and in any case the level and distribution of imputed rent flowing from home-ownership is likely to be an important aspect of the income distribution in most, if not all, of the country cases. One can reasonably assume that the exclusion of a measure of imputed rent from the income concept leads to a systematic underestimation of the degree of income inequality found among old age pensioners.[241] Similarly, it is problematic that lump-sum payments from occupational retirement schemes and individual life-insurance tend to be excluded from the data. Lump-sum payments from private occupational pensions schemes are very important in Australia, and they are also quite significant in the US (Andrews, 1993).

The other major class of items that are generally excluded from the operational definition of disposable income involves benefits in kind – subsidized or free-of-charge public services, subsidized public housing, etc.[242] Old age pensioners are heavy users of health care, and free or subsidized health care can be seen to add very significantly to the total income received by this population subgroup. It is also quite common that pensioners receive preferential treatment with respect to public transport and a range of social services, sometimes subject to some kind of means-test. There can be little doubt that the inclusion of such items in a more comprehensive income concept would have produced a picture of more modest levels of inequality among old age pensioners and a more privileged income position of this group vis-à-vis the general population in all of the countries studied.[243]

Nevertheless, there is no reason to surrender completely to skepticism about the available data. The fact that some potentially important items are excluded from the income concept is only a serious problem for the cross-national analysis if these items have a differential scope and a differential distributional profile in the various countries. In this case they do become a problem, in particular if they themselves function as an important (alternative) means of private retirement provision (as could be argued with the implicit rent received by home owners), or if they can be assumed to affect the need for private retirement provision (as with the presence/absence of high quality, public health-care).

---

[240] The way that interests and other types of return from financial assets are included in the data is somewhat problematic from a theoretical point of view. In periods with high inflation, the nominal returns will tend be high. If the nominal returns are viewed as current income and fully consumed, the wealth base will tend to erode very quickly, and the person is in fact engaged in a process of dissaving in real terms.

[241] In the analysis of Danish panel data in Chapter 8 and 9, I have made adjustments for this problem. Instead of adding an estimate of imputed rent, I have chosen an alternative approach and deducted an estimate of the net housing costs from the concept of disposable income. The picture of income inequality among Danish old age pensioners changes significantly in the direction of more inequality as a consequence of this move.

[242] Note that some 'near-cash' benefits like food-stamps in the US and benefits from the housing allowance programs found in many countries are included.

[243] Although strong arguments can be made for the use of a more comprehensive income concept that includes items such as free health care (disproportionally consumed by the elderly) and free schooling (disproportionally consumed by families with adolescents) (see Smeeding et al., 1993), it must require a basic reconsideration of the economic needs of different household types and a complete revision of conventional equivalence scales and poverty thresholds.

There is not much systematic comparative data on the scope of owner occupied housing among the elderly in different countries – see however Mitchell, 1995; Whiteford and Kennedy, 1995; Castles, 1997. There can be no doubt, however, that the phenomenon is more widespread in some countries than in others. For example, home-ownership is close to universal among contemporary cohorts of retirees in countries like Australia, the US, Canada and Norway, while a substantial fraction of the elderly are tenants in public or private rented housing in countries like the UK, Germany, Sweden and Denmark. In these latter countries, homeownership is likely to be concentrated among the more well-off segments, and one might speculate that the (in-egalitarian) implications for the distribution of income could be particularly strong in these settings, where the variation in the implicit income from home-ownership is supposedly largest (variation in homeownership per se is of course largest with a fifty-fifty distribution) – see Whiteford and Kennedy, 1995. On the other hand, part of the rental sector, which is more important in these countries, is often heavily regulated and subsidized so that also many non-owners tend to pay less than the full market value for their consumption of housing.

Whiteford and Kennedy (1995) claim that the inclusion of imputed income from home-ownership has a strongly equalizing effect on the distribution of income in Australia and the US. Nevertheless, I would argue that it is impossible to assess the scope of the bias caused by cross-national differences in the role of home-ownership (and subsidized rental housing) for the comparative analysis of income inequality among old age pensioners.

With respect to benefits in kind and public services, it can be observed that all the countries in the sample do provide the elderly with essential health care services free-of-charge. This is so even in the US, where all old age pensioners are covered by the so-called Medicare program. The quality of public (or collectively financed) health care can of course vary, and partly as a result of this, the elderly in some countries are liable to spend more money out of their own pockets on private health care than in others. Also on this point, I shall refrain from further speculation about the direction and strength of a potential bias for the estimation of the degree of income inequality.

The remaining part of chapter is organized in the following way: Section 6.2 is devoted to a comparison of Lorenz curves for the respective country samples. Various estimates for the level of Gini inequality prevailing among the retired in the respective countries are presented and discussed in Section 6.3. Sections 6.4 and 6.5 offer an analysis of the way income inequality appears to be structured across age-groups and family types in the various countries.

6.2 LORENZ DOMINANCE AND PARTIAL ORDERINGS

It is natural to begin the presentation of results on the degree of income inequality among old age pensioners in the nine countries with an investigation and comparison of the respective country-specific Lorenz curves.

Lorenz curves

Lorenz curves drawn for each of the country samples are presented in Graph 6.1. The curves are based on ordinates obtained from a grouping of the data into decile groups. The Lorenz curve is theoretically defined on continuous data and it could in principle be drawn directly on the basis of the original micro-data. Nevertheless, the grouping is convenient from both a practical and a statistical point of view. With the rather modest samples sizes available in LIS and in other typical income surveys, the lower and the upper segments of a continuous Lorenz curve will be based on very few observations and therefore be highly sensitive to sampling and measurement error. The grouping into deciles and decile shares guarantees that the first as well as the last coordinate of the curve will be based on samples of a reasonable size. I shall return to the issues of sampling error and statistical inference below.

The top panel in Graph 6.1 is not particularly revealing. The most striking feature is the extent to which the Lorenz curve for the US elderly deviates from the rest of the country samples. The US curve lies far outside the curves for the remaining countries, all the way from the first to the ninth decile, indicating a higher level of income inequality in this country. One should also be able to verify that the Lorenz curve for Sweden lies consistently within and above the curves for the remaining countries.

In other words, the US ranks first by a clear margin in terms of the level of inequality prevailing among old age pensioners, while Sweden ranks last, with the lowest level of measured income inequality. Apart from this, the picture appears to be rather messy, at least when the curves for all nine countries are presented together, as done in the top panel of Graph 6.1. This is partly due to the crudeness of the graphical presentation itself, but it also springs from the fact that there is high degree of overlap between some of the country curves and quite a few instances of crossing Lorenz curves.[244]

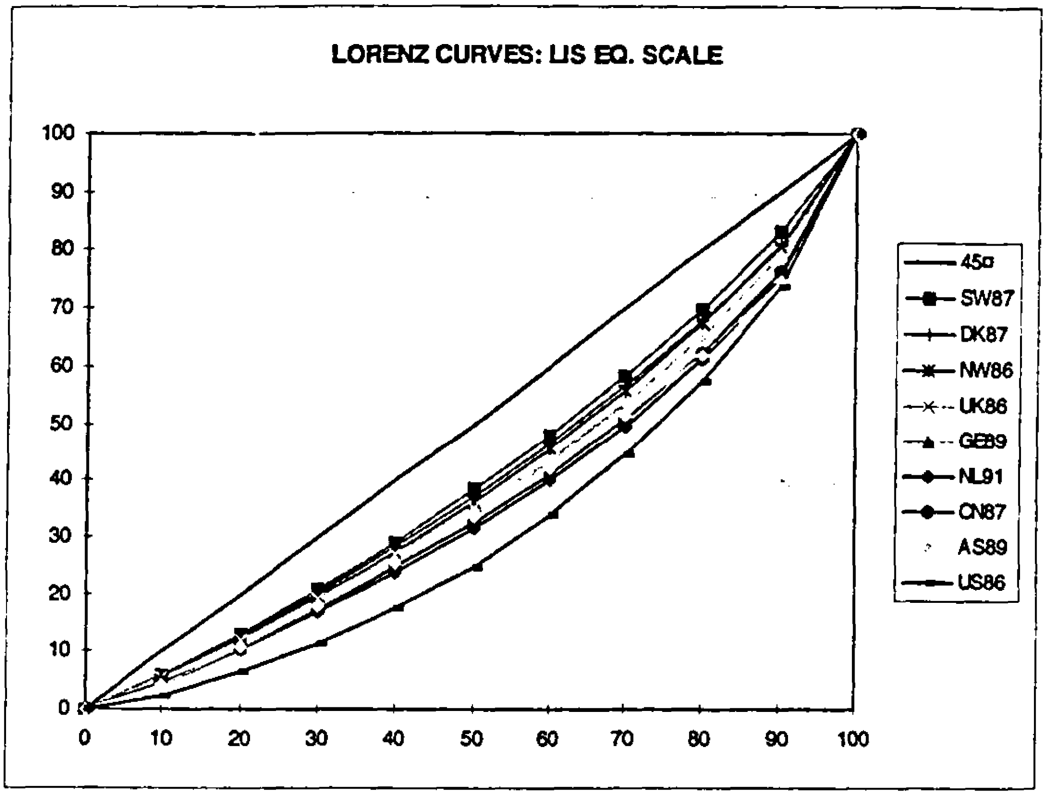
In the three remaining panels of Graph 6.1, different groupings of the nine countries are presented separately to illustrate more clearly the position of the various country cases. The curves for the three Scandinavian countries lie fairly close together, with the Danish and Norwegian curves appearing to overlap/cross at some points. The curve for the Netherlands appears to lie somewhat to the outside of the curves for Germany and the UK. The curve for the UK appears to be clearly above/within the curve for Germany in the lower part, while the curves tend to converge or even cross in the upper/right part of the diagram. Finally, it can be seen from Panel D that the curves for Canada and Australia are very close, somewhere in the middle between the extremes of Sweden and the US.

---

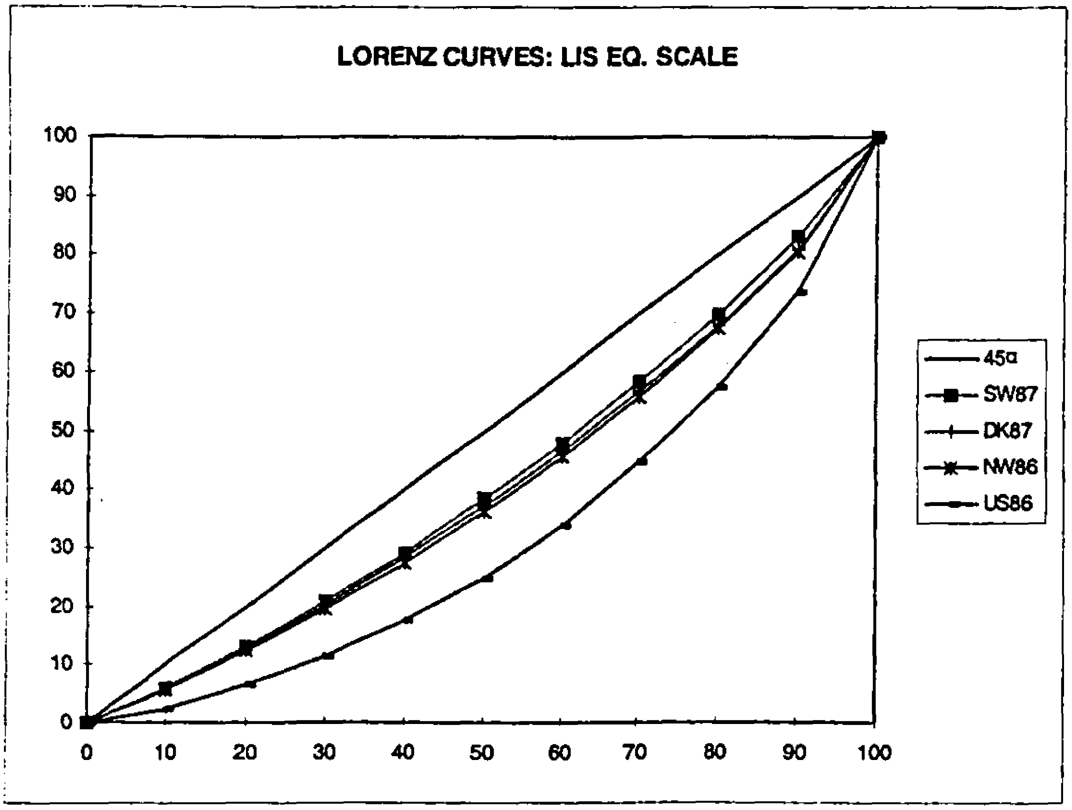
[244] The decile coordinates can be found in the top panel of Table A.1 in Appendix IV.

Graph 6.1: Lorenz curves for the population of old age pensioners. Disposable household income adjusted by the LIS equivalence scale. All nine country cases (Panel A) and various sub-samples of the country cases (Panel B-D).

Panel A

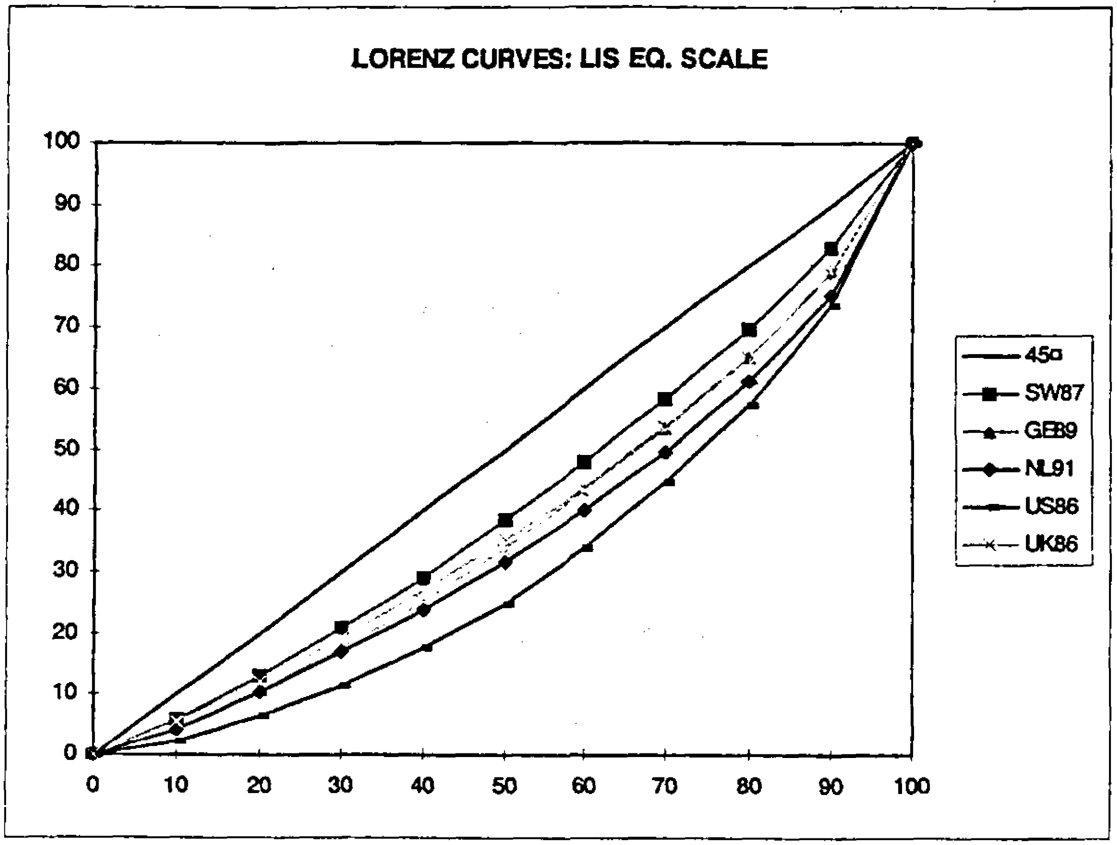


Panel B

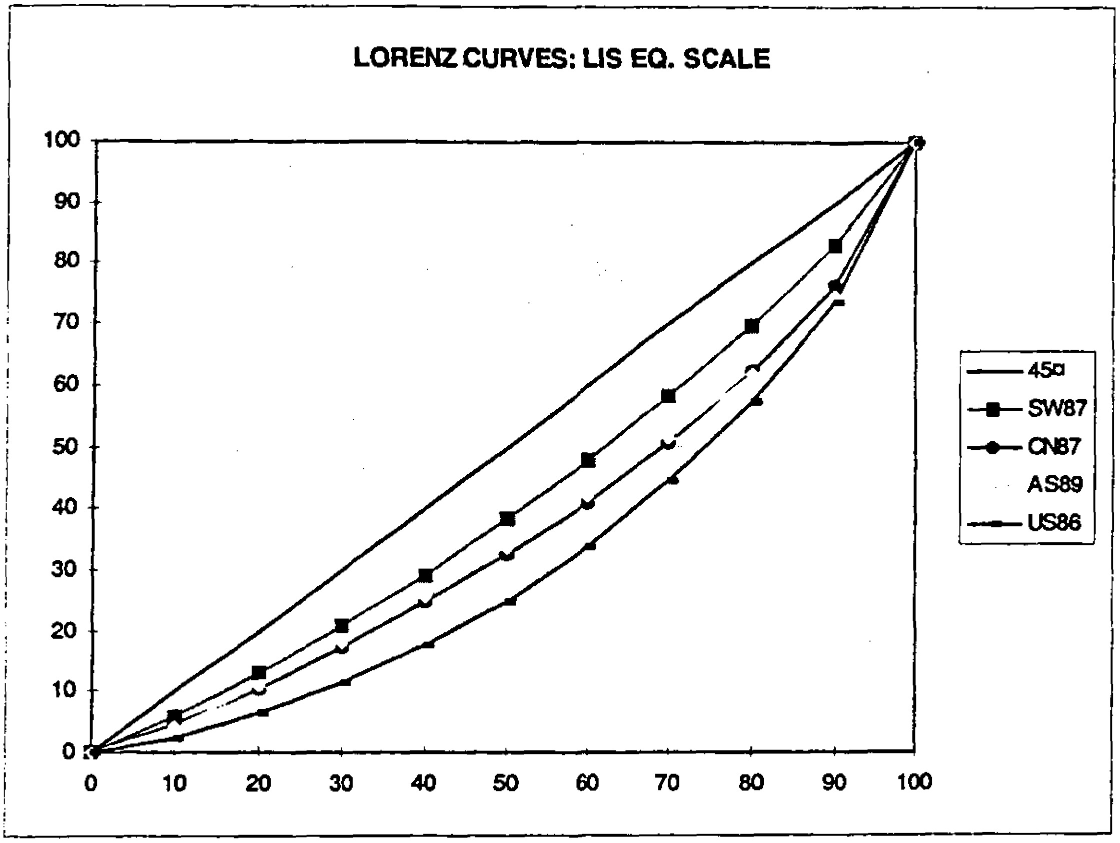


Graph 6.1 continued

Panel C



Panel D



Quintile shares

Another way to summarize and highlight part of the information that was contained in Graph 6.1 above is to compare the income shares taken up by the first and the fifth quintile in each of the nine-country samples.

Table 6.1: Share of total income received by the 1. and 5. quintile among old age pensioners and the ratio between the fifth and the first quintile share. Household disposable income adjusted by LIS eq. scale.

	SW87	DK87	NW86	UK86	GE89	AS89	CN87	NL91	US86
First quintile	12.9	12.7	12.4	12	10.6	10.8	10.5	10.3	6.5
Fifth quintile	30.3	32.2	32.6	35	34.7	38.1	37.8	38.8	42.7
Ratio	2.3	2.5	2.6	2.9	3.3	3.5	3.6	3.8	6.6

In the US the poorest 20 percent of pensioners claim only 6.5 percent of the total income received by all old age pensioners. In Sweden, the share controlled by the poorest 20 percent is almost double, 12.9 percent. The income share taken up by the poorest 20 percent is also relatively high (above 12 percent) in Denmark, Norway and the UK, while the corresponding figures for Australia, Canada, Germany and the Netherlands cluster in the range between 10 and 11 percent.

The picture is of course almost the reverse for the income share taken up by the fifth quintile. The richest quintile controls 42.7 percent of the total income received by old age pensioners in the US. In Sweden the corresponding share is 30.3 percent. The remaining countries display scores in the range between 32.2 percent (Denmark) and 38.8 percent (the Netherlands).

One should note that the ranking according to the share taken up by the richest 20 percent does not correspond exactly (in reverse order) to the ranking according to the share taken up by the first quintile. This is immediate proof that some of the Lorenz curves cross. Among German pensioners the share taken up by the poorest fifth is smaller than in the UK and Australia. However, the share controlled by the richest fifth is smaller in Germany than it is in both the UK and Australia. In other words, the Lorenz curve for the German sample appears to perform better in the upper part than it does in the lower part of the income distribution – as compared to the other countries in the sample.[245]

The ratios between the fifth and the first quintile shares that are reported in the last row of Table 6.1 provide a summary of the scope of income differentials between the poorest and the richest segments of the pensioner populations in the nine countries. In Sweden, the average level of disposable income received by the richest 20 percent is 2.3 times higher than the average level of income received by the poorest fifth. In the US, the level of income enjoyed by the richest 20 percent is 6.6 times higher than the average level of income received by the poorest fifth.

---

[245] Still, one might say that the German sample performs far better in the lower part of the distribution than one would have expected on the basis of the institutional information presented in Chapter 5. It is particularly surprising that the lowest percentiles do not fall more seriously behind in Germany, given the absence of any minimum benefit in the German pension system.

Lorenz dominance

In order to investigate the prospects for a partial Lorenz ordering we need to make systematic pair-wise comparisons of the nine Lorenz curves. However, as pointed out by Bishop et al. (1991), the criteria for Lorenz dominance should take account of the fact that we are dealing with samples that are subject to random sampling error (in addition to the obviously more serious problems of possible systematic biases and inconsistencies in measurement across countries).

The Lorenz comparison really involves two questions concerning the relationship between the (population) distributions involved in the pair-wise comparison:

- Are the two distributions really different at all, or do they feature (more or less) identical Lorenz curves?
- If they are different, are the differences consistent across all cumulative percentile points (implying a situation of dominance), or are they inconsistent (implying a situation of crossing curves)?

Sampling error could in some cases lead to small differences in the Lorenz ordinates between two countries, and hence to a picture of either Lorenz dominance or crossing Lorenz curves where no real difference exists between the distribution in the two populations. Sampling error could also be responsible for artificial instances of crossing Lorenz curves, where a situation of dominance exists in reality between the two populations concerned. Finally, sampling error could produce a picture of dominance where the population curves do in fact cross at some point.

Bishop et al. (1991) have developed a sophisticated method for Lorenz comparisons, where estimates of sampling error at the respective percentile ordinates are built into the criteria for Lorenz dominance.[246] Here I shall use a more crude approach, based on very simple rules of thumb (for a similar approach, see Atkinson et al., 1995).

The practical criterion I use for (strict) Lorenz dominance is two-fold. The differences between Lorenz ordinates should be consistent across the entire distribution and they should exceed one percentage point at one (or more) decile point(s). I further distinguish a situation of "quasi dominance", where one country curve appears to lie clearly above the curve for the other country in some parts of the distribution (more than 2 percentage points) but this pattern is broken by a close margin in some other part of the distribution (less than 1 percentage point). Finally, I make a distinction between two situations of non-dominance: If the difference between ordinates nowhere exceeds 1 percentage point, I consider the distributions to be equivalent, while all other situations are considered as indicating crossing Lorenz curves.

---

[246] Bishop et al. (1991) show that their method for taking account of sampling error tends to produce fewer instances of crossing Lorenz curves, and hence that its application can lead to a more complete Lorenz ordering. It can be argued, however, that this highly favorable side-effect is due to the fact that the method has a built-in bias against the detection of crossing Lorenz curves and in favor of detecting either equivalence or dominance. Since equality (no difference) of each pair of Lorenz ordinates is always the H_0 hypothesis, one significant deviation in favor of either distribution will suffice to conclude in favor of dominance, while at least two instances of significant deviation (one in each direction) are required in order to accept the hypothesis of crossing Lorenz curves. The burden of proof is strongly placed on the hypothesis about crossing Lorenz curves. Consider a case where two distributions do in fact cross; i.e., there are differences in the Lorenz ordinates in both directions. The method provides no conservative guarantee against accepting the false hypothesis about dominance. In fact, the chances that this method will (mistakenly) conclude in favor of dominance will tend to increase as the sample size decreases. This is a rather perverse property of the method, since dominance/equivalence will often tend to be the favored hypothesis of the researcher.

The results are presented in Table 6.2. The table is split into three separate sub-tables – each representing calculations based on an alternative equivalence scale. I shall start commenting on the results using the preferred, middle-of-the-road, LIS scale.[247]

The impression from the graphical presentations, that the Swedish distribution dominates all the remaining distributions, is confirmed. So is, of course, the fact that the income distribution among old age pensioners in the US displays the highest level of income inequality among this sample of OECD countries, i.e., the US distribution is dominated by all the remaining distributions.

The Danish and the Norwegian distributions are dominated by the Swedish distribution, and they in turn dominate the remaining six countries. Between themselves Denmark and Norway show a pattern of crossing Lorenz curves. The Danish curve lies somewhat above the Norwegian curve at all decile ordinates except for the first decile, where Norway is slightly in the lead. However, the difference in favor of Denmark nowhere reaches the level of 2 percentage points.

The UK is dominated by the three Scandinavian countries, its Lorenz curve crosses the German curve, and it dominates the remaining four countries. The German curve crosses the Canadian and the Australian curves in addition to the UK curve. As suggested above, the German curve performs relatively best in the upper part of the distribution. Here the advantage of Germany vis-à-vis Canada and Australia exceeds 2 percentage points, while the disadvantage at the first decile point is smaller than 1 percentage point. Hence, we have a situation of quasi dominance of Germany vis-à-vis these two countries. The German distribution dominates the Dutch as well as the US distribution.

The Canadian and the Australian curves cross at more than one point, with the largest cumulative difference reaching one and a half percentage points in favor of Canada at the ninth decile. The Canadian distribution dominates the Dutch distribution, while the Australian distribution only qualifies for the status of quasi dominance vis-à-vis the Netherlands. Hence, the Dutch distribution is strictly dominated by all the remaining country cases except for Australia and the US.

One can see that an overall ordering of the nine cases based on the criterion of strict dominance will be highly incomplete. Sweden ranks first, while Denmark and Norway can be said to share the second/third places. The US, of course, ranks last, but the remaining five countries cannot be ranked unambiguously. The Netherlands draws with Australia, which draws with both Canada and Germany. Germany, in turn, draws with the UK.

The ordering becomes far more complete if one is prepared to treat quasi dominance on par with strict dominance. In this case the UK and Germany will share the fourth/fifth places, Canada and Australia will share the sixth/seventh places, while the Netherlands takes up the eighth place next to the US. However, this means giving up the normative robustness of the Lorenz ranking. Larger differences in favor of one country in one part of the distribution are traded off against smaller differences in favor of the other country in another part of the distribution.[248]

---

[247] The full set of Lorenz curve coordinates can be found in Appendix IV, Table A1.

[248] This tendency to trade-off smaller against larger differences between two Lorenz curves (without paying attention to where in the distribution they appear) conforms with the spirit of the Gini index – see the discussion in Appendix II - and hence it should come as no surprise that the more complete ordering that results when quasi dominance is treated on par with strict dominance agrees largely with the complete Gini ordering presented in Section 6.3 below.

Table 6.2 Pair-wise Lorenz comparisons of the income distribution among old age pensioners. Household disposable income.

Panel A: LIS eq. scale

	DK87	NW86	UK86	GE89	CN87	AS89	NL91	US86
SW87	+	+	+	+	+	+	+	+
DK87	■	?	+	+	+	+	+	+
NW86		■	+	+	+	+	+	+
UK86			■	?	+	+	+	+
GE89				■	?(+)	?(+)	+	+
CN87					■	?	+	+
AS89						■	?(+)	+
NL91							■	+
US86								■

Panel B: OECD eq. scale

	DK87	NW86	UK86	GE89	CN87	AS89	NL91	US86
SW87	+	+	+	+	+	+	+	+
DK87	■	=	+	+	+	+	+	+
NW86		■	+	+	+	+	+	+
UK86			■	+	+	+	+	+
GE89				■	?(+)	?	+	+
CN87					■	?	+	+
AS89						■	?(+)	+
NL91							■	+
US86								■

Panel c: Subjectivist eq. scale

	DK87	NW86	UK86	GE89	CN87	AS89	NL91	US86
SW87	?	+	+	+	+	+	+	+
DK87	■	?(+)	?(+)	+	+	+	+	+
NW86		■	?(+)	+	+	+	+	+
UK86			■	?	+	+	+	+
GE89				■	?(+)	?(+)	+	+
CN87					■	?(+)	+	+
AS89						■	?(+)	+
NL91							■	+
US86								■

Source: LIS data files.

'+'	*strict dominance* by row country over column country with the difference exceeding one percentage point for at least one cumulative decile group
'?(+)'	crossing Lorenz curves with *quasi dominance* by row country: the difference in favor of the row country exceeds two percentage points for at least one decile group and the difference nowhere exceeds one percentage point in favor of column country.
'='	non-dominance with *equivalent distributions*: the difference nowhere exceeds one percentage point
'?'	non-dominance with *crossing Lorenz curves*: all situation that do not satisfy the three previous conditions

The results discussed so far were based on the implicit (normative) judgments of one specific equivalence scale, the so-called LIS scale – see the discussion of equivalence scales in Appendix I. The question is: How far do these, already fairly indeterminate, results depend on the properties of this particular equivalence scale? Panel B of Table 6.1 shows the corresponding Lorenz comparisons when household income has been adjusted by the OECD scale, while Panel C refers to calculations based on the subjectivist equivalence scale.

When the Lorenz comparisons are based on income adjusted according to the OECD scale, the results do not change very much as compared to the LIS scale. In fact, the potential Lorenz ordering becomes somewhat more complete when based on the OECD scale. The Danish and the Norwegian curves coincide more completely (the difference never reaching one percentage point), and the UK distribution dominates the German distribution. In this case, then, the UK can be assigned a clear fourth place, while the ambiguity remains for the overall ordering of Germany, Australia, Canada and the Netherlands.

When we turn to the lower Panel C, based on the subjectivist scale, the picture becomes significantly more blurred. In this case the Swedish and the Danish curves cross at more than one point, leaving the ranking of the two countries indeterminate. The UK distribution is no longer strictly dominated by either the Danish or the Norwegian distributions and so forth. The ordering that emerges from a criteria of strict pair-wise dominance could hardly be more incomplete. The only thing that can be said in terms of an overall ordering is that the US ranks behind the other eight countries.

One should note here, that the subjectivist equivalence scale implies rather extreme assumptions about the scope of the economies of scale connected with the sharing of households, and hence that single pensioners need almost as much income as a married couple in order to achieve the same level of economic well-being. In all the nine countries, one finds a high share of single pensioners in the lower part of the income distribution – even when the OECD scale is applied. The application of an equivalence scale that assumes large economies of scale will tend produce a picture where single pensioners – and hence the lower deciles – fall more seriously behind the rest of the population. This explains why the subjectivist scale generally produces higher levels of inequality among old age pensioners than does the OECD scale.

However, the effect of alternative equivalence scales is not neutral across the country cases. The differential impact of alternative scales is stronger in countries where the average level of income received by single member households is relatively low as compared to that of married couples, for any given equivalence scale. These country cases will tend to do better in terms of overall inequality with equivalence scales that are close to the per capita pole (like the OECD scale). Correspondingly, they will tend to do worse with an equivalence scale of the subjectivist type, since the income gap between single pensioners on the one hand and married couples on the other will appear to be more severe and add to the overall picture of inequality.

The conclusion so far must be that Lorenz comparisons and Lorenz orderings lead to rather indeterminate results for the assessment of cross-national differences in income inequality among old age pensioners. In particular this is so if we also want to leave open the question about the choice of appropriate equivalence scales. It appears to be impossible to arrive at an ordering of these country cases in terms of inequality without making stronger commitments to a particular summary measure of inequality, and perhaps also to one particular equivalence scale (or a more narrow range of equivalence scales). Normative inclusiveness and cautiousness has to be sacrificed in order to gain more effectiveness in the measurement of inequality.

6.3 GINI INEQUALITY

As I have already argued extensively, the Gini index is preferred as a summary measure of inequality – primarily for its normative properties (see the discussion of alternative summary measures of inequality in Appendix II). Gini coefficients calculated for the samples of old age pensioners in the nine countries are shown in Table 6.3,[249] based on the LIS equivalence scale.

The level of measured Gini inequality ranges from 0.17 in Sweden to 0.36 in the US. Below I shall present some alternative ways to illustrate and interpret the range of variation in the level of Gini inequality displayed in Table 6.3, but first I concentrate on a discussion of the robustness of the ordering of the country cases that is implied by the figures presented in Table 6.3.

Both the scores and the ordering of the country cases is in line with what could be expected from a visual inspection of the Lorenz curves in Graph 6.1, and the ordering that resulted when quasi Lorenz dominance was treated on par with strict Lorenz dominance in Panel A of Table 6.2. Sweden ranks first with the lowest level of inequality, and Denmark – in the second place – is closely followed by Norway. The UK takes the fourth place, followed by Germany. Australia and Canada display almost identical levels of Gini inequality, while the Netherlands takes up the position next to US at the far end of the spectrum.

Table 6.3: Gini coefficients for the distribution of income among old age pensioners in nine countries. Household disposable income adjusted by the LIS scale. Jackknife estimates of the standard deviation of the Gini estimates are presented in italics.

	SW87	DK87	NW86	UK86	GE89	AS89	CN87	NL91	US86
Gini coefficient	0.170	0.193	0.201	0.225	0.239	0.266	0.267	0.282	0.362
Stdv.	*0.009*	*0.006*	*0.007*	*0.007*	*0.014*	*0.011*	*0.014*	*0.029*	*0.008*
N (unweighted)	797	1277	634	1345	471	2568	1514	681	1549

It is standard practice in work based on the LIS data simply to report point estimates of the Gini coefficient and other summary measures of inequality and to treat them as if they were not subject to random sampling error.[250] When the analysis is concentrated on limited sub-samples such as the elderly here, this practice becomes all the more problematic. For some of the countries the unweighted sample sizes are fairly modest, and one might wonder how sensitive the estimates might be to random sampling error.

---

[249] The Gini coefficients have been calculated directly on the weighted micro-data, following the procedure suggested by Lerman and Yitzhaki (1989) – see also Lerman and Yitzhaki (1984), Shalit (1985) and Jenkins (1988). The procedure takes advantage of the fact that the Gini coefficient can be written as twice the covariance between a unit's income and its rank position (when all units are ranked in ascending order), divided by the total sum of income.

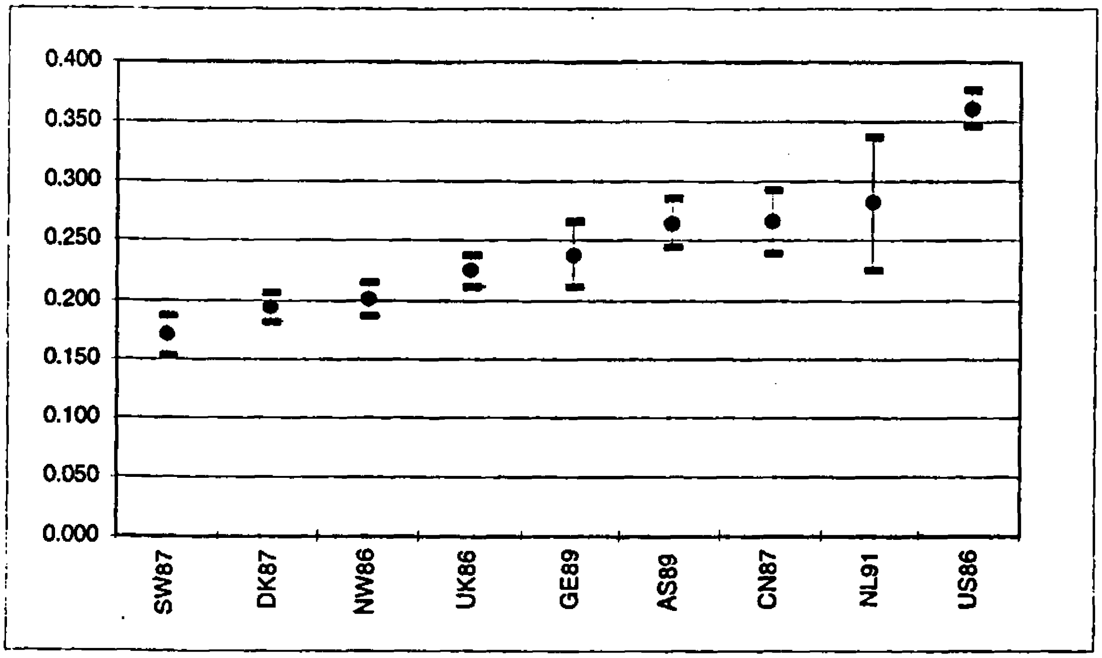
[250] Atkinson et al. (1995) discuss whether to take account of sampling error in analyses of the LIS data. While they recognize the obvious arguments that can be made in favor of an explicit treatment of this issue, they fear that procedures to control for random sampling error can deviate attention from the potentially more serious problems of incomparability, systematic sampling error, etc.

Sampling error and statistical significance

In order to address this problem, estimates of the standard deviation of the Gini coefficients are reported in italics. The standard deviations have been estimated using a convenient computational procedure for jackknife resampling of the Gini index described by Yitzhaki (1991).[251] Jackknife resampling involves the calculation of a large number of Gini estimates based on sub-samples with one income unit left out at a time. The actual distribution of these (N) sub-sample Gini estimates is then used to produce an estimate of the standard deviation of the original Gini estimate. Yitzhaki shows that the Gini index (and other Gini related measures such as the concentration index) has statistical properties ensuring that the jackknife approach should produce a conservative estimate of the standard error of the real sampling distribution of the Gini index.

Most of the estimated standard errors are modest. This means that the two-sided confidence intervals that can be drawn on the assumption of a normal sampling distribution, are quite narrow for most of the country cases – as can be seen from Graph 6.2. The sample of old age pensioners from the Netherlands, however, stands out with a very large estimated standard error. This is partly due to the small size of the Dutch sample, but it is also an indication that the Dutch Gini estimate is more strongly influenced by single, extreme observation than the Gini estimates for the remaining countries.

Graph 6.2: Gini coefficients with 95% confidence intervals. Disposable household income among old age pensioners. LIS eq. scale.



It can be seen from Graph 6.2 that some of the confidence intervals overlap, while others do not. Of course it is perfectly possible that the difference between two Gini estimates is in fact statistically significant – even though the two separate confidence intervals might overlap to some extent. Therefore, I have conducted a more specific test for the statistical significance of each of the pair-wise differences in Gini coefficients between the nine-country samples.[252]

---

[251] The procedure laid out by Yitzhaki (1991) takes advantage of a formula for decomposing the Gini coefficient according to the contribution made by each of the income units. The procedure has been adjusted to the present context where the Gini coefficient is calculated on weighted data. For a general treatment of Jackknife and other resampling techniques – see Efron (1982).

Table 6.4: Significance test for pair-wise differences between Gini estimates. '+' implies that the difference in favor of the row country vis-à-vis the column country is statistically significant at the 5% level (two-sided test). '0' implies that the H_0 hypothesis of no difference cannot be rejected.

	SW87	DK87	NW86	UK86	GE89	AS89	CN87	NL91	US86
SW87		+	+	+	+	+	+	+	+
DK87			0	+	+	+	+	+	+
NW86				+	+	+	+	+	+
UK86					0	+	+	0	+
GE89						0	0	0	+
AS89							0	0	+
CN87								0	+
NL91									+
US86									

Most of the pair-wise differences do in fact reach statistical significance at the 5 percent level. As could be expected the small difference in the Gini estimates between Denmark and Norway and the even smaller difference between Australia and Canada, are insignificant. Also the somewhat more substantial difference found between the UK and Germany turns out to be statistically insignificant, and so is the difference between Germany on the one hand and Australia and Canada on the other. This is due to the relatively large estimated standard errors for the German, the Australian and the Canadian Gini coefficients. The very large standard error for the Dutch Gini estimate implies that only the difference in favor of the three Scandinavian countries come out as statistically significant. However, despite the large standard error for the Dutch Gini estimate, the difference vis-à-vis the US is still clearly significant.

Comparing Gini and other indices

The discussion of Lorenz dominance in the previous section showed that there is likely to be disagreement among different inequality indices about the ordering of the country cases. In Table 6.5 I have presented the Gini scores and the Gini ordering with scores and orderings that result from three alternative and widely used summary measures of inequality. The first two are members of the Atkinson Family of indices, where the epsilon parameter has been fixed at 0.5 and 0.75, respectively. In other words, the second of the two Atkinson indices displays the highest degree of sensitivity to the lower part of the income distribution.[253] The third index – the Squared Coefficient of Variation[254] – belongs to the Generalized Entropy Family and it has a tendency to put emphasis on the more extreme observations in either tail of the distribution – in particular the upper tail in the typical right-skewed income distribution.

---

[252] Given that the two separate Gini estimates are normally distributed with the standard errors as estimated by the jackknife procedure, the difference between the two Gini coefficients will also be normally distributed with a standard error equal to the square root of the sum of the two respective variances.

[253] I have chosen not to present calculations based on versions of the Atkinson index with values for epsilon higher than 1. With higher values for epsilon the focus on the lower part of the distributions soon starts to become extreme. The resulting index values have a tendency to converge towards 1 – indicating maximum levels

Table 6.5: Inequality scores and rankings for the nine-country samples, using different inequality indices. Correlations with the Gini scores and ranking. Household disposable income among old age pensioners. LIS eq. scale.

	Gini		Atkinson 0.5		Atkinson 0.75		Squared coefficient of variation	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
SW87	0.170	1	0.028	1	0.044	1	0.16	1
DK87	0.193	2	0.038	3	0.062	3	0.18	3
NW86	0.201	3	0.034	2	0.052	2	0.17	2
UK86	0.225	4	0.044	4	0.066	4	0.23	4
GE89	0.239	5	0.052	5	0.077	5	0.31	5
AS89	0.266	6	0.074	7	0.113	7	0.56	8
CN87	0.267	7	0.061	6	0.087	6	0.37	6
NL91	0.282	8	0.083	8	0.13	8	0.76	9
US86	0.362	9	0.107	9	0.16	9	0.53	7
Correlation with Gini scores and ranking			0.977	0.967	0.959	0.967	0.766	0.9

It turns out that the two Atkinson indices produce results that do not deviate very much from the picture of cross-national variation in Gini inequality.[255] The ranking of the nine-country samples that emerges from the application of the two Atkinson indices is almost identical to the Gini ranking. Only Norway and Denmark change places, and it is not entirely obvious why they should do that. As we have seen in Table 6.1, the relative income position of the lowest quintile among Danish pensioners vis-à-vis all old age pensioners is slightly more favorable than the position of the lowest quintile among Norwegian pensioners.[256] The

---

of inequality – in particular where the country samples contain a few observations with income levels close to zero.

[254] The index is simply the square of the ratio between the standard deviation and the mean income. It is not – like the Gini and the Atkinson indices – upwardly bounded by 1. Of course, this index is ordinally equivalent to the widely used Coefficient of Variation. This index satisfies the Principle of Transfers but not, of course, the Principle of Transfer Sensitivity – see Appendix II.

[255] A possible explanation for this apparent agreement between Gini and the Atkinson indices is the fact pointed out in Appendix II, that the density tends to be high in the lower part of the income distribution among old age pensioners, and hence the Gini index will in this situation tend to give emphasis to this part of the distribution. However, the Gini index will, contrary to the Atkinson index (with high values for epsilon), be rather insensitive to any single observations with measured income at or just above zero.

[256] Note that relative here refers to the population of old age pensioners and not to the general population. As we have seen in Chapter 5 above, Norwegian old age pensioners enjoy a higher average level of income as compared to the non-pensioners.

ordering of the two countries changes, however, if we look at the lowest decile, and the explanation must lie in the fact that the Danish sample contains more observations with extremely low incomes as compared to the Norwegian sample.[257]

It is at the same time somewhat surprising that the score and ranking of Germany does not decline when the Atkinson index is used instead of the Gini index, since – as we have seen – the income distribution among German old age pensioners performs relatively badly in the lower part, with the German Lorenz curve crossing both the Australian and the Canadian Lorenz curves from below.

Although Gini and the Atkinson indices largely agree about the ranking of the nine country cases, they differ in terms of cardinal measurement. One can take the difference between the inequality found among Swedish and US old age pensioners as an example. The level of Gini inequality found among American old age pensioners is just above twice the level found among Swedish pensioners. According to the Atkinson index with espilon set at 0.5, the level of inequality among US pensioners is almost four times higher than the level of inequality found among Swedish pensioners. According to the index with epsilon set at 0.75, the magnitude of the difference factor is just above 3.5. Still, the Gini scores and the Atkinson scores tend in this case to be linearly equivalent, as can be seen from the very high Pearson's r reported in Table 6.5.

The picture of variation in inequality that is produced by the Squared Coefficient of Variation deviates more sharply from the Gini scores. Pearson's r between the two sets of inequality scores is as low as 0.77. The deviance in terms of a pure ordering is less severe with a Spearman's r of 0.9.

One should note that the Coefficient of Variation ranks the US before both Australia and the Netherlands. This is flatly at odds with the Lorenz ordering results presented in Section 6.3. The US distribution appears to be strictly Lorenz dominated by both the Australian and the Dutch distribtutions. According to the theorem presented by Atkinson (1970), all inequality indices that satisfy the Principle of Transfers, including the Squared Coefficient of Variation, should produce an identical ordering in agreement with the (partial) Lorenz ordering. The explanation for this paradoxical result must be found in the fact the Atkinson theorem holds only for Lorenz curves that are defined and measured on the continuous, ungrouped data. The fact that the Squared Coefficient of Variation ranks the US before Australia and the Netherlands proves that the ungrouped, continuous Lorenz curves must be crossing each other in either of the two extreme segments of the distribution (below the first percentile or above the tenth percentile). Such crossings could emerge from just a few observations in the latter two samples recorded with either zero incomes or extremely high incomes.

Note also that the inequality scores of Australia and Canada show remarkable difference according to the Squared Coefficient of Variation, despite the fact the that two decile-based Lorenz curves were extremely close. Again this must be explained by extreme observations within the lowest and the highest decile (in the Australian sample), and it is evidence of the sensitivity of this inequality index to the thinly populated tails of the income distribution. This, I would argue, is a very unfortunate property from a statistical point of view, in particular in comparative research based on the LIS data-files, where the technical properties of the country samples are likely to differ – data-sources, sampling frames, response rates and last but not least the extent and type of data cleaning that has been applied.

---

[257] It is surprising that some of the countries known to provide a universal minimum income guarantee to all old age pensioners – Denmark, the Netherlands and Norway – do exhibit some individual observations with zero or close to zero disposable incomes. There might be substantial explanations for this phenomenon – like immigrants not meeting the (prior) residency criteria for receiving a public pension – but I suspect that problems of measurement are involved.

This comparison of the results obtained using alternative inequality indices has confirmed the relevance of the two practical arguments that I made in favor of the Gini index in the closing paragraphs of Appendix II:

- Thanks to the typical shape of the income distribution among old age pensioners with a rather high density in the lower end of the income distribution, the Gini index will in fact be quite sensitive to the scope of income differentials in this part of the income distribution, and hence it is not likely to disagree strongly with the Atkinson index with moderate values for epsilon.
- The insensitivity of the Gini index to thinly populated areas of the income distribution is a clear advantage from a statistical point of view – in particular in comparative research based on different national data-sources. The results produced by the Squared Coefficient of Variation – an index with almost contrasting characteristics – are strongly discouraging.

Sensitivity analysis for the choice of equivalence scale

The next issue to be addressed is whether the choice of equivalence scale has strong repercussions for the picture of cross-national variation in income inequality among this population segment.

Here the results are uplifting for the purpose of the present comparative analysis. There is a general tendency, across the country samples, for measured inequality to be lower when the OECD scale is applied instead of the LIS scale, and a stronger tendency for measured inequality to be higher when the household income of old age pensioners is adjusted with the Subjectivist equivalence scale. I have already mentioned the most plausible explanation for this phenomenon: Single member households (females) tend to be relatively disadvantaged on average vis-à-vis married couples in all the LIS countries, and this differential between singles and couples forms part of the overall inequality picture. However, the closer one moves towards the per-capita pole (exemplified with the OECD scale), the smaller will this income differential between single and married pensioners becomes, and its contribution to overall inequality will diminish. Conversely, when an equivalence (like the Subjectivist scale) that evaluates the economic needs of single member households to be high is applied, the average income differential between singles and couples will grow and this will add to the overall level of inequality found in the pensioner samples.

There were reasons to believe that this effect could be stronger in some countries than in others, and hence that the picture of cross-national variation in inequality would also be significantly affected by the choice of equivalence scale. Fortunately, this appears not to be the case for the present cross-country comparison. The figures in Table 6.6 demonstrate that the ranking of countries is only very modestly changed when the LIS scale is replaced with either the OECD scale or the Subjectivist scale.

When the OECD scale is applied the Gini coefficients for Denmark and Norway turn out identical, and hence they share the second place after Sweden in the overall ranking. When the Subjectivist scale is applied, Canada and Australia change places. One should also note, however, that the Gini coefficients of Germany and the UK move extremely close when household incomes are adjusted according to the Subjectivist scale. The explanation, which I shall return to below, probably lies primarily with peculiarities of the German pension system that produce a relatively favorable income position for single member households, vis-à-vis married couples.

Table 6.6: Inequality scores and rankings for the nine-country samples, using different equivalence scales. Correlations with the scores and ranking obtained on the basis of the LIS scale. Household disposable income among old age pensioners.

	LIS		OECD		SUBJECTIVIST	
	Score	Rank	Score	Rank	Score	Rank
SW87	0.170	1	0.160	1	0.199	1
DK87	0.193	2	0.194	2.5	0.209	2
NW86	0.201	3	0.194	2.5	0.226	3
UK86	0.225	4	0.222	4	0.243	4
GE89	0.239	5	0.242	5	0.244	5
AS89	0.266	6	0.259	6	0.289	7
CN87	0.267	7	0.265	7	0.278	6
NL91	0.282	8	0.279	8	0.300	8
US86	0.362	9	0.358	9	0.370	9
Correlations			0.998	0.996	0.993	0.983

Stability in Gini estimates over time

So far I have used only one wave of data-sets for each country case referring to the time period around the latter half of the 1980s. LIS does by now contain several data-sets for each country. The first wave of LIS data-sets, which has already been extensively analyzed with respect to the income distribution in later life, referred to the late 1970s/early 1980s. Similarly, new data-sets have recently been added to the data bank that refer to the early 1990s.

As a final attempt to check on the validity and reliability of the Gini scores presented above, I have calculated Gini scores for the earlier as well as the more recent data-sets, that are available for each of the nine countries in the LIS files. The results are presented in Graph 6.3, where the particular reference year of each data-set is depicted on the X-axis.

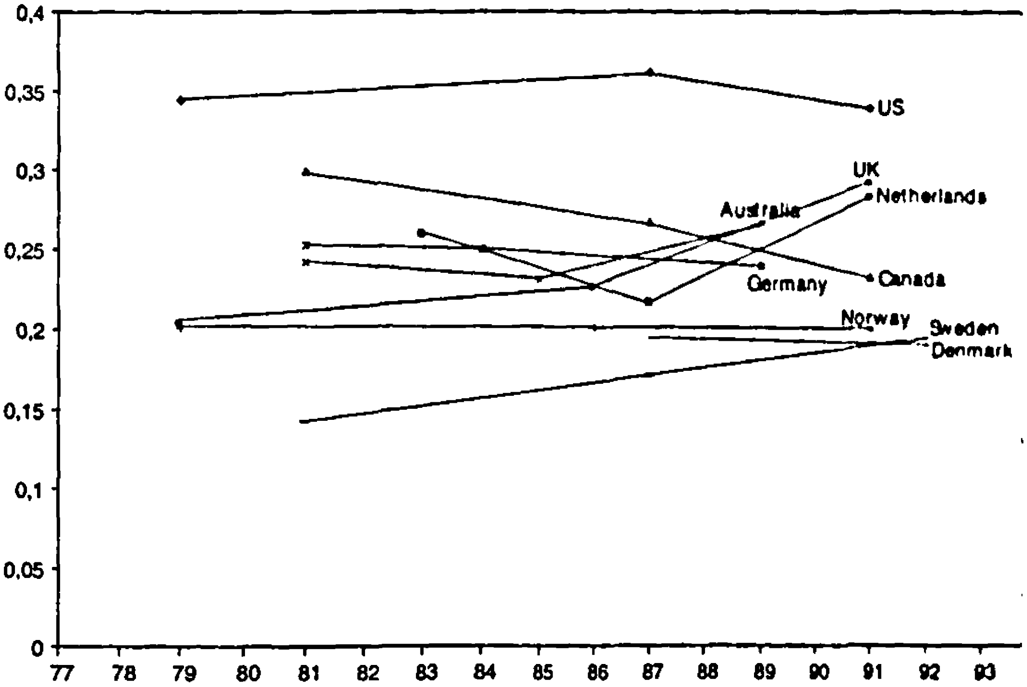
Substantial variation across time in the measured Gini coefficients for each country could be taken as a symptom of inconsistent measurement, but, of course this will only give an extremely crude indication of potential measurement problems. First, the actual level of Gini inequality found among old age pensioners could very well change over time, and hence there might be good substantive explanations for, in particular, consistent upward and downward trends in measured Gini coefficients over this period. Secondly, the finding of a fairly stable picture of Gini inequality over time for each country is by no means a guarantee for consistent measurement across time and (even less so) across countries.

As can be seen from Graph 6.3, the Gini estimates appear to be fairly stable across time for some country cases, while they show rather strong variation for other countries.

In four countries – Denmark, Norway, Germany and the US – the deviation between the lowest and the highest observed Gini coefficient is less than 10 percent (of the smallest measured Gini coefficient). In none of these cases, except for the US, are the differences between the lowest and highest observation anywhere near to statistical significance at the 5 percent level.

In the remaining five countries the differences do exceed 10 percent of the smallest observed Gini coefficient and they are in many cases far too strong to be ascribed to sampling error only. In other words there are strong reasons to suspect that either the level of inequality among old age pensioners has been changing over this decade, or there have been some inconsistencies in the way the data have been collected or prepared for analysis. In either case, the finding of differences across national data-sets is disturbing because it indicates that the results of the cross-national analysis might depend on the particular time period and country-specific data-set chosen for the analysis. However, despite the considerable variation found between the observations for some countries, an analysis of variance shows that an overwhelming part (90 percent) of the total variation between the 25 Gini estimates depicted in Graph 6.3 stem from cross-country differences, while within-country differences account for only 10 percent.

Graph 6.3: Gini scores obtained from LIS samples referring to different time points. Household disposable income among old age pensioners adjusted by the LIS eq. scale.



The strongest absolute difference between two country-specific Gini coefficients is found in the UK, where measured Gini inequality among old age pensioners is 0.291 in the 1991 sample, as opposed to only 0.203 in 1979. Canada follows next, with a drop in the Gini coefficient among old age pensioners from 0.299 in 1981 to 0.232 in 1991. The strongest relative difference is also represented by the UK, with a difference between the highest and lowest Gini score of 43 percent, followed by Sweden, where the increase in measured Gini inequality from 0.141 in 1981 to 0.193 in 1992 amounts to just below 37 percent.

However, the observed changes in Gini inequality in the UK, Canada and Sweden show a consistent trend over time. In Canada the degree of inequality among old age pensioners appears to be declining during the 1980s, while in Sweden and the UK measured inequality among old age pensioners increases over the three waves of data. In both the UK and Sweden a real tendency for increase in income inequality among old age pensioners over the last one-

and-a-half decades could be explained with reference to a significant growth in private (occupational) pensions and payments from individual annuities in these countries.[258] The decrease in inequality observed for Canada might be related to an increasing scope for means-tested benefits and tax claw-back, but it could also be result of the continued maturation of the earnings-related tier of public pensions (C/QPP) and a corresponding decrease in the share taken up by private income components.

The pattern of variation in Gini estimates for the Netherlands and Australia is immediately more disturbing. Here the estimates fluctuate – quite dramatically in the Dutch case – without a clear trend. According to the Dutch 1987 sample, Gini inequality among old age pensioners is measured at 0.216, which is close to the level found in countries like, Norway and Denmark. The Dutch 1991 sample that I have been using so far produces a very different picture, with Gini inequality estimated to 0.282, a figure that – as we have seen – puts the Netherlands at the bottom, next to the US in the overall inequality ranking.

It turns out that these two Dutch data-sets originate from very different sources, the more recent of the two from the 1991 wave of the ongoing Dutch Household Panel Survey.[259] I have chosen to let the Netherlands be represented by this 1991 data-set in the simple cross-national comparison, since it is the largest of the two samples and since the Dutch Household Panel Survey appears as the most authoritative and most widely used of the two alternative data-sources.

A similar pattern obtains in the Australian case, although the differences are much less dramatic, with Gini estimates ranging from 0.231 in the 1985 sample to 0.266 in the 1989 sample that I have been using so far. The earlier, 1981 sample falls in between, with a Gini estimate of 0.242.

Whatever the cause might be in each case, the fact that there appears to be substantial variation in the degree of measured inequality for some of the countries is problematic for the purpose of cross-national analysis. As an alternative to calculations based on only one data-set for each country, it seems reasonable to take the average Gini values over the three available data-sets for each country to represent the respective countries.

Table 6.7 shows, together with the original Gini estimates based on one wave of data only, the scores and rankings obtained from calculating a simple unweighted average of the three individual Gini estimates that can be made for each country.[260] In central parts of the comparative analyses of Chapter 7 I shall use these latter, arguably more robust, average figures to represent the degree of income inequality prevailing among old age pensioners in the respective country cases. It can be seen, however, that the scores and the rankings based on more data-sets for each country do not deviate dramatically from the scores and rankings based on the original nine data-sets. Both Pearson's r between the Gini scores and the corresponding rank-correlation are high – close to 0.97. For general investigations of the patterns of covariation with institutional and structural variables over the nine country cases, it is not likely to make much difference which indicator is chosen.

---

[258] Private pension benefits have grown as part of the total income package among the retired in some of the other countries as well, but without producing a clear tendency for income inequality to rise in this period (Norway and Denmark are cases in point).

[259] It has for some time been announced that the 1986 wave of the Dutch Household Panel Survey would be made available by LIS. This would provide an alternative to the smaller and presumably less reliable 1987 survey that has so far been available. When the present work was finalized, it is still not possible to access this new and interesting data-source.

[260] Note that there are only two available data-sets for Denmark (1987 and 1992).

For the evaluation of particular country cases and smaller groups of countries, it does make a difference, however. Both the Netherlands and – to a lesser extent – Australia show more favorable average scores than the individual estimates used so far, and both countries improve their rank position switching places with Canada and Germany, respectively.

Table 6.7: Inequality scores and rankings for the nine countries using one wave of data for each country and average scores over three (or two) successive waves taken from the period between the early 1980s and the early 1990s. Correlations with the scores and ranking. Household disposable income among old age pensioners, LIS eq. scale.

	One wave		Average over three waves	
	Score	Rank	Score	Rank
Sweden	0.170	1	0.168	1
Denmark	0.193	2	0.191	2
Norway	0.200	3	0.201	3
UK	0.225	4	0.240	4
Germany	0.239	5	0.247	6
Australia	0.266	6	0.246	5
Canada	0.267	7	0.266	8
Netherlands	0.282	8	0.252	7
US	0.362	9	0.348	9
Correlation			0.974	0.967

The scope of observed differences in inequality

So far the discussion has concentrated on how the nine countries compare with respect to the level of (Gini) inequality that can be found among contemporary generations of retirees. Various sensitivity tests have been conducted and, fortunately, they have only led to minor ambiguities as to how these nine country cases rank on the dependent variable.

But even if one accepts that a fairly robust ranking has emerged, the question remains whether the differences found in the degree of Gini inequality between the country cases are big or small, substantial or trivial. What does it mean that Sweden displays a Gini score below 0.2, while the Gini score for the US is well above 0.3? We know that the situation in Sweden is more favorable in terms of inequality, but is it just slightly more favorable or, indeed, very much so?

One of the advantages of the Gini index is that relative differences in the Gini scores between two or more distributions can be given a straightforward and intuitive interpretation.

As already mentioned, the Gini index can be written as a simple function of the typical income differential found between all pairs of individuals in the sample. More precisely, the Gini coefficient is equal to half the mean relative difference in income between all possible (N*(N-1)) pairs of individuals, where the term "relative" refers to the mean level of income

(Sen, 1973; Lambert, 1993).[261] In other words, a 10 percent difference between two Gini coefficients implies a 10 percent difference in the expected relative income differential found between two individuals chosen randomly from each of the respective distributions.

An even more perceptible and policy-relevant way to illustrate the importance of differences in Gini scores can be derived from this formulation of the Gini index and from the decomposition rule described and applied in Section 5 of Chapter 2. It is very easy to calculate the static (first-order) effect on Gini inequality if everybody were granted an identical amount on top of their current, observed income; i.e., by adding a new uniform income component to the existing income distribution. Such an additional income component would reduce the level of Gini inequality by a factor that is equal to its share in the entire income package. This relationship provides for a neat way to illustrate the practical implication of relative differences in observed Gini scores.

Suppose that the level of Gini inequality among old age pensioners in country A is found to be X percent smaller than the level found in country B, and suppose further that it is decided in country B to improve the situation by granting a new universal flat-rate benefit to all retirees. What would be the necessary size of this new uniform income component in order to ensure that the Gini inequality of country B decreases to the level of inequality found in country A? The answer is that such a new hypothetical benefit would have to take up X percent of the entire income package in country B. Of course, this hypothetical intervention does not ensure that the two distributions would become identical, only that the level of Gini inequality found in the two countries will become equivalent.

Let us take a relevant real example. According to the (average) figures presented above, the level of Gini inequality found among Swedish old age pensioners is only 48 percent of the level found among American pensioners (0.17 versus 0.35) and, consequently, the level of Gini inequality in the US will have to be reduced by 52 percent in order to match the Swedish figures. This would in turn require that a hypothetical new uniform income component in the US should account for 52 percent of the entire income package received by retired households in the US. One should note that, in order to achieve this figure, the new benefit would have to be even larger than the mean income already received by American pensioners, or to be more precise, it would have to be fixed at 107 percent of the current mean income of this population group. This, of course, represents a rather dramatic increase in the level of income enjoyed by American pensioners. Hence, one could alternatively suggest a different, more cost-neutral thought experiment where a proportional tax is levied on the current, observed income of all old age pensioners to finance the new benefit to be distributed equally among the retired. In this case a benefit set at 52 percent of the current mean income, financed by a corresponding 52 percent proportional tax on all current income, would be sufficient.

In other words, in order for the US to match the Swedish situation one would have to tax away more than half of the existing (disposable) income received by old age pensioners and redistribute the provenue in the form of a uniform benefit to all retirees.

These observations can be utilized to provide alternative illustrations of the differences found in Gini inequality across all nine country cases.

The first column of Table 6.8 shows the estimated Gini coefficients (average scores over three waves of data). The second column shows the corresponding expected relative income differential between two randomly selected individuals for each country. In Sweden this expected income differential between two pensioners amounts to 34 percent of the mean income of all pensioners.

---

[261] The formula can be written: $\frac{1}{2N*(N-1)}\sum_{i,j}\frac{|Y_i - Y_j|}{\overline{Y}}$

The Gini coefficient found for Denmark is 14 percent higher than the Swedish figure and the expected relative income differential between two randomly chosen old age pensioners in Denmark amounts to 38 percent of the mean income received by all Danish pensioners. It turns out that, in order to reach the Swedish level of inequality, a new uniform transfer granted to all old age pensioners would have to be fixed at a corresponding 14 percent of the current mean income received by Danish old age pensioners. If such a new transfer were not simply added to the existing income package among Danish old age pensioners, but instead financed by a proportional tax on the current income received by this population group, the benefit and the tax would have to be fixed at 12 percent of the current income level.

Norway follows rather close, but already in the country ranked fourth, the UK, we find a level of income inequality among old age pensioners that is more than 40 percent higher than the one found in Sweden, corresponding to an expected relative income differential among two randomly selected pensioners at 48 percent.

Turning to the countries ranked fifth, sixth and seventh – Australia, Germany and the Netherlands – the difference in Gini inequality vis-à-vis Sweden rises to about 50 percent. When a randomly chosen pair of old age pensioners compare their income standards, the expectation is that they face an income differential of about 50 percent in mean income.

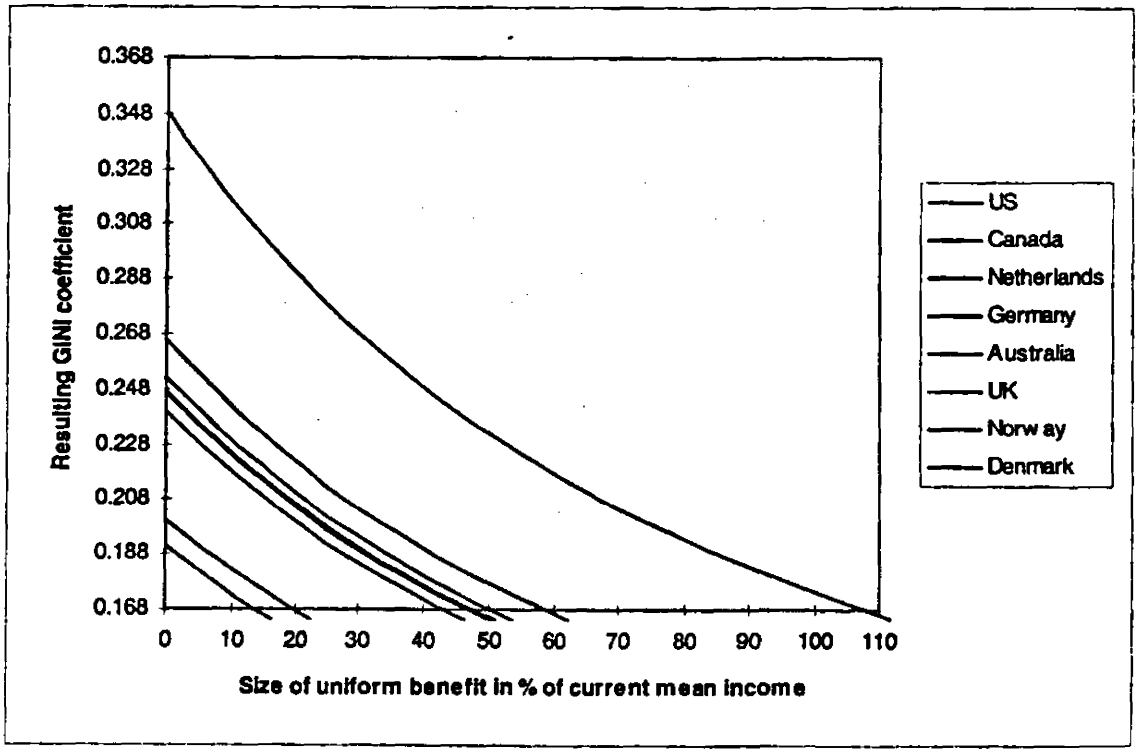
Table 6.8: Differences in Gini scores, expected income differentials between pairs of individuals, and their implications in terms of hypothetical interventions.

	Gini score	Mean relative income differential between pairs of individuals in % *(Sweden=100)*	Size of a new uniform benefit necessary to match Swedish figure, in % of current mean income in the respective countries	
			Without a corresponding proportional tax	With a corresponding proportional tax
Sweden	0.168	34 *(100)*	0	0
Denmark	0.191	38 *(114)*	14	12
Norway	0.201	40 *(119)*	19	16
UK	0.240	48 *(143)*	43	30
Australia	0.246	49 *(147)*	47	32
Germany	0.247	49 *(147)*	47	32
Netherlands	0.252	50 *(150)*	50	33
Canada	0.266	53 *(158)*	58	37
US	0.348	70 *(207)*	107	52

This implies, of course, that scope of a hypothetical intervention along the lines discussed here would have to be very substantial in these countries. An uncompensated additional benefit to all old age pensioners must be fixed at about 50 percent of the current mean income received by this population group in order to reach the same level of inequality as the one prevailing in Sweden. If this hypothetical benefit were financed by a proportional tax, the benefits level and the rate of taxation would have to be fixed at a level around one-third of current income levels in order to achieve the same reduction in inequality.

The thought experiment of reducing current inequality levels by simply adding a uniform income component to the income currently received by all old age pensioners can also be given a more visual representation as in Graph 6.4.

Graph 6.4: Gini inequality among old age pensioners in eight countries after the hypothetical introduction of a new uniform retirement benefit of a varying size.



The curve for each country starts to the left, at the level of Gini inequality that is currently being observed. It shows – along the Y-axis – the resulting level of inequality that would prevail in each country after the addition of a uniform benefit of a varying size, measured relative to the current level of mean income received by old age pensioners. As the size of such a benefit is increased – by moving along the X-axis – the level of inequality decreases until at some point it reaches the Swedish level of 0.168, which has been chosen as the minimum level for the Y-axis. Hence, the curves intersect with the X-axis at the level of benefit required to match the Swedish figures.

It can be seen, for instance, that a new hypothetical benefit, fixed at 25 percent of the current mean income, would be more than sufficient to bring the Danish and the Norwegian inequality figures down below the level of inequality actually found in Sweden, but it would be insufficient in all the remaining countries. Since the introduction of some kind of minimum pension has been discussed in Germany over the last decade (see Schmähl et al., 1992), it is interesting to note that this hypothetical and highly stylized intervention would bring the German inequality figure down to just below 0.2, which is still 18 percent higher than the currently observed Gini coefficient for Sweden. In the US, overall Gini inequality would remain as high as 0.28 after this fairly drastic hypothetical intervention.

I should hasten to stress that the purpose of these thought experiments is not to present relevant policy options and their likely effects on the level of inequality found among old age pensioners. They only serve as heuristic devices, as a means to give substantive meaning to the observed differences in Gini inequality. Hopefully they have helped persuade the reader that the observed differences in Gini inequality among old age pensioners across the nine countries cannot be dismissed as trivial.

Let me finally mention how this type of reasoning could be used to make rough assessments of the potential impact on measured inequality of existing income items that are not recorded in the data. As mentioned in Section 6.2, the implicit income from home-ownership can be assumed to play a very substantial role for the level and distribution of economic well-being among old age pensioners in many of the LIS countries. Since this source of income is not systematically recorded in the data, there is good reason to suspect that the picture of cross-national variation in income inequality among the elderly presented here and elsewhere is biased to some extent. Whiteford and Kennedy (1995) claim that income from home-ownership has a strongly equalizing effect on the distribution of income in Australia and the US, while this income source is less widespread and tends to be much more concentrated among more privileged segments in many of the European countries. This issue certainly deserves more serious attention, if and when the relevant micro-data can be made available for comparative research. In the mean-time a stylized thought experiment can provide some impression of the potential scope of the problem for the inequality ranking of Sweden and Australia.

Assume for the Swedish case that the latent income from home-ownership is distributed in perfect proportion to the distribution of disposable income, or, alternatively, that this latent income source is very small as compared to the mean disposable income. Either of these assumptions will secure that the picture of income inequality in Sweden is unaffected by the inclusion or exclusion of this particular income component. Assume then, for the Australian case, that the latent income from home-ownership is perfectly equally distributed across the population of retirees: i.e., the absolute amount of income received from this source is the same for everybody, rich or poor. I willingly admit that the assumption made for the Swedish case is overly optimistic. This latent income source must have a non-trivial scope among Swedish old age pensioners, and it is likely to be more than proportionally concentrated among the more well-off segments.[262] However, the assumption made for Australia must also be quite far to the optimistic side, since the real value of the dwellings owned by Australian pensioners – and hence the implicit rent – is likely to show at least some variation and a positive correlation with current income levels.[263]

If these assumptions were true, the effect on the level of income inequality found in Australia would simply depend on the scope of this latent income component vis-à-vis the recorded income levels among Australian pensioners. The latent income component can be treated as equivalent to the hypothetical uniform retirement benefit discussed above, and the effect on the total level of inequality can be read off of the Australian curve in Graph 6.4.[264] Without this income component, Australian pensioners are recorded with a Gini coefficient of just below 0.25. If the inclusion of these latent incomes should be sufficient to depress the Australian Gini coefficient to Swedish levels, they would have to amount to no less than 50 percent of the disposable income received on average by all old age pensioners in Australia. This seems to be far more than can realistically be expected.

---

[262] Also after taking into consideration that many of the (generally less well off) tenants benefit from public subsidies and regulation.

[263] Note that this assertion does not run counter to the claim made by Whiteford and Kennedy (1995) that the inclusion of this income source would have a strong equalizing effect in the Australian case.

[264] As pointed out by Aaberge and Aslaksen (1996), there is a very distinct difference between the two types of thought experiment. The latent income component does in fact exist, while the hypothetical benefit represents a truly counterfactual experiment. Therefore, it is only in the latter case that we would have to worry about potential second-order effects.

I conclude that it is highly implausible that the inclusion of this income component could lead to a revision of the ranking of these two countries – even if the initial assumptions are relaxed to a considerable degree in favor of Australia. However, this conclusion depends primarily on the large difference in initial Gini estimates for the two countries. A potential bias caused by the exclusion of the implicit income from home-ownership could very well affect the ranking of some of the other country cases.

6.4 THE STRUCTURE OF INEQUALITY

In this section, I shall look at the way the income distribution among old age pensioners is structured across age-groups and household types in the nine countries.

One of the fundamental maxims of inequality measurement, discussed in Section 6.2, is the Principle of Symmetry or Anonymity. The idea is that only the degree of dispersion or concentration of income across the relevant population should be allowed to matter, while any more specific characteristics of the individuals at various positions in the income distribution are irrelevant. For instance, the fact that female pensioners might tend to be more heavily concentrated in the lower end of the income distribution in a particular country will not and should not make any difference to the measurement of inequality as such.

In much policy discourse, on the other hand, one can often find a strong concern with average income differentials among identifiable subgroups according to age, gender, race, socio-economic status, etc., sometimes at the expense of any concern for income differentials within each subgroup and for the overall level of income inequality.

Of course, these two types of distributive analysis need not be mutually exclusive, but there can be different opinions about their respective status and way they ought to be linked.

One possible position would be that the degree of overall inequality is what really matters for the social evaluation, while various subgroup differentials are relevant only insofar as they contribute to overall inequality. A strong and growing average income differential between subgroups – like males and females – will tend to enhance the overall level of inequality,[265] and these implications for the overall level of inequality would be the ultimate reason for concern. In this context, a description of income differentials between subgroups is primarily of analytical value as it can help explain why some distributions perform better than others in terms of overall inequality.

Alternatively, you might think that certain subgroup comparisons take on a special normative significance, and that the social evaluation should somehow balance concerns for the degree of overall inequality with concerns for the way inequality is structured across various subgroups. By taking this position one would have to confront difficult questions about the choice of relevant subgroup divisions and which kind of weight this dimension should be given vis-à-vis differences in overall inequality,[266] but this does not mean that such a position could not be specified and defended.

---

[265] Note however, that the relationship between such income differentials and overall Gini inequality is complex – see the discussion in Section 6.5 and Appendix III.

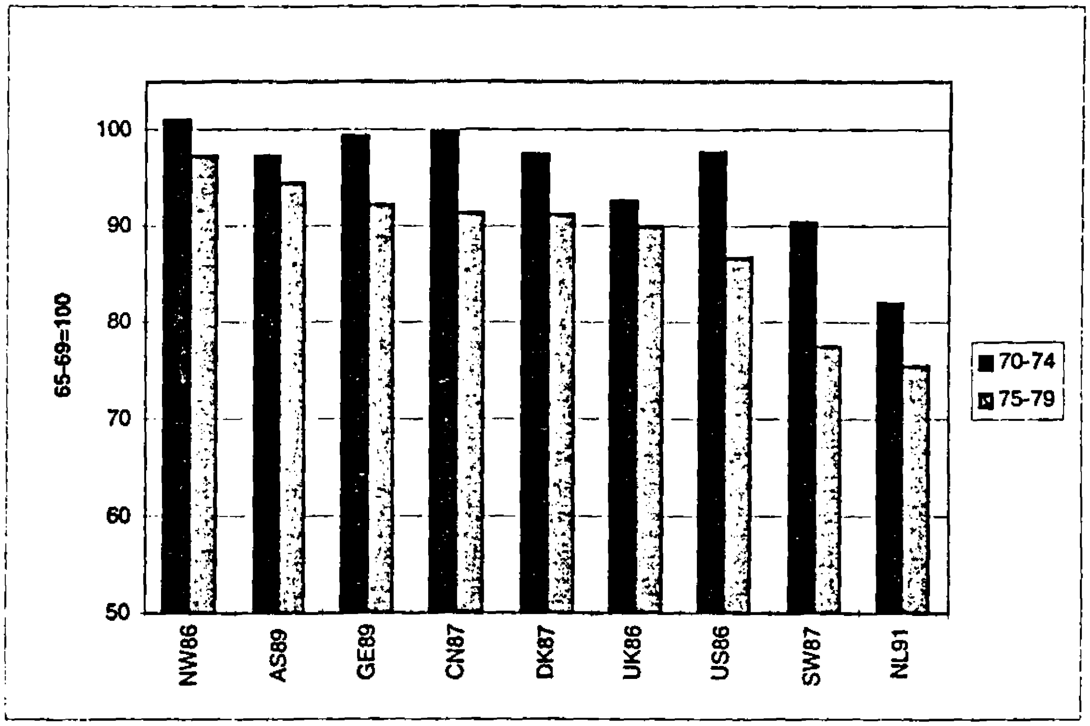
I am inclined to take the first position and view the following description of income differentials across age-groups and household types as being primarily of analytical value, but the reader might think otherwise.

Needless to say, age-group and household type are not the only characteristics that could have been relevant in the present context. An investigation of current income differentials among pensioners according to their income position before retirement, occupational status before retirement, etc., would have been highly relevant as a means to shed light on the functioning of the respective pension systems, but data sets such as those offered by LIS do not contain the necessary information.

Income differentials across age-groups

In order to show how the typical income level tends to vary with the age of the household head in each country, the total population has been divided into three five-year age bands. The results are shown in Graph 6.5. Since the main interest is focussed on relative differentials, the mean income of the age bands 70-74 and 75-79 has been calculated in percentage of the mean income enjoyed by the youngest age band; i.e., those aged between 65 and 69.

Graph 6.5: Mean disposable income across age-groups. Mean income of individuals belonging households with head aged 65-69=100. LIS eq. scale.



---

[266] The weakest possible trade-off would take the form of a lexicographic ordering: only when two distributions show identical levels of overall inequality is the difference in subgroup differentials allowed to decide the ordering.

In all the countries there are clear tendencies for average income levels to decline with age in these cross-sections of old age pensioners. However, the differentials between the youngest and the two older age-groups vary substantially in magnitude.[267]

Age differentials appear to be smallest in the Norwegian sample. The mean income of the oldest age-group is 97 percent of the level found in the group with a household head between 65 and 69. The corresponding figure is 94 percent in Australia, and it declines gradually, when moving to the left, with Germany, Denmark and the UK all showing figures above 90 percent for the oldest age-groups. The last three countries display more notable age differentials. In the US sample, the average income of individuals belonging to the oldest age-group is 87 percent of the income level enjoyed by the young pensioners, and the last two countries deviate even more sharply. In the Swedish sample, the average income of the oldest pensioners only reaches 78 percent, while the corresponding figure is 75 percent in the Dutch sample.

It is interesting to observe, that of the three countries with largest income differential across age-groups, one is the country with the lowest recorded level of overall inequality (Sweden), while the remaining two (Netherlands and the US) are countries showing the highest level of overall inequality.

Norway is the only country where the monotonous, declining relationship between age and income is broken, since the age-group 70-74 is recorded with a slightly higher average income level than the one found among the youngest pensioners. This result is presumably driven primarily by a selection bias that can be expected to be particularly strong in the Norwegian case. The requirement that earnings should contribute less than 1/3 of all gross (household) income in order for an individual be included in the material is particularly consequential in Norway, since the normal retirement age is 67 and a non-trivial share of the population between 65 and 70 are still working. It is well established, in Norway and elsewhere, that the propensity to stay on in the labor market after 65 is strongly related to income and wage levels, and hence the pensioners found in this age-group will tend to be systematically selected among the less privileged strata. In the age-group 70-74 virtually everybody will be retired, and hence the pensioners in this age-group will include also these more privileged strata, and for this reason their mean income will appear to be higher. This effect might also be active in some of the other countries with comparatively high effective retirement ages – like Canada – and in these cases it will contribute to weaken the underlying tendency for the older pensioners to be poorer than their younger "colleagues".

Some more general points should be made about the interpretation and evaluation of observed income differentials across age-groups of old age pensioners based on cross-sectional data. The pattern could be the result of at least three very different dynamic processes.

There could be a tendency for real income levels to decline over retirement for each individual and therefore also for each birth cohort, due to insufficient indexation of public and private pensions, for instance, or a gradual wearing down of private assets and a decline in income from capital.[268] This might be labeled a genuine age effect. The implications of such an effect for inequality measurement are rather ambiguous. On the one hand, it would constitute a permanent feature of the income conditions suffered by subsequent cohorts of retirees, and there is good reason to consider a possible tendency for income standards to decline over retirement as being intrinsically undesirable and harmful. On the other hand, if this effect is experienced by everybody in each successive cohort, it would imply that some of the inequality found among people in different stages of retirement in the cross-sectional data would disappear if one had chosen a longer account period and looked at the distribution of total income received over larger parts of the retirement phase.

---

[267] The scope of the measured income differentials across age-groups depends quite heavily on the choice of equivalence scale, since single member households are more strongly concentrated in the oldest cohort band. However, a change in the equivalence scale will not make much difference to the picture of cross-national differences, and hence a sensitivity test is not presented here.

[268] An increase in the frequency of widowhood with a corresponding drop in income standards could also be counted in as a genuine age effect – see the discussion in Chapter 9 below.

Alternatively, the pattern observed in the LIS data could be the result of a pure cohort effect. The young pensioner cohorts could simply be richer than their older colleagues thanks to the maturation of public and private pension systems and – possibly – a general tendency for younger cohorts to have received higher lifetime incomes. In this case, the age differentials would be more of a historical and transitory phenomenon, but they would constitute real interpersonal differences.

Finally, a potential bias from differential mortality should be mentioned. Mortality rates tend to rise very substantially as people approach the typical age of retirement and throughout the retirement years, and hence the effect on the representative samples that can be drawn from this age-group is substantial. It is a well established finding from different national contexts that mortality and life expectancy in older life are strongly and negatively related to income and economic status.[269] As the poor members of each cohort die off first, we should expect average income levels to rise over time as a result of this process of selection. This effect should run counter to the age effects and the cohort effects discussed so far, and it should tend to dampen the degree of income inequality that would appear from the conventional cross-sectional data-sets. The real problem in our context is that this effect could be stronger in some countries than in others, and hence the picture of cross-national variation in income inequality among old age pensioners could be seriously biased.

On the basis of cross-sectional data, one can only speculate about which of these effects are active in the respective country cases and to what extent. Later, in Chapter 8, I shall explore these issues in depth for the case of Denmark, using a large full-fledged panel data-set of Danish old age pensioners.

It was discussed in Chapter 3 that one could expect private income sources to be more vulnerable to inflation and a gradual depletion over the retirement phase, as opposed to public pension benefits. Consequently, a possible real tendency for income levels to decline over retirement should be stronger in countries where the total income package of retired households relies more heavily on private income sources.

The fact the income differentials across age-groups appear to be high in the US and the Netherlands seems to fit with this expectation, while it is all the more surprising that Sweden figures among the group of countries with relatively high age-income differentials. However, there is good reason to believe that the maturation of public as well as private pension schemes and other cohort effects play a significant role in most of the countries, not the least in Sweden. Technically speaking, the Swedish public pension system should have been close to a state of maturation in the late 1980s. However, the strong increase in female labor force participation that took place in Sweden in the 1960s and 1970s implies that the younger generations of retired households have enjoyed a higher level of lifetime income and that they enter retirement with a higher social insurance and occupational pension wealth than did the older pensioner cohorts.

---

[269] In Chapter 8, I shall show that this relationship holds among Danish old age pensioners.

Income differentials across gender/household types

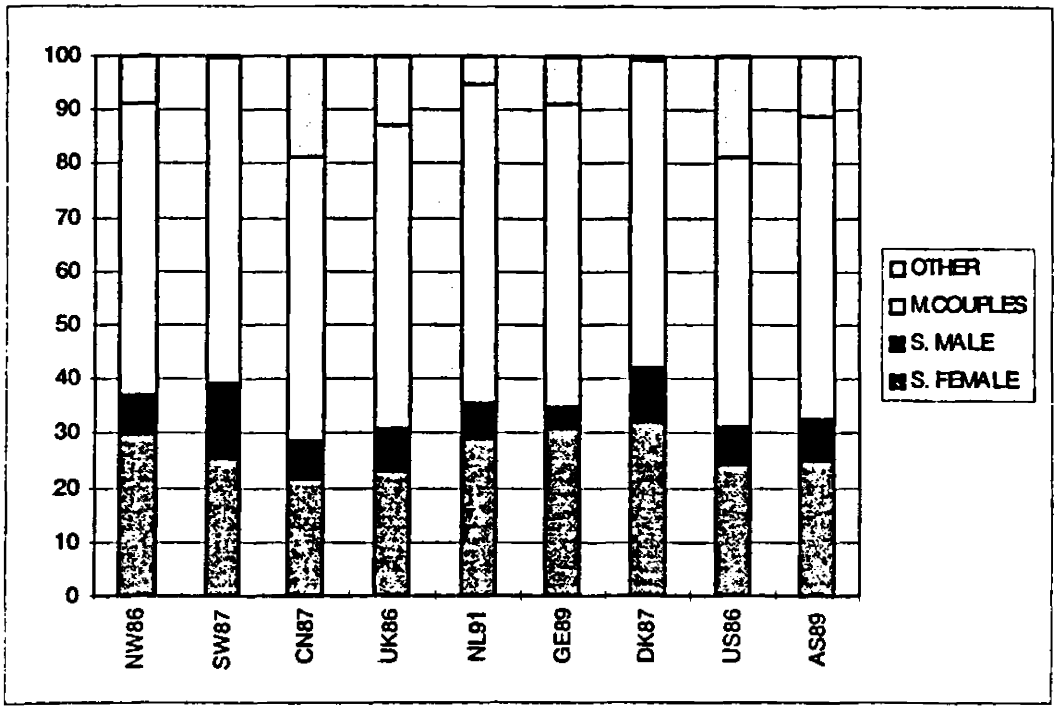
Let me now turn to the differences in mean income levels enjoyed by members of different household types.

This dimension is arguably the more politically and normatively pertinent, as it relates to the prominent question of a gender gap in retirement income. If one accepts the position taken throughout this work that individual welfare is determined by the income situation of the entire household/family – and not by the level of personal income – the issue of gender differences must center around a comparison of the situation prevailing among single females (or if you like, households with a female head) on the one hand and married couples and single males on the other.

A large proportion of single female pensioners are likely to be widows. The income situation of widows can be expected to depend on the existence and quality of a possible minimum pension, the quality of any survivor's benefits and other pension rights (public or private) that are derived from the late husbands and, finally, the level of any social insurance pensions and occupational pensions that these women might have accrued in their own right. The last aspect implies that not only variation in the pension systems per se but also variation in the historic pattern of labor force participation among these generations of female pensioners can be suspected to influence the picture of cross-national variation.

In most of the country samples, it is possible to distinguish between four different household/family types: single females, single males, married couples and other, more extended family types. The composition of the respective country samples is presented in Graph 6.6.

Graph 6.6: Composition of the pensioner samples according to family types.



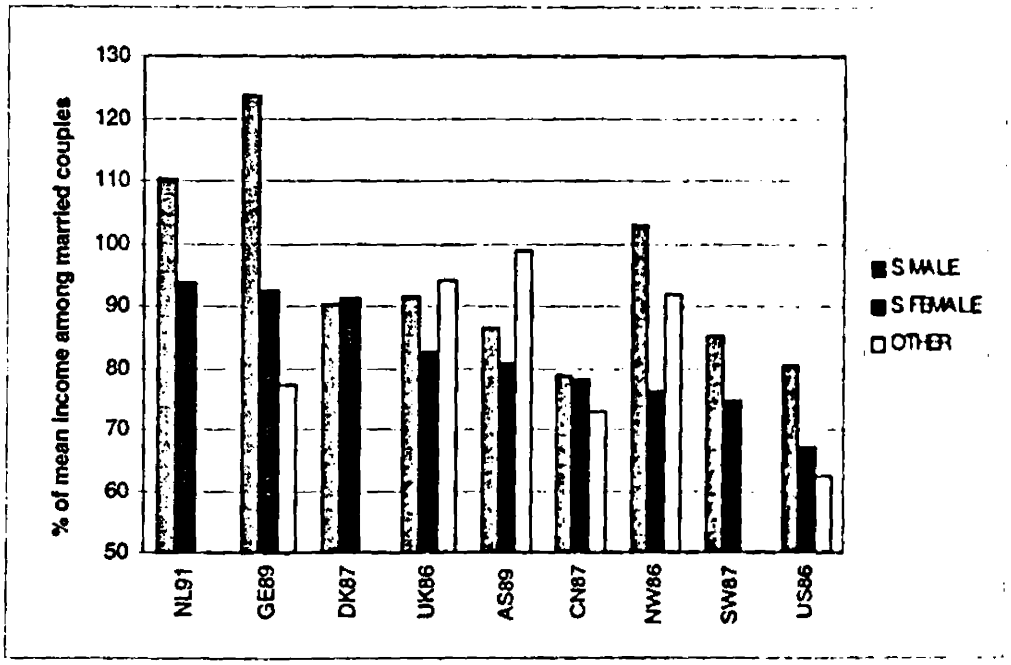
In all the samples, the largest category is of course married couples, followed by single females, while single males everywhere constitute a rather small minority. In some country samples, the category "other family types" represents a non-trivial minority among the retired, while in others this category is virtually absent. The category is practically empty in the Swedish and the Danish survey, and the share is modest – below 10 percent – in the Netherlands, Germany and Norway. The contrast is significant vis-à-vis the four English speaking countries, in particular Canada and the United States where the category "other family types" takes up more than 18 percent of the respective samples.

This difference in the range of family types that can be found in the various countries could partly be the result of different statistical conventions and definitions. For instance, in the Swedish survey each adult (above 18 years of age) is considered to form a separate family/household unless the person is living together with a spouse or partner. This practice will in itself explain why the category "other family types" is virtually empty in the Swedish survey.

However, there is reason believe that the differences that can be observed in Graph 6.6 do reflect different behavioral patterns. More extended family types where, for instance, old age pensioners share a household with their adult offspring, seem to be more common in North America than they are in most (Northern) European countries, where this appears to have become an extremely rare phenomenon.

These differences in the relative frequency of the respective family types should be kept in mind when looking at the differentials in mean income levels presented in Graph 6.7.

Graph 6.7: Relative mean disposable income across four family types. Mean income of married couples=100. LIS eq. scale.



In Graph 6.7 the mean level of income enjoyed by the three remaining family types is measured in percentage of the income level recorded among married couples. One can immediately see that there is a considerable variation across the country cases in the degree and structure of income differentials.

Nevertheless, one universal feature stands out. In all the countries, single females appear to constitute an underprivileged group, with average income levels well below the level found among married couples and single males. Note, however, that Denmark departs from the latter aspect of the general pattern, since single male pensioners in Denmark are recorded with average income levels slightly below the level found among single female pensioners. Also in Canada the relative income position of single males is very close to the situation experienced by single females.[270]

In Graph 6.7, the countries are placed along the X-axis in descending order according to the size of the income differential found between single females and married couples. The average income of single female pensioners exceeds 90 percent of the level found among married couples in three countries, the Netherlands, Germany and Denmark. In a second group of three countries, the UK, Australia and Canada, average income levels among single females are in the area of 80 percent of the level found among married couples. Norway and Sweden follow next, with scores around 75 percent, while the US displays the highest differential with single female pensioners receiving only 67 percent of the income levels enjoyed by married couples.

The relative situation of the smaller category of single males varies more strongly. Single males appear to do better on average than married couples in three countries, Germany, Netherlands and Norway, while this group appears significantly less privileged in the remaining countries. The pattern observed among German pensioners, with a particularly privileged situation among single males, can be explained with reference to peculiarities of the German pension system in combination with the low labor force participation rate found among (in particular married) women in Germany. As described in earlier chapters, the German pension system is a rather pure social insurance scheme, without any universal minimum benefit provided to female home-makers and other individuals without an active labor market career of their own. A further peculiarity of the German scheme is that no special allowance is paid to male pensioners for supporting a wife who is without substantial pension entitlements of her own. The result is that the German pension system appears to be less generous towards the typical married couple (when differences in economic needs are taken into consideration), in particular in comparison with the single male who lives alone on the social insurance pension secured by a full lifetime earnings record. Also the typical widow pensioner is relatively well taken care of in Germany thanks to the fairly generous survivor's benefits guaranteed by the German pension system. This pattern is likely to change if and when the labor force participation rates of married females in Germany increases to Scandinavian/North American levels.

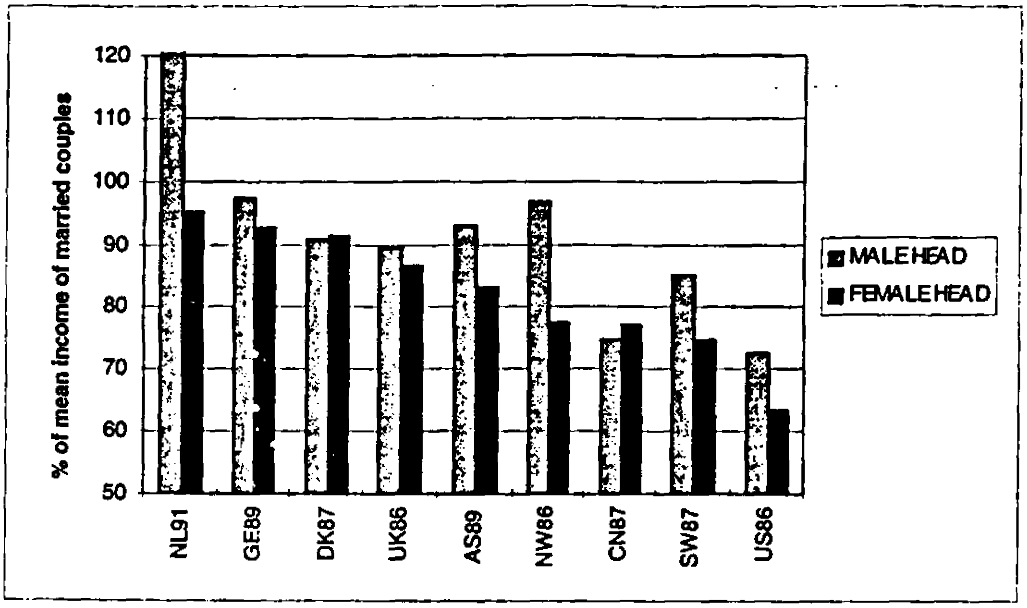
There is very strong variation across the countries in the relative position of individuals belonging to the last, more heterogeneous category of family types. In the two countries where this group is particularly large – Canada and the US, the mean income level found for this group is very low. There can be reason to suspect that, in these and other countries, the sharing of a household between generations or with other individuals outside the nuclear family can be part of a strategy to cope with a low level of income and other economic resources. If this is the case, it introduces a further complication for the comparative analysis, since a higher propensity among poorer segments to join in more extended households for economic reasons will help create a more favorable picture of their economic situation, while any potential costs in the form of disutility will remain hidden.

low I shall try to investigate how these income differentials across age-groups and family pes contribute to the overall level of income inequality found in the respective countries. For that purpose it is convenient with a breakdown in family types, that is more balanced and consistent across countries. In order to arrive at a more balanced three-fold breakdown in all countries, the group "other family types" has been split into two subgroups according to the recorded sex of the household head. Those with a male head have then been added to the single males, while those with a female head have been added to the single female units.

---

[270] Again it should be noted how these income differentials depend crucially on the equivalence scale chosen (here the LIS scale). However, the picture of cross-national variation in the relative performance of different household types is virtually unaffected by changes in the equivalence scale, and, therefore, the results of a sensitivity test are not provided.

Graph 6.8: Relative mean disposable income across three family types: a) married couples, b) other male headed households and c) other female-headed households. Mean income of married couples=100. LIS eq. scale.



The relative income position of these two new categories of, respectively, male- and female-headed households is compared to the (unchanged) mean income of married couples in Graph 6.8. The variation in the relative position of female-headed households (single and other) is roughly equivalent to the findings for the more narrow category of single females. In the countries where those in category of "other family types" were found to be relatively underprivileged, the new combined categories of female-headed and male-headed families tend to do worse.

Like the age-income differentials discussed above, the income differentials across family-types/gender could be the result of very different dynamic processes in each country, and hence they cannot be interpreted as direct effects of the respective pension systems. Differences in female labor force participation, processes of selection through mortality, andvariation in the class-specific risk of falling into widowhood might all play a role in a complicated interaction with the respective pension systems.

In this context it is interesting to note that the relative income position of single females appears to be particularly unfavorable in the US, Sweden and Norway, three countries where female labor force participation rates are known to have been high and growing over the last two to three decades. This is a somewhat paradoxical finding, but it can be explained by at least two different mechanisms.

It could simply be the result of a more transitory cohort effect triggered by the tendency for labor force participation to have increased between successive birth cohorts of women in these countries. The income differentials across family types is likely to be related to the income differentials found across age-groups, and we have already seen that the US and Sweden also belong to the countries with the strongest income differential across age-groups.

In a cross-section of pensioner families, the typical single female pensioner is older than the male head of the typical married couple, and the age differential to the typical female spouse covered in the sample is even greater. In other words, the single females and the female spouses that are included in these data-sets do to some extent belong to different generations with (potentially) a different labor force participation history and hence a different level of accrued pension rights.

Alternatively, the finding could be explained as a more permanent feature, the result of an interaction between comparatively high female labor force participation rates on the one hand and contemporary, individually oriented pension systems on the other. The dual earner couple will under many contemporary pension systems (like those found in the US, Sweden and Norway) receive something close to a double wage-earners pension, and hence they will be in a much more favorable economic situation vis-à-vis single males and females than the traditional one-earner couple. When the male spouse dies, however, the surviving female might not be entitled to a deferred benefit after the husband, since she is already receiving a (typically modest) social insurance pension accrued by herself, and the drop in income can easily become too big to uphold the same level of equivalent income. (Burkhauser and Smeeding, 1994). If both labor force participation rates and earnings levels between men and women should continue to converge in the future, this effect will not necessarily vanish, but it should begin to affect single males as strongly as single females.

Of course, it is impossible to explore these issues in depth on the basis of simple cross-sectional data. However, a simple multivariate analysis of variation in income levels could give some indication whether the unfavorable income position of female-headed households found in the pensioner samples from the US, Sweden and Norway, is primarily a cohort effect. If this were the case, we should find that the degree to which female-headed households fall behind the average income level becomes significantly smaller after controlling for age; i.e., if the comparison between family types is restricted to members of the same cohort bands. This appears not to be the case, according to the results of an analysis of variance presented in Table 6.9.

Table 6.9: The mean income of female-headed families, in % of the mean income of all retired. Before and after the application of a statistical control for the distribution of family types across three age-groups. Estimates derived from analysis of variance.

	DK87	GE89	NL91	UK86	AS89	CN87	NW86	SW87	US86
Before controlling for age	95.0	94.6	92.1	91.6	88.6	87.3	84.1	81.6	76.2
After controlling for age	95.6	95.2	94.5	92.3	88.8	87.8	84.1	82.6	76.7

The relative income position of female-headed households shows some improvement in most of the countries, when the comparison is restricted to members of the same age-group (three five-year cohort bands). However, the improvement is only marginal, and the picture of cross-national variation along this dimension is practically unchanged.

6.5 GROUP DIFFERENTIALS AND THE CONTRIBUTION TO OVERALL GINI INEQUALITY

After this description of typical income differentials across age-groups and family types, the question remains: How do these differences in the average level of income received by different age-groups and family types contribute to the overall level of income inequality found in each country?

There is no straightforward answer to this question, given the nature of the Gini index. I have in Section 2.6 and in the discussion in Appendix II mentioned how the Gini index fails to meet the so-called Subgroup Consistency Axiom, and that the Gini coefficient cannot be neatly decomposed according to the contribution made by "within-group" and "between-group" components, as it can be done for members of the Generalized Entropy Family (Cowel, 1995).

However, the lack of a neat decomposition rule does not rule out all possibilities for discussing the impact of the observed differences between subgroups on the overall level of Gini inequality.

One main strategy I shall pursue in the following is to explore two clearly defined counterfactual manipulations of the micro-data themselves. In the first of these experiments, the existing mean differences between subgroups are eliminated, while leaving the relative differences within each subgroup intact; i.e., the incomes of all members of a particular subgroup are scaled up or down by a constant factor, to ensure that the mean income of the subgroup equals the overall mean. When this has been done, the Gini coefficient is calculated for the resulting (artificial) income distribution. This procedure can be seen to answer the question, what would have been the level of inequality among the general population if the existing differences in mean income among subgroups had been eliminated, while leaving within-group differentials intact.

As a second, complementary experiment, the Gini coefficient can be calculated for the hypothetical income distribution that would result if all members of each particular subgroup had been observed with an income level equal to the mean income presently observed for the subgroup.[271]

The problem with this strategy – using alternative counterfactual experiments – is that it cannot provide a symmetrical decomposition of the overall Gini coefficient. The Gini coefficient for the two counterfactual distributions will not add up to the overall Gini coefficient that is actually observed for the general population, and hence the relative significance of within-group and between-group differentials cannot be established unambiguously. Still, I shall present the results of these two alternative counterfactual experiments for a breakdown into age-groups and family types, before I move on to apply a particular symmetrical method of subgroup decomposition of the Gini index.

---

[271] This is equivalent to the so-called age-Gini used by Paglin (1975) in his attempt to provide a measure of Gini inequality net of typical income differentials across age-groups, and it is identical to the "between-group" component that is used in most of the existing attempts to specify a subgroup decomposition rule for the Gini coefficient – see the discussion below.

Counterfactual experiments, age-groups

As shown in Graph 6.5, there appears to be considerable variation across the country cases in the degree to which the mean income of the very elderly falls behind the income levels enjoyed by younger pensioner cohorts. Table 6.10 presents the results of two counterfactual experiments that can be seen to illustrate the impact of income differentials across age-groups on the overall level of income inequality found in each country.

In the first experiment the differences found in the mean income of the respective age-groups have been removed in the micro-data, without interfering with the relative income differentials found within each age-group. This has been achieved by calculating the ratio between the overall mean income and the mean income within each subgroup, and the inverse of this ratio is then used to scale the observed incomes of members of each subgroup up or down so that the mean income of the group coincides with the overall mean. If, for instance, the income level found among the youngest cohort band is 10 percent above the overall mean, then the constant scaling factor for the members of this group is fixed at 1/1.1, and so on.

As can be seen from the first row of Table 6.10, the pure elimination of income differentials between age-groups has only a very modest effect on measured Gini inequality in most of the countries, and here in particular in countries where age-group differentials appeared to be small. The strongest relative effect (percentage reduction in overall inequality) is found in Sweden, a country where age-group differentials are among the highest, and where, at the same time, overall inequality among the elderly is found to be very low. The hypothetical elimination of mean differentials between cohort bands of old age pensioners in the Swedish sample, results in a Gini coefficient of just above 0.16, corresponding to a 12 percent reduction compared to the Gini coefficient actually observed.

In the second, complementary experiment, all income differentials within each age-group have been eliminated. All members of a particular age-group have been given a hypothetical income equal to the group mean. Of course, one must expect this operation to have the strongest impact in countries where the income differentials between groups are smallest. This appears to be the case. Income inequality is almost totally eliminated in countries such as Norway, Australia, Canada and Germany, and even in the US where age-group differentials were somewhat stronger, the relative reduction is very strong because of the very high degree of within-group income differentials. The absolute level of Gini inequality found in this hypothetical situation is highest by far in the Netherlands and Sweden, and also the relative reduction is smaller in these two countries.

Table 6.10: Overall Gini inequality among old age pensioners and its reaction to two counterfactual experiments concerning income differentials across and within age-groups.

		NW86	AS89	CN87	GE89	US86	UK86	DK87	NL91	SW87
Observed Gini coefficient		0.201	0.266	0.267	0.239	0.362	0.225	0.193	0.282	0.170
Experiment 1: Eliminating differences in mean income between groups	Resulting Gini coefficient	0.201	0.265	0.266	0.238	0.360	0.223	0.192	0.276	0.161
	% reduction in inequality	*0.2*	*0.3*	*0.3*	*0.4*	*0.4*	*0.9*	*0.9*	*2.2*	*5.1*
Experiment 2: Eliminating all within-group variation	Resulting Gini coefficient	0.009	0.014	0.018	0.018	0.028	0.024	0.020	0.063	0.048
	% reduction in inequality	*95.5*	*94.8*	*93.4*	*92.7*	*92.4*	*89.3*	*89.5*	*77.6*	*71.9*

Note how these two experiments offer two alternative measures of the relative significance of between-group differentials for the overall level of Gini inequality actually observed. Taking Sweden as an example, we can say that the removal of all between-group differentials (while leaving within-group differentials intact) would reduce observed inequality by 5.1 percent, while the removal of all within group differentials (while leaving between-group differentials intact) would result in a reduction of inequality to a level corresponding to 28 percent of the level actually observed.

Counterfactual experiments, family types

The results of similar experiments based on a subdivision of the retired into family types are presented in Table 6.11. The hypothetical elimination of mean differences between family types does appear to make some contribution to reduce the overall level of inequality in all the nine-country samples, but the size of the effect is still quite modest in most cases. The effect is relatively strongest in Sweden, where we know that income differentials across family types are particularly strong while at the same time overall inequality is very low. The Gini coefficient for the hypothetical distribution is 0.15 or 12 percent below the level actually observed. In the US where, as shown in Graph 6.7, income differentials across family types were even stronger, the relative effect of the experiment is far more modest. In the US case, the Gini coefficient is reduced by 4.5 percent from 0.362 to 0.345.

The hypothetical elimination of within-group variation has a much stronger impact, generally, but still with some interesting variation across countries. Since between-group differences are strongest in the US, it is not surprising that the level of inequality that would obtain under the second experiment is the highest, with a Gini coefficient at 0.11. About 30 percent of total inequality would remain in the US sample. In Sweden the resulting Gini coefficient is only half this size (0.058), but in relative terms this represents 34 percent of the level of inequality actually observed in the Swedish sample.

Table 6.11: Overall Gini inequality among old age pensioners and its reaction to two counterfactual experiments concerning income differentials across and within family types.

		DK87	UK86	AS89	GE89	CN87	US86	NL91	NW86	SW87
Observed Gini coefficient		0.193	0.225	0.266	0.239	0.267	0.362	0.282	0.201	0.170
Experiment 1: Eliminating differences in mean income between groups	Resulting Gini coefficient	0.192	0.220	0.258	0.231	0.257	0.345	0.266	0.187	0.149
	% reduction in inequality	*0.9*	*2.3*	*2.8*	*3.3*	3.8	*4.5*	*5.6*	*7.2*	*12.1*
Experiment 2: Eliminating all within-group variation	Resulting Gini coefficient	0.022	0.036	0.042	0.040	0.070	0.107	0.050	0.058	0.057
	% reduction in inequality	*88.9*	*84.2*	*84.2*	*83.2*	*73.8*	*70.4*	*82.3*	*71.4*	*66.3*

Again one should note how these two experiments provide very different accounts of the role played by income differentials across subgroups. Using the results of the first experiment on the Swedish case, one could conclude that 12 percent of the existing Gini coefficient is accounted for by income differentials across family types. Using the results of the second experiment, one might be tempted to claim that no less than 34 percent of the observed overall inequality is accounted for by variation in the mean income enjoyed by different subgroups.

Subgroup decomposition of the Gini index applied to family types

Despite the failure to meet the Subgroup Consistency Axiom, a number of attempts can be found in the literature to develop symmetrical subgroup decomposition rules for the Gini index similar to the ones that available for members of the Generalized Entropy Family. These decomposition rules for the Gini index usually involve three components: a term for within-group inequality (which is always based on the Gini coefficient itself), a term for between-group inequality and a third, arguably more opaque, term taking count of the degree of overlap between the subgroups (see Bhattacharya and Mahalanobis, 1967; Pyatt, 1976; Shorrocks, 1984; Silber, 1989; Yitzhaki and Lerman, 1991; Lambert and Aronson, 1993; Yitzhaki, 1994; Dagum, 1997). Whenever there is some degree of overlap between the subgroups, a third term becomes necessary to ensure that the components will in fact add up to the overall Gini coefficient for the general population.

Here I shall use a decomposition rule, presented in Appendix III to the present chapter, that is a simpler version of the approach developed by Yitzhaki and Lerman (1991) and Yitzhaki (1994). In their approach, the within-group term is defined in the conventional way as a weighted average of the respective subgroup Gini coefficients, but the approach deviates from the rest of the literature in the way the between-group component is defined and in the definition of the terms reflecting the degree of "stratification"/overlap between the subgroups.

Unlike the original formulation by Yitzhaki and Lerman, the subgroup decomposition that is presented in Appendix III and applied to the LIS data below involves two terms only: a within-group (WG) and a between-group term (BG).

$$\text{Gini} = \text{WG}+\text{BG}$$

The between-group term is identical to the one suggested by Yitzhaki and Lerman (1991), while the within-group term is based on a kind of pseudo-Gini index – The Subgroup Concentration Index.

As argued in Appendix III, this simple decomposition provides a meaningful breakdown of overall Gini inequality into a within-group and a between-group component. It is faithful to the normative/sociological assumptions invoked by the use of the Gini index to measure inequality within the general population. Of the total level of relative deprivation recorded by the Gini coefficient for the general population, WG accounts for the part stemming from within-group comparisons, while BG accounts for the part stemming from between-group comparisons.

However, like any subgroup decomposition rule for the Gini index, it does have severe limitations. WG and BG are strongly interdependent, and hence they cannot be seen as providing separate parts of an explanation for the overall level of inequality actually observed. The decomposition provides a description of the way overall inequality is structured into within- and between-group components, but it cannot pretend to offer an explanation of the overall level of inequality in the same way as can be claimed for the decomposition of the Generalized Entropy Family of indices (see Cowell and Jenkins, 1994).

Results from the application of this decomposition to a grouping of the retired into family types are presented in Table 6.12.

Table 6.12: Gini inequality among old age pensioners decomposed with respect to family types. Absolute values for the within-group (WG) and between-group (BG) components, and the respective shares in the overall Gini index.

	Absolute values			In % of overall Gini		
	WG	BG	Gini	WG	BG	Gini
DK87	0.191	0.002	0.193	99	1	100
UK86	0.218	0.007	0.224	97	3	100
GE89	0.226	0.013	0.239	95	5	100
NL91	0.269	0.013	0.282	95	5	100
AS89	0.249	0.016	0.265	94	6	100
CN87	0.245	0.021	0.266	92	8	100
NW86	0.175	0.027	0.201	87	13	100
SW87	0.139	0.030	0.169	82	18	100
US86	0.320	0.042	0.362	88	12	100

The picture emerging from Table 6.12 is roughly in accordance with the results of the two counterfactual experiments. It is characteristic, however, that the decomposition consistently provides an assessment of the role of between-group differences that strikes a balance between the more extreme assessments flowing from the two counterfactual experiments.[272] In Table 6.12, the countries are presented in ascending order according to the absolute value of the between-group component. This component takes the highest value in the US, with a score of 0.04, followed by Sweden with a score of 0.03. The smallest value for the between-group component is found in Denmark, with a score of 0.002.

The within-group component is highest in absolute terms in the US, followed by the Netherlands, Australia and Canada. The within-group component shows extremely low values in Sweden, followed at some distance by Norway and Denmark.

The relative significance of the between-group component shows very strong variation across the country cases. The between-group component represents only 1 percent of total Gini inequality among the retired in Denmark, while it represents 12 percent in the US, 13 percent in Norway and 18 percent in Sweden.

It is interesting to note that although the level of inequality is found to be relatively low among the retired in all three Scandinavian countries, it appears to be structured differently with respect to income dispersion within and between family types. The between-group contribution to overall inequality is extremely modest in Denmark, while the within-group inequality component is stronger than in the two other Scandinavian countries.

I suggested above that the relatively privileged position of married couples vis-à-vis single pensioners found in the US, Sweden and Norway might be explained – at least partly – with reference to the strong growth in female labor force participation in these countries over the last decades. This explanation is challenged by the fact that the income differentials between family types appear to be far more modest in Denmark, where female participation rates have also grown to a comparatively high level in the same period.

---

[272] This is no coincidence. It can be shown that the BG term will always be smaller than the Gini coefficient calculated in Experiment 2 and smaller than the reduction vis-à-vis the original Gini coefficient resulting from Experiment 1. For a proof of the first part of this claim see Yitzhaki and Lerman (1991).

It is possible, however, to accommodate these findings as the result of an interaction effect between female participation rates and features of the pension system. The Danish pension system differs from the systems found in the two other Scandinavian countries (and in the US) by the absence of any second tier of earnings related social insurance pensions. This explains why, despite their history of labor market participation, new generations of female pensioners in Denmark do not receive higher public pensions than their older sisters. Of course, some of these younger female pensioners will have earned rights to occupational pensions, but as we have seen in the Chapters 2 and 6, coverage with occupational pensions and the role of occupational pensions in the income package of Danish pensioners is smaller than you might expect.

Similarly, you might try to account for the higher degree of intra-group differences observed in the Danish sample as compared to the Swedish and the Norwegian samples with reference to the fact that occupational pensions and income from capital do play a relatively stronger role among Danish old age pensioners, and hence can create stronger income differentials within family types. I shall stop here, since these last remarks anticipate the theme of the following chapter.

CHAPTER 7

EXPLAINING VARIATION IN OUTCOMES

7.1 INTRODUCTION

After having measured variation in public pension systems and in retirement income packages in Chapter 5 and attempted to assess and compare the degree of inequality prevailing among the retired in Chapter 6, I am now ready to embark on the final chapter of the comparative analysis in Part II of the thesis, where I shall explore the possibilities for drawing substantive conclusions about the hypothesized relationship between institutions and outcomes.

As discussed in Chapter 4, the prospects for making causal inferences based on a limited cross-sectional sample of country cases are extremely bleak. Hence, the approach adopted here must be rather eclectic, as neither comparative design strategies nor statistical controls can in and by themselves be guaranteed to isolate the relevant institutional effects.

In the present chapter, I shall pursue two rather different lines of inquiry, which I have called "external analysis" and "internal analysis", following a suggestion by Janoski and Hicks (1994). External analysis refers to the truly comparative, causal analytical type of analysis, where variation in country scores on dependent and various independent variables is used to draw inferences about hypothesized institutional effects. Internal analysis refers to analytical efforts that aim to open the black-box of more specific mechanisms that must be assumed to operate in each country case.[273] It is characteristic of internal styles of analysis that they are capable of operating on the basis of information on one macro-unit only. This can be statistical information about micro-level relationships, or it can be more qualitative, process-oriented types of information.

The type of internal analysis that is presented in this chapter focusses on the contribution made by different income components – public pensions, private income and taxes paid – to the level of inequality found in total disposable income among the respective pensioner populations. As I have argued in Chapter 3, the overall hypothesis of the present thesis rests on a number of more specific hypotheses about the distribution of public and private income components and their interaction in the formation of total disposable income in each country case. These hypotheses are investigated more closely in Section 7.2 below.

In Section 7.3 I turn to the external analysis, proper. Bivariate scatterplots and other graphical presentations are used together with summary measures of association. I shall at the same time draw upon the logic of comparative research strategies by giving emphasis to variation among "similar" country cases, in particular the three Scandinavian countries. In addition to the head-on investigation of the relationship between institutional features (obtained from other appropriate sources) and the ultimate dependent variable, a number of crucial links in the hypothesized causal chain between institutions and outcomes will be explicitly studied: the relationship between the level and structure of public pensions and the scope of private income provision in retirement, and the presence of cross-national variation in the dispersion of private income components. Last but not least I shall in Section 7.3 look at the potential role for competing or complementary causal factors, in particular the degree of income inequality prevailing among the economically active population.

---

[273] See Goldthorpe (1997) and King, Keohane and Verba (1994) for strong recommendations to supplement macro-oriented styles of analysis with an effort to develop and test relevant auxiliary hypotheses on richer data-structures like micro-data or historical data.

The combination of internal and external analysis is central to the research strategy adopted here. It is easy to find pure examples of both lines of inquiry in the existing literature concerned with the implications of different pension systems for the income distribution among the retired. The studies by Palme (1989; 1993) and Korpi and Palme (1994) are good examples of the purely external style of analysis, while the studies by Pestieau (1992) and Delhausse et al. (1994) represent the opposite pole, as they rely primarily on a static decomposition of overall income inequality in each country case. However, there are few examples of studies where these two approaches have been used simultaneously in an attempt to address – if not overcome – their respective weaknesses.

7.2 INTERNAL ANALYSIS: THE CONTRIBUTION TO INEQUALITY BY INCOME SOURCES

As we have seen, the central hypothesis of the present thesis rests on a set of more specific hypotheses, including some about the distributive profile of different components in the income package of retired households: It is a fairly safe guess that the distribution of income from private sources will be characterized by a high degree of concentration among more well-off segments, while public retirement benefits should to be much more equally distributed. This is likely to be so even in the country cases where public pensions are based on the social insurance approach and hence where benefits are allowed to vary according to the pre-retirement income histories of the recipients. The assumption of a high degree of inequality in the distribution of private income components plays an important role in the general egalitarian argument in favor of social insurance that was developed in Chapter 3.

In this section I shall deploy a range of methods and techniques designed to reveal how different income sources contribute to the level of inequality found in total disposable income among a certain population – in this case among the respective samples of old age pensioners. It is important to emphasize that all these methods are static and descriptive in nature – as opposed to dynamic and explanatory. They provide a description of the role played by different income components for the level of income inequality found in each particular case – in the present context a population of old age pensioners -, and they are presented here under the term "internal" analyses because they can be applied separately to particular populations and distributions and do not, by their very nature, require any comparison between country cases.

Since the methods are built on the logic of accounting rather than the logic of causal analysis, they cannot directly or by themselves be used to support any causal claims about the link between institutions and outcome. The crux of the problem is that they do not allow for any dependency between the size and distribution of different income components (Shorrocks, 1982). A central tenet of the general argument developed in Chapter 3 and the hypotheses presented in Chapter 4 is that the nature and quality of public pension systems is likely to influence the scope as well as the distribution of private income components among a generation of retirees. An assessment of such second-order effects is crucial for an evaluation of the distributive outcome of different public pension systems, but they are simply ignored in this framework.

One further caveat regarding these methods needs to be mentioned. It is tempting to interpret the distribution of public pension benefits or the distribution of taxes paid as direct measures of variation in policies and institutions.[274] This would clearly be misleading. Rather they must be seen as the result of an interaction between the policy instruments/institutions, like benefit schedules or tax schedules on the one hand, and the distribution of relevant characteristics in the population on the other (Lambert and Pfähler, 1992). As argued in Chapter 2, attempts to learn about the effect of different policy choices should, preferably, take purely institutional variables as their point of departure.

Once these severe limitations have been recognized, however, the methods provide valuable supplementary information to the purely "external" comparative analysis of covariation between independent variables (measures of institutional variation in public pension systems) and outcome variables (the level of inequality in disposable income) – like the one to be presented in the following section. They provide an opportunity to open the black-box of more specific mechanisms that are assumed to link the independent and dependent variables.

Three approaches to the decomposition of inequality by income sources

In the following, I shall use three different approaches within this more general framework of static, descriptive methods: the "sequential" approach, the "simultaneous" approach and the "marginal" approach. The purpose of all three is to assess the impact made by various income components on the level of inequality found in total disposable income.

Any reasonable evaluation of the contribution made by a specific component to inequality in total income should somehow take account of the following aspects: a) the degree of dispersion/concentration of the component itself; b) the relative share of the component in the total income package; and c) the pattern of covariation between this component and the other income components (Shorrocks, 1988). This latter "interactive" aspect is important since, roughly speaking, a weak or negative correlation between income components is generally good for equality, while a strong positive correlation will tend to be bad.

The three approaches answer very different types of analytical questions and this difference is reflected primarily in the way they treat the "interactive" aspect.

The sequential approach is the most prominent and frequently used of these three methods. It is intuitively appealing since it promisses to answer a very clear and relevant counterfactual question: How would overall inequality change, if the component were removed from the income package altogether (while keeping the joint distribution of the other income components unchanged)?

The approach is particularly attractive, when all attention is focussed on a particular component (such as income taxes) and the distribution of the remaining income package is taken for granted. However, in order to apply this approach consistently to more than one income component or, perhaps, to all income components in the income package of the relevant population, one needs to decide on a particular ordering or sequence of the components. It is common to invoke a model of the process of income formation, where some sources of income enter at an early stage while others are seen as coming later (see for instance Uusitalo, 1985; Mitchell, 1991).[275] A simple version might involve three stages, with factor incomes (earnings and capital income) in the first, government transfers in the second and taxes in the third stage, thus arriving at a measure of disposable income. The contribution by transfers and taxes to inequality in disposable income is then calculated by looking at the (relative) change in measured inequality when moving from one step to the next.

---

[274] This happens very often in practical applications of these types of analysis – see for instance Mitchell (1991) for a typical example in the context of cross-sectional data and Fritzell (1993) for an example in the context of time-series data.

[275] The idea that total income is formed in successive stages is potentially misleading. It is easily forgotten that public transfers and taxation can exercise a strong influence on both the size and the distribution of factor incomes (for further discussion see Pedersen, 1994).

The results obtained by this approach will depend strongly on the ordering chosen. At each step, the joint distribution of the income components included in the previous step is taken as the baseline for evaluating the distributive impact of the new income component. This means that the new income component will be given all the credit/blame for the direction and strength of covariation with the income components included in the previous step. The method is very powerful in situations where a clear hierarchy or sequence between income components can be established on theoretical grounds, but it becomes highly problematic in a situations where the choice of a particular sequence is more or less arbitrary.

By contrast, *the simultaneous approach* provides a symmetrical decomposition of the overall level of inequality without requiring any a priori assumptions about a particular sequence of income formation. I have already used this approach quite extensively, particularly in Chapter 3. It is built around a formal decomposition rule for the Gini index, where inequality in total disposable income can be expressed as a simple additive function of the contribution made by individual components.

The key to this approach is that it takes for granted the ranking of individuals according to existing distribution of total disposable income. The distributive impact of a particular component is evaluated according to its size and its concentration in the population when ranked according to the distribution of total income, and the approach uses perfect equality as the baseline for measuring the impact of each component. It is both a strength and a weakness of this approach that it is more purely descriptive than the two alternative approaches (see the discussion in Aaberge and Aslaksen, 1995). However, the undeniable drawback of the simultaneous approach is that it does not have a direct intuitive interpretation in the form of a clearly defined counterfactual question.

As we shall see below, this weakness can be overcome by turning to *the marginal approach.* At least it would seem so. The marginal approach is an extension of the symmetrical approach. Like the symmetrical approach, the marginal approach is symmetrical, i.e., it does not depend on any particular ordering of the income components. Unlike the simultaneous approach, it uses the prevailing level of inequality in total income as the baseline for the evaluation, and like the sequential approach it can be seen to answer a clearly defined counterfactual question. In this case the question is: what is the relative effect on the existing degree of inequality in total income of infinitely small proportional changes in the size of a particular income component? The main problem with this approach is that it cannot – in general – tell anything about the effect of more substantial proportional changes in an income component. The fact that it takes the existing level inequality in each case as the point of reference, also makes it rather difficult to interpret in a comparative context.

Applications of the sequential approach

The application of the sequential approach requires that the respective income components can be ordered in a meaningful sequence. The conventional model of the process of income formation operates with three basic stages: a primary distribution of factor incomes or market incomes, a secondary distribution of public transfers and a tertiary distribution of taxes.

This model and the associated ordering is particularly problematic and potentially misleading in the area of retirement provision. First of all, it should be kept in mind that public pensions constitute the lion's share of the total gross income received by this population segment and hence it becomes rather odd to view the distribution of private components received by old age pensioners as being primary in any meaningful sense. In the area of retirement income, you can argue that the hierarchy (if at all meaningful) should be completely reversed. It must be suspected that unions and employers develop occupational pension plans with a view to the structure and level of public pensions, and that individuals are likely to save for retirement and to participate in private pension systems depending on their expectations about social security pensions. The finding in Chapter 5 of a (albeit weak) negative correlation across the nine country cases between the level of public pension benefits and the scope of private income sources lends some support to this assertion.

In Graph 7.1 and Table 7.1, I have therefore chosen to reverse the conventional ordering of stages in the process of income formation, beginning with the distribution of public pensions, then adding all private incomes (mainly pensions and capital income), then adding means-tested supplementary transfers, and finally subtracting income taxes paid.

At each stage the Gini coefficient has been calculated and the resulting value is measured along the Y-axis in Graph 7.1. It should be stressed that the income units have been re-ranked for every step. This means that the change that can be observed when a new income component is added will depend on three factors: 1) the level of Gini inequality in the component itself, 2) the size of the component relative to the components already included, and 3) the scope of re-ranking that is being triggered by the inclusion of the new component.[276] The more re-ranking triggered by the inclusion of the new component, the smaller will be the change in the Gini coefficient.

Starting from the left in Graph 7.1 and Table 7.1, we can see that there is considerable variation across countries in the size of Gini coefficients calculated for public pensions alone. Inequality in the distribution of public pension benefits is lowest in the UK, followed by the Netherlands, Denmark and Canada, while it is relatively high in Germany, Australia and the US.

The addition of private income components is associated with a rather dramatic increase in the level of inequality in most countries, and the change tends to be particularly strong in the countries where public pensions are distributed more equally. In other words, the country scores move very much closer together after the addition of private components. There are a few exceptions from this pattern that deserve further comments.

First of all, one should note that the increase in inequality from the first to the second step is very strong in the US, where also public pensions appeared to be fairly concentrated in and by themselves. When public pensions and private income components are added together their distribution shows a degree of inequality in the US that is far beyond any of the remaining nine countries.

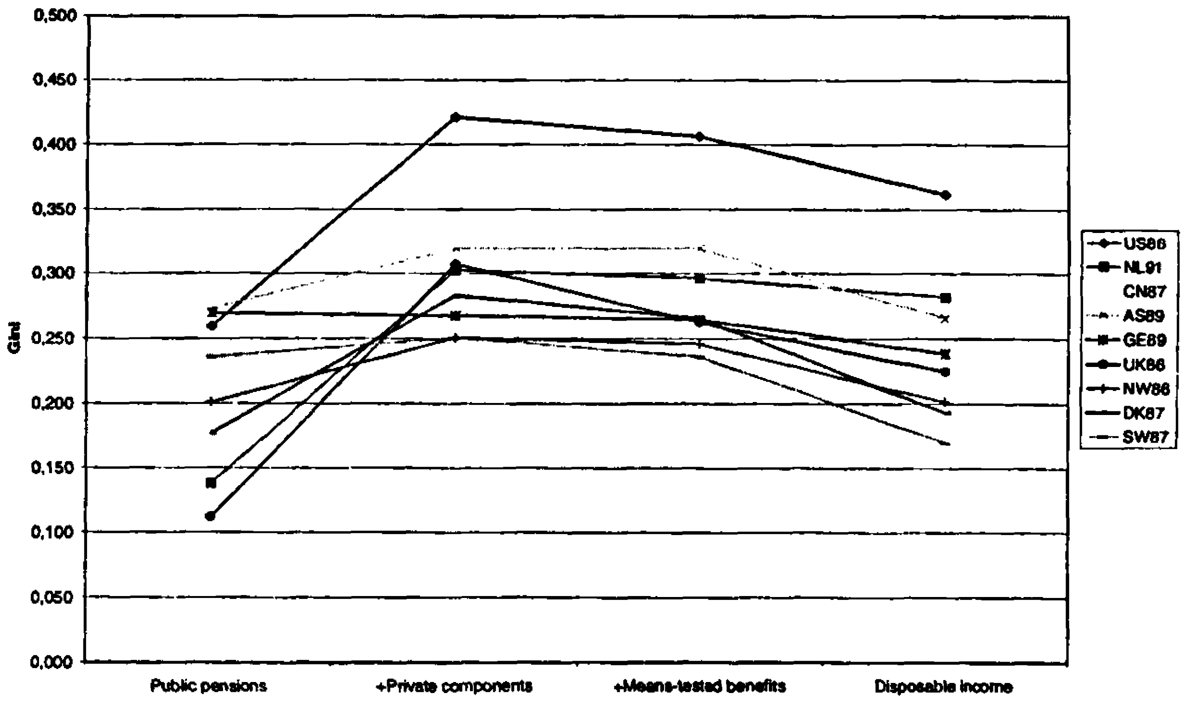
Secondly, it is somewhat puzzling – at least at a first glance – that public pensions appear to be relatively unequally distributed in Australia and that the increase in inequality after adding private components is rather modest. The explanation lies in the peculiar nature of the Australian pension system, based as it is on means-tested benefits. Means-tested benefits will of course be withheld from the most well-off segments of the population. Therefore it is not surprising that they appear to be strongly concentrated among a smaller or bigger subgroup of the old age pensioners. What these figures fail to pick up, however, is the important fact that means-tested benefits will tend to be relatively concentrated among people who have little access to alternative, private income sources. When private income components are added, one can observe a relatively modest increase in overall inequality for Australia. This is not because private income components are not highly concentrated in Australia (as can be confirmed by looking at Graph 7.2 below), but because their introduction triggers a radical re-ranking of the individual cases.

---

[276] It is possible to decompose the change in the overall Gini coefficient according to the relative significance of these three factors – see Kakwani (1986) and Mitchell (1991).

The introduction of means-tested benefits in the third step does have some effect to depress the level of inequality in many countries. In the UK the effect is relatively substantial with a reduction in the Gini coefficient by 0.04. Also in Canada Denmark, Sweden, US and the Netherlands small inequality reducing effects can be registered. Hardly any effect from these types of transfers is found in Australia and Norway. In the Australian case, the explanation is simply that no public transfers are classified under this variable in the Australian data-set.

Graph 7.1: Gini coefficients for public pensions taken alone and for income packages with new income components added cumulatively.



The inclusion of means-tested transfers – and hence the arrival at a concept of gross income – only makes fairly modest changes in the ranking of countries. Sweden and Norway display the lowest level of inequality in gross income, and they are followed by three countries with almost identical Gini-scores at this stage: Denmark, Germany and the UK.

Finally, the payment of income taxes appears to have a very significant effect in the direction of reducing the level of inequality in disposable income among old age pensioners in all nine countries. The effect is strongest in Sweden and Denmark with a reduction in the respective Gini coefficients of 0.07. The weakest effect is found in the Netherlands and in Germany, with a reduction of 0.01 and 0.03, respectively.

Table 7.1: Gini coefficients for public pensions and the absolute change in Gini coefficients after the addition of new income components.

	Gini coefficient public pensions	Change in Gini coefficient after adding:.			Gini coefficient disposable income
		Private income sources	Means-tested transfers	Income tax	
US86	0.259	0.16	-0.01	-0.04	0.362
NL91	0.138	0.16	-0.01	-0.01	0.282
CN87	0.186	0.14	-0.02	-0.04	0.267
AS89	0.273	0.05	0.00	-0.05	0.266
GE89	0.269	0.00	0.00	-0.03	0.239
UK86	0.112	0.20	-0.04	-0.04	0.225
NW86	0.201	0.05	0.00	-0.04	0.201
DK87	0.177	0.11	-0.02	-0.07	0.193
SW87	0.236	0.01	-0.01	-0.07	0.170

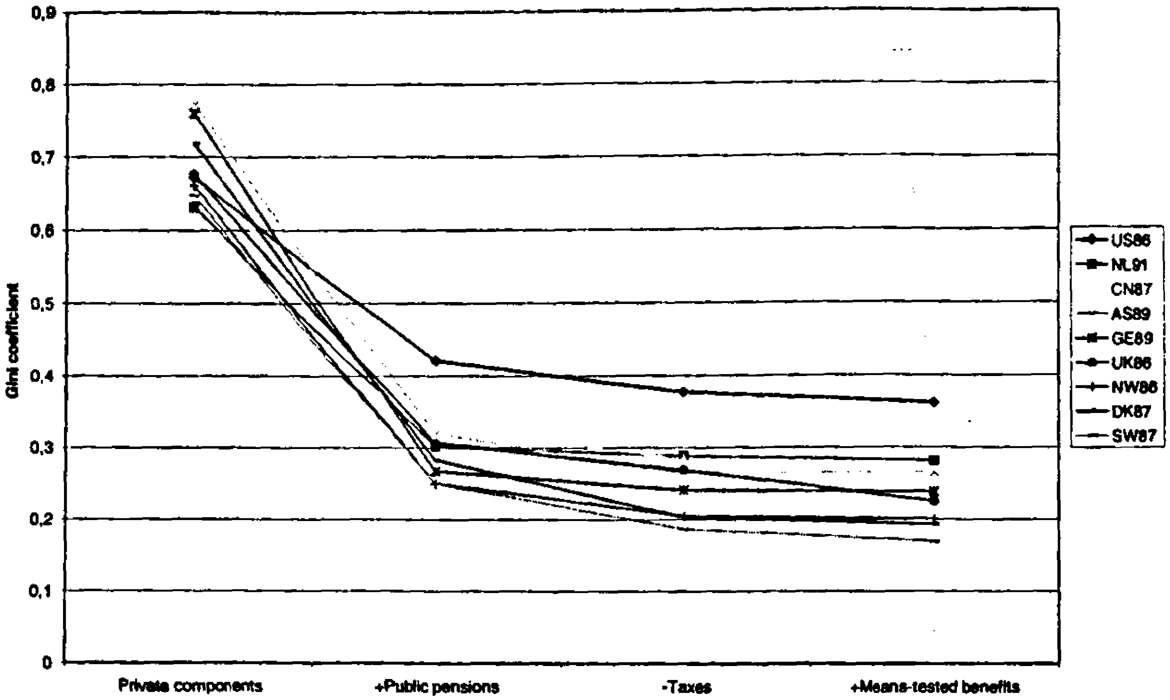
The story that can be told by the application of the sequential approach changes if the order of the components is changed. In Graph 7.2 private income components have been granted the first place, while public pensions come next, to conform with the more conventional model of income formation. From the addition of public pensions in the second stage, Graph 7.2 shows identical figures to those presented in Graph 7.1 and Table 7.1.

The most interesting feature of Graph 7.2 is that it shows how highly concentrated private incomes are in all nine countries. The Gini coefficients for private income taken alone shows surprisingly little variation. The largest concentration of private income is found in Australia, with a Gini coefficient of 0.77, while the smallest is found in the Netherlands with 0.63. The addition of public pensions appears to have a strongly equalizing effect in all countries, with further, more modest reductions in Gini coefficients following from the addition of means-tested transfers and the deduction of taxes.

The diverging assessments of the role played by public pensions that emerge from Graph 7.1 and 7.2 cannot easily be reconciled. The Gini coefficients for public pensions shown in the first stage of Graph 7.1 can be interpreted in terms of a particular counterfactual claim: They represent the level of inequality that would have prevailed if all other income sources had been removed and public pensions were the only source of income. In Graph 7.2 the role of public pensions is assessed in terms of a different counterfactual experiment. What would have happened if public pensions had been completely removed and the pensioners had been left with income from private sources only? In this case the Gini inequality for private income – presumably the level of inequality that would have prevailed if private income were the only source of income – serves as the baseline for assessing the contribution made by public pensions.

Neither of these two interpretations can claim to be superior, and they both suffer from the very serious weakness that they assume that the different income sources are distributed independently of each other. In particular it is difficult to take the observed distribution of private income components seriously as an approximation of the (counterfactual) distribution that would have prevailed in the absence of any public pension provision.

Graph 7.2: Gini coefficients for private income taken alone and for income packages with new income components added cumulatively.



Applications of the simultaneous approach

While the sequential approach required a particular a priori ordering of the income components, the simultaneous approach allows for each income component to be treated in a symmetrical way. I have already used the simultaneous approach in earlier chapters, particularly in Chapter 3. The approach is based on the so-called natural decomposition of the Gini index, where the overall Gini coefficient can be written as a weighted sum of a special kind of pseudo Gini coefficients – often called concentration coefficients – measuring the degree of concentration of each particular income component across the population when ranked according to the distribution of total income.

As in Chapter 3, I shall here use an extension of the natural decomposition that was first suggested by Lerman and Yitzhaki (1985) and where the contribution to overall inequality by a particular component (Q_k) is written as a product of three separate terms: the Gini coefficient for the component itself (G_k), the share of the component in the overall income package (S_k) and finally the so-called Gini correlation between the component and the overall income package (R_k).[277]

---

[277] A similar three-way breakdown of the contribution by each income component to overall Gini inequality is applied in Flückiger and Silber (1994) and in Delhausse et al. (1994). The Gini correlation is a hybrid between the familiar Pearson's r and Spearman's rank-correlation coefficient (Schechtman and Yitzhaki, 1987). It uses information about the ordering of cases (ranks) for one of the variables (in this case the total income package), while taking advantage of the full interval-level information about variation on the other variable (in this case the particular component). Like the more conventional correlation coefficients, the Gini correlation varies between -1 and 1, with the two extreme values representing perfect negative and perfect positive correlation, respectively. Perfect positive correlation occurs when the two variables agree completely in their ranking of the income receiving units. Hence, R_k is equal to 1 whenever the particular component itself and the entire income package rank the observations in exactly the same way.

$$G = \sum Q_k = \sum G_k \cdot S_k \cdot R_k$$

This formula illustrates rather neatly how the natural decomposition of the Gini index satisfies the intuitive requirement, that the assessment of an income component's contribution to overall inequality should be sensitive to the concentration of the component itself, its share in the overall income package and its covariation with the remaining income components.[278]

In Table 7.2 the formula has been applied to a decomposition of total disposable income into three basic components: public transfers, private income and taxes paid. Means-tested transfers have been added together with public pensions in order to simplify the exposition. In many of the countries means-tested transfers do make a modest contribution to decrease overall inequality, but this effect has been included in the terms for public transfers in general.

For each of these income components the Gini coefficient, the share in total disposable income and the Gini correlation are shown together with the resulting measure of the contribution made to overall inequality.[279]

Table 7.2: Decomposition of Gini inequality in disposable income according to the contribution made by public transfers (pu), private income (pr) and taxes paid (t). LIS eq. scale.

	Public transfers				Private income				Tax				Disposable income
	G_{pu}*	S_{pu}*	R_{pu}=	Q_{pu}+	G_{pr}*	S_{pr}*	R_{pr}=	Q_{pr}+	G_t*	S_t*	R_t=	Q_t=	*GINI*
US86	0.24	0.51	0.55	**0.07**	0.67	0.59	0.95	**0.38**	0.88	-0.10	0.97	**-0.08**	**0.36**
NL91	0.14	0.64	0.32	**0.03**	0.63	0.53	0.94	**0.32**	0.43	-0.18	0.84	**-0.06**	**0.28**
CN87	0.17	0.58	0.32	**0.03**	0.65	0.52	0.92	**0.31**	0.80	-0.10	0.90	**-0.07**	**0.27**
AS89	0.27	0.58	-0.06	**-0.01**	0.77	0.52	0.90	**0.36**	0.90	-0.10	0.92	**-0.08**	**0.27**
GE89	0.27	0.72	0.45	**0.09**	0.76	0.33	0.75	**0.19**	0.91	-0.05	0.85	**-0.04**	**0.24**
UK86	0.13	0.67	0.27	**0.02**	0.68	0.43	0.90	**0.26**	0.78	-0.09	0.81	**-0.06**	**0.23**
NW86	0.20	0.87	0.76	**0.13**	0.66	0.29	0.80	**0.15**	0.57	-0.16	0.88	**-0.08**	**0.20**
DK87	0.18	0.82	0.24	**0.03**	0.72	0.48	0.84	**0.29**	0.59	-0.31	0.74	**-0.13**	**0.19**
SW87	0.22	1.28	0.91	**0.26**	0.65	0.19	0.40	**0.05**	0.43	-0.47	0.68	**-0.14**	**0.17**

Starting with the contribution made by public transfers (Q_{pu}), one can see that there is quite substantial variation across the nine countries, and by and large it follows a pattern that one would have expected. Public transfers make a (modest) negative contribution to overall inequality in disposable income in Australia, while they make a substantial positive contribution to inequality in Sweden, followed by Norway, Germany and the US. We have seen in earlier chapters (in particular Graph 5.2) that these four countries feature public pension systems with a relatively strong social insurance/earnings related component. Public transfers make only insignificant contributions to overall inequality in the UK, Canada, the Netherlands and Denmark.

---

[278] Unfortunately, the two last aspects are not completely separated by the formula. R_k measures the Gini correlation between the particular component and the entire income package, including the component itself. The R-terms are not independent of the S-terms, because the overall ranking depends on the relative size of the various components. As a component increases in size it will increasingly dominate the overall ranking, and thus its R-term will tend towards 1 (except for the special case where G_k is zero).

[279] Note that the shares taken up by public transfers and private income will exceed 100 percent, since taxes represent a negative income component with a corresponding negative share in disposable income. The shares of the three components sum to 100 percent.

The observed variation in the contribution made by public transfers appears to be driven largely by variation in the share of public pensions (S_{pu}) and – in particular – the degree of Gini correlation with the remaining income package (R_{pu}).

As we have already seen in Table 7.1, Australia is among the countries with the highest Gini coefficient for public pensions (0.27). The reason is of course that public pension benefits are withheld from a significant (well-off) segment of the pensioner population.[280] Thanks to a negative Gini correlation with the entire income package – i.e., a modest tendency for public pensions to be concentrated in the lower part of the overall income distribution – the contribution to inequality by public transfers becomes negative in this country.

In Sweden, on the other hand, public transfers are only modestly concentrated in and by themselves (a Gini coefficient of 0.22), but their share is extremely high and they show a very close correlation with the distribution of disposable income.

A few comments on individual country scores are needed at this point. First, it must be emphasized once again that the Swedish figures are somewhat misleading, due to the fact that occupational pensions are included under public transfers. There is no doubt that the contribution to inequality made by public transfers would turn out to be more modest in Sweden if occupational pensions had been excluded.

Secondly, the German figures show a surprisingly modest contribution to overall inequality by public transfers. Once again, a primary explanation is likely to be methodological and related to the way different income sources are classified in the German data. As mentioned earlier, the occupational pension schemes for civil servants in Germany (*Beamte*) are organized separately from the general public scheme. Hence, former civil servants, who tend to form a highly privileged stratum among German retirees, will not receive any income from the general public scheme, and the positive correlation between public pensions and total disposable income will turn out relatively weak. For a fair comparison with most of the other countries, where occupational pension schemes for public employees provide supplements to the general public scheme, it would have been preferable to classify part of the occupational pension benefits received by public sector pensioners (corresponding to the benefits payable to them under the rules of the general scheme) as public transfers.

Finally, we should note that a similar type of problem – for the comparability across countries – is created by the possibility to opt out of the earnings related, second tier of the public scheme in the UK (SERPS). Members of generous occupational pension schemes, who have opted out of SERPS will receive very modest public pension benefits, and hence the correlation with total disposable income will become weak. Again you could argue that it would have been preferable – for the sake of comparability -, that the part of the private occupational benefit that would have been payable to the pensioner from SERPS was classified as a public pension benefit.

Turning now to private income components, we can see that the contribution to overall inequality is very substantial in most of the countries, with Sweden as a rather extreme exception. Aside from Sweden, Norway displays the most modest contribution from private sources with a score of 0.15, followed by Germany (scoring 0.19). The US tops the list, with a contribution from private sources at 0.38, followed by Australia at 0.36.

---

[280] According to the figures presented in table 5.2, 12 percent of old age pensioners in Australia live in families that do not receive any public pension benefits and hence no public transfers.

The primary reason for the large contributions is that private income components appear to be highly concentrated in all the nine countries. As we have already noted in Graph 7.2, the Gini coefficient for private income shows remarkably little variation across countries. Australia shows the highest Gini coefficient of 0.77, while the Netherlands displays the lowest value of 0.63.

The share in total income that is taken up by private components shows more variation, and this variation is largely responsible for the observed variation in the contribution made by private components. It is hardly surprising that the distribution of private income correlates strongly with the distribution of total disposable income in most of the countries. Leaving out Sweden, we find Gini correlations lower than 0.9 in three countries only: Germany, Denmark and Norway.

Finally, it is interesting to observe the estimates for the contribution made by income taxation. The impression produced by the sequential approach is once again confirmed. Taxation makes a significant contribution to reduce the level of inequality in disposable income, with the strongest effect being observed in Sweden and Denmark. It appears as if it is the scope of taxation that makes most of the difference. Sweden and Denmark are among the countries where taxes are only weakly concentrated (Gini coefficients of 0.43 and 0.59) and where the correlation with total disposable income is less than perfect.[281]

Graph 7.3 offers an alternative presentation of the main results from an application of the simultaneous approach, and in this case to a more detailed decomposition of the income packages of retired households. As in Graph 7.1 above, the different income components are added cumulatively, starting from the distribution of public pensions and ending up with total disposable income, but the fundamental difference is that the ranking of income units remains the same for each step, as it is determined by the distribution of disposable income.

The graph should be read from the left, starting with the concentration coefficients for public pensions alone. All counties display curves with an inverse U-shape with increasing concentration as private income components are added on and decreasing inequality as means-tested transfers and taxes enter the picture.

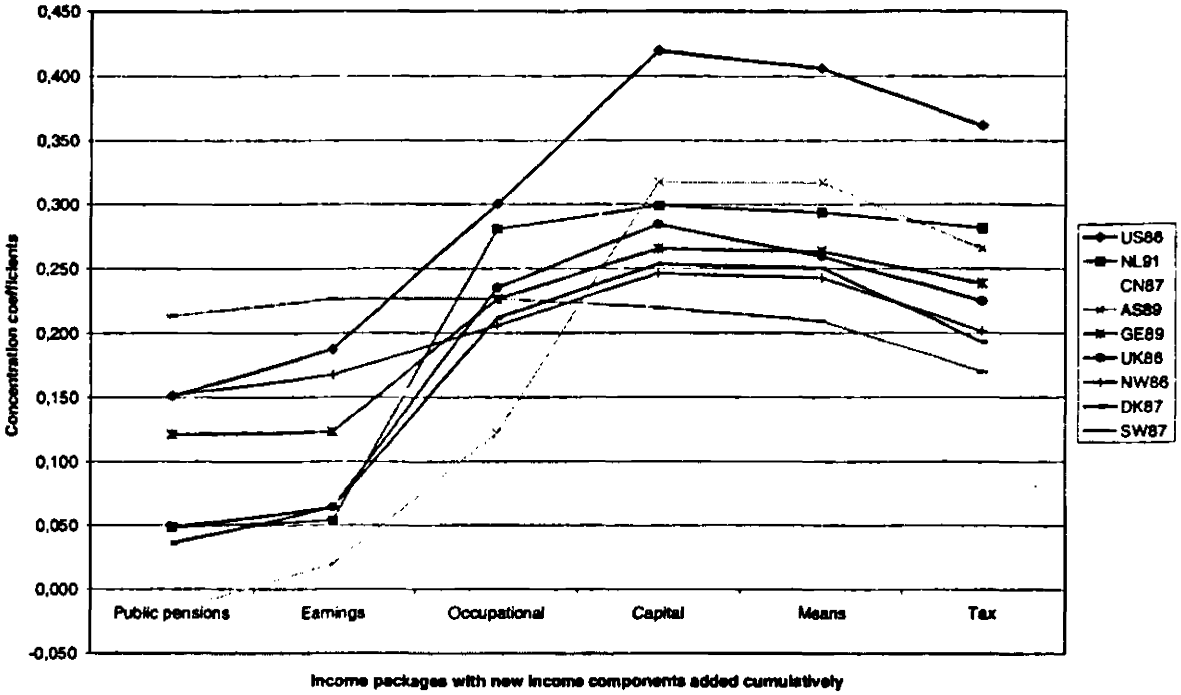
However, there appears to be a clear tendency for the countries that "start out" with relatively high concentration coefficients for public pensions to show a flatter profile as the three types of private income are added on. In Sweden, the concentration of public pensions is in fact higher than the concentration of final disposable income.[282] Also the Norwegian and the German curves display a rather flat profile, with a relatively modest increase in the concentration coefficients as the various private income components are included. As we have seen in Table 7.2, the main reason lies with the relatively modest shares taken up by private components in these countries.

---

[281] Part of the explanation for the relatively low Gini correlation between the amount of taxes paid and total disposable income in these two countries lies with the fact that taxation leads to a considerable amount of re-ranking of the income units.

[282] It is not surprising that the addition of occupational pensions makes no difference in the Swedish case, but it is remarkable that the concentration index declines somewhat when income from capital is included. The peculiar distribution of capital income among Swedish pensioners is commented on below, as the phenomenon appears in the application of the marginal approach.

Graph 7.3: Concentration coefficients calculated for different, still more inclusive, income packages. Starting with public pensions, new income components are added cumulatively. Ranking determined by the distribution of disposable income.



The Australian curve displays an extremely steep profile, starting out with a concentration coefficient for public pensions somewhat below zero, but with the concentration rising steeply as occupational pensions and (in particular) capital income are added on. The degree of concentration of gross income found among Australian retirees is only second to that found among American old age pensioners.

The US is the only country where the concentration of public pensions is relatively high at the outset, but where the addition of private income components triggers a further steep increase in the concentration of the combined income package.

Note that both occupational pensions and income from capital make a considerable contribution to overall inequality in most of the countries, while earnings generally play a minor role.[283]

Applications of the marginal approach

Lerman and Yitzhaki (1985) and Podder (1993) have shown that a modification to the formula for the natural decomposition of the Gini index can yield the elasticities of the overall Gini coefficient with respect to "proportionate" changes in each specific component.[284] The elasticity, η_k, is given by the difference between the concentration coefficient and the Gini coefficient for total income, weighted by the share of the component in total income and finally divided by the overall Gini-coeffcient:

---

[283] Of course, this is partly the result of our decision to leave out of the sample family units where earnings constitute more that 33 percent of total gross income.

[284] "Proportionate" means in this case something highly restrictive: that the change does not affect the concentration curve for the component. A proportionate change will not always leave the concentration curve unchanged, however, because it could trigger a re-ranking of units in the size distribution of total income.

$$\eta_k = \frac{1}{G}\left[\frac{\mu_k}{\mu}(C_k - G)\right]$$

The elasticities for the k components will sum to zero, which makes perfect sense since nothing should happen to overall inequality if all income components are given the same proportionate change.

This formula for the elasticity of total inequality provides an alternative symmetrical method for the evaluation of the contribution to inequality made by different components. It has the attractive feature that it can be used to evaluate the consequences of a meaningful counterfactual experiment, i.e., an increase or decrease in the scope of a specific component. The intuition behind the formula is straightforward: If a component shows a lower degree of concentration than the entire income package, an increase in this component will tend to push overall inequality down.

It is important to be aware, however, that these elasticities are only valid for marginal changes that leave the ranking of individuals according to total disposable income unchanged. They do not in general apply to more substantial proportionate changes in a component that 1) takes up a significant share in the total income package, and 2) is only weakly or negatively correlated with the remaining income package. In this case a change in the scope of the component will lead to some re-ranking of the income units, and hence the elasticities will not be able to predict the net result.[285]

Table 7.3: Elasticities of Gini inequality in total disposable income with respect to proportionate changes in specific income components.

	Public pensions	Earnings	Occupational pensions	Capital income	Meanstested transfers	Taxes
US86	-0.29	0.03	0.13	0.30	-0.04	-0.13
NL91	-0.52	0.00	0.51	0.08	-0.02	-0.05
CN87	-0.41	0.02	0.30	0.32	-0.05	-0.17
AS89	-0.62	0.05	0.18	0.60	0.00	-0.21
GE89	-0.35	0.00	0.30	0.17	-0.01	-0.11
UK86	-0.46	0.03	0.47	0.23	-0.10	-0.17
NW86	-0.21	0.06	0.18	0.23	-0.01	-0.24
DK87	-0.63	0.08	0.65	0.29	-0.01	-0.39
SW87	0.32	0.11	0.00	-0.01	-0.08	-0.34

With these reservations in mind we can start summarizing the results reported in Table 7.3. On the margin an increase in public pensions appears to have a clear inequality reducing effect in all countries except for Sweden. The negative elasticities are strongest in Denmark, Australia and the Netherlands. But the elatisticities are also found to be negative in countries like the US, Germany and Norway. The reason is, of course, that the concentration coefficients for public pensions are smaller than the respective Gini coefficients for total disposable income.

The positive elasticity for public pensions found in Sweden can be explained by the (by now notorious) misclassification of occupational pensions. Furthermore, it should be seen in light of the completely mechanical treatment of taxation offered by this type of method. Public pensions are fully taxable in Sweden, and any real-life increase in benefits would automatically be subject to (progressive) taxation. It can be expected, therefore, that the distribution of net increases in benefits is likely to be more compressed than the gross increase. The elasticity estimate, however, is based on the unrealistic assumption that the absolute amount of taxes paid by each individual is left unchanged.

---

[285] It is perfectly possible that a component could display negative elasticity according to this definition (i.e., Ck<G), and still it could be the case that total inequality would eventually rise as the size of the proportional increment becomes sufficiently large. Note, however, that this is a theoretical possibility only if the Gini coefficient for the component itself is larger than the Gini coefficient for the entire income package (i.e., Gk>G).

Earnings tend to play a minor role in all nine countries, and the main reason lies with the modest share in total income taken up by this income source.

The elasticities for occupational pensions and/or capital income are strongly positive in most of the countries, suggesting that proportionate increases in these components will be associated with a substantial increase in overall inequality in disposable income, although – as suggested for public pensions – the existing tax schedule might automatically take away at least some of the effect in most of the countries.

One serious exception to this generalization needs mention. While the elasticity for capital income is positive and in some cases very strong, it appears to be negative in Sweden. In other words, income from capital is distributed in such a way that a small proportional increase in this component should have an equalizing effect on total disposable income among old age pensioners in Sweden. This result cannot easily be explained away as an artifact caused by problems with the data. There is no reason to doubt the quality of the Swedish data on this point. The deviation is symptom of a peculiar distribution of capital income among Swedish pensioners. The share in total disposable income taken up by capital income is not particularly low (about 12 percent), however the coefficient of concentration is extremely low (about 0.15) due to a low degree of Gini correlation with total disposable income (0.24). Part of the explanation seems to be related to cohort differences. Income from capital appears to play a rather important role among the older segments of the pensioner population where income from public and occupational pensions, and hence total disposable income tends to be relatively low.

Concluding remarks

The different techniques employed in this section have produced different images of the role played by specific income sources for the degree of income inequality found among the respective samples of old age pensioners.

One feature stands out as fairly robust, however. In line with prior expectations we find that private income components – in particular occupational pensions and income from capital – are strongly dispersed in all countries and represent the single most significant contribution to the overall level of inequality found among old age pensioners. The Gini coefficients for private components taken together are high, and they show relatively modest variation across countries. The distribution of private income components is strongly correlated with the distribution of total disposable income in most countries. As could be expected, the correlation is strongest in countries where public pensions show little variation. In these countries, the distribution of private income components must decide the ranking of the income units according to total disposable income. Applications of the marginal approach show that proportionate increases in the scope of private income components will have a significant inequality increasing effect in all countries.[286]

---

[286] Sweden is an exception, but there is every reason to believe that the conclusion would hold also for Swedish pensioners if occupational pensions had been properly classified.

There is also general agreement in these findings about a significant inequality reducing effect of income taxes. I shall return to this issue later in this chapter. Here it should briefly be mentioned that the separate role played by taxation might be somewhat overrated in this kind of analysis. Policy-makers are likely to view benefit levels and benefit structures in conjunction with existing tax rules for pensioners and pension income. If this is the case, it is not entirely meaningful to make a clear distinction between the contributions made by public pension benefits on the one hand and the effect of taxation on the other.

The results for public pensions show real variation across country cases and, moreover, they differ according to the specific methodological approach. The simultaneous decomposition of the Gini coefficient indicates that public pensions do make a substantial positive contribution to inequality in some of the countries (Sweden, Germany, Norway and the US), while they make no serious contribution to inequality in other countries (Australia, Canada, Denmark, the Netherlands and the UK). However, the application of the marginal approach demonstrates that a proportionate increase in the scope of public pensions will have a negative effect on inequality in all countries.

These apparently contradictory findings can be accommodated by viewing them as answers to two quite different analytical questions.

The fact that public pensions are found to make a positive contribution to inequality in some countries can be taken to imply that the degree of inequality would diminish in these countries if public pensions were distributed equally among all old age pensioners (everything else remaining constant). In other words, if suddenly the total amount that is presently being spent on public pensions in countries like Sweden, Germany. Norway and the US were withdrawn and redistributed equally among all pensioners, overall inequality in these countries would decline significantly.

On the other hand, the general finding of a negative elasticity for public pensions gives a strong indication that – even in these countries – an increase in the scope of public pensions will trigger a reduction in overall inequality.

These interpretations are entirely compatible, and they are in accordance with the simple a priori reasoning developed in Chapter 3. However, they are of limited value, as the underlying methodology is completely mechanical and static in nature.

As argued in Chapter 3, the potential consequences of different institutional choices cannot be adequately analyzed in a mechanical framework. The final consequences of real institutional interventions will depend on the existence and strength of more dynamic relationships: a possible trade-off between scope and equality in the distribution of public pensions and a tendency towards crowding-out/substitution between public and private pensions. If the equalization of public pensions is necessarily accompanied by a decline in the scope of public pensions then the overall result of an increase in the scope of public pensions could very well be to increase the degree of inequality in disposable income. Similarly, if an increase in the scope of public pensions can only be achieved by allowing for larger benefit differentials, and if the increase should turn out to have little effect in terms of reducing the scope of private income components, the overall effect could be an increase in inequality.

In Chapter 5 we found a fairly strong tendency for trade-off between the use of flat-rate or means-tested benefits and average size of public pension benefits across the nine countries. We also found a tendency for substitution between public pensions and private income components, but here the evidence was somewhat more mixed. In this section we have provided empirical evidence about one of the remaining links in the chain – namely, the degree of concentration in private income components. We have found that private income components tend to be highly concentrated in all countries – despite the existing variation in the institutional context.

The question remains, however, whether the degree of support we have found for these auxiliary hypotheses is strong enough to justify the overall hypothesis: A public pension system with a second tier of earnings related benefits will at the end of the day do better in terms of overall income inequality among retirees than systems based solely on flat-rate or means-tested benefits.

It is now time to leave the mechanical, internal analysis and move on to a direct investigation of the pattern of covariation across the nine country cases between measures of institutional variation on the one hand and the degree of income inequality among old age pensioners on the other.

7.3 EXTERNAL ANALYSIS: PATTERNS OF COVARIATION ACROSS COUNTRIES

The overall hypothesis of the present study holds that a complete reliance on flat-rate or means-tested benefits might not be the most effective long-term strategy to achieve a modest degree of income inequality among a generation of retirees. After having explored the black-box of income formation among the retirees in each of the nine countries, it is now time to adopt a more straightforward causal analytical strategy focussed on patterns of covariation between the main independent variables and the ultimate dependent variable: the degree of income inequality prevailing among the present generation of old age pensioners.

The available data cannot be expected to provide definite answers, and the style of analysis has to be a kind of "approximate reasoning", as opposed to rigid testing of alternative hypotheses.

As discussed in Chapter 4, it is impossible to test – in any strict sense – hypotheses about the final effect of institutional choices based on a sample of nine country cases. The situations prevailing in other countries can only serve as highly imperfect proxies for the counterfactual situation that would have obtained in each particular country if a different type of pension system had been implemented. The fundamental problem of causal inference applies, and the standard statistical remedies – linear controls for observable covariates, controls for endogeneity, etc. – are effectively ruled out because of the extremely modest sample size. Not even the most simple techniques for multivariate analysis are viable.

There is no end to the list of factors that one would ideally have liked to keep under control in the following analysis, but as I have argued extensively, the degree of income inequality that prevailed among the present generation of retirees when they were in their economically active life-phase is the single most pertinent candidate. There is every reason to believe that income differentials from the active life-phase will inevitably – to a lesser or greater extent – spill over into the retirement phase. One could argue, therefore, that the distributive effect of a particular pension system should be evaluated in terms of the degree to which pre-retirement income differentials are reproduced or perhaps amplified as a cohort enters retirement.

As a first step, I develop the specification of the central treatment variable – institutional variation in public pension systems. In the second step I investigate the hypothesized relationship between the treatment and outcome variables, while the issue of control for potential sources of bias – primarily variation in the pre-retirement income distribution – is treated in the third and last step.

The treatment variable(s)

In Chapter 2, I discussed alternative ways to conceptualize and operationalize the existing variation in public pension systems across the OECD area. It was decided to concentrate on two separate dimensions: the average level of benefits secured by the public pension system (Benefit Level) and the range of variation in benefits that is allowed according to variation in prior income and labor market participation histories (Benefit Range). Both measures are based on purely institutional information: the calculation of stylized benefit ratios (minimum, standard and maximum benefits) for single persons retiring in 1985. The scores of the nine country cases on Benefit Level and Benefit Range were described and discussed in Chapter 5.[287]

Although these two institutional variables are logically independent, they are empirically related. As argued in Chapter 3, there are good theoretical reasons for assuming the existence of a trade-off between benefit generosity and benefit equality, and indeed we did in Chapter 5 find a fairly strong positive association across the nine country cases between the scores on Benefit Level and Benefit Range (Pearson's r=0.680 and Spearman's r=0.71).

The overall hypothesis of the present study can be operationalized as expectations about the relationship between the joint distribution of these two institutional variables on the one hand and the dependent variable on the other. Insofar as the two variables can be manipulated independently, they are likely to have opposite effects on the degree of inequality in total disposable income. If, however, the actual trade-off between equality and generosity in the provision of public pensions is sufficiently "steep", the possibility emerges that the "positive" effect of changes in the Benefit Level might dominate over the "negative" effect of an associated change in the Benefit Range.

A "steep" trade-off between benefit equality and the relative generosity of public pensions would imply that changes in Benefit Range are associated with rather strong increases in Benefit Levels. The pattern of country scores on these two institutional variables is shown in Graph 7.4, with the associated regression line (using Benefit Range as the predictor variable). Variation in Benefit Range explains 46 percent of the variation in Benefit Level, and the unstandardized regression coefficient implies an expected change in Benefit Level of 2.2 percentage points for every unit's change in Benefit Range.

It is of course perfectly possible that the true trade-off is steeper (as well as more slack) than the picture emerging from a simple comparison of the scores of these nine countries. One could point out, for instance, that Germany is an extremely influential case in these regressions, and that the elimination of Germany from the sample would have improved the fit considerably in a direction favorable to the hypothesis about a trade-off – and consequently in a direction favorable to the overall hypothesis.[288]

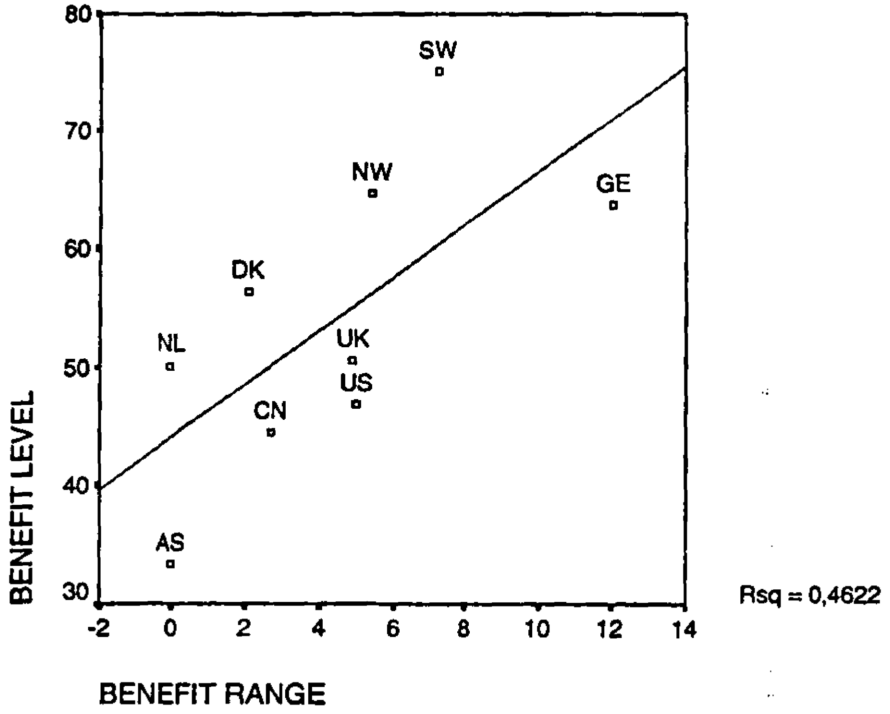
Furthermore, as indicated in Chapter 3.3, it is possible to imagine that the trade-off is played out at different levels in different countries, according to variation in a complex of social and political conditions summarized as the "capacity for solidaristic pension provision". If this were the case, the simple bivariate relationship is likely to underestimate the real trade-off in the policy options available for each country case. For instance, Denmark displays relatively high benefit levels vis-à-vis countries like the US and the UK, despite the fact that the public pension system in Denmark is basically flat-rate. This apparent anomaly could be the result of a higher "capacity for solidaristic pension provision" in Denmark, allowing the trade-off to take place at a higher level of benefits in this particular country (see Graph 3.1 and the related discussion). If we assume that the three Scandinavian counties share important societal characteristics, including a similar "capacity for solidaristic pension provision", a comparison of these cases would be less vulnerable to potential bias. In fact one can see from the upper-right panel of Graph 7.4 that a linear pattern emerges from the scores of these three countries with a somewhat steeper slope than the one implied by the general regression line. Comparing the scores of Australia, Canada and the US also suggests a rather steep trade-off, while the internal comparison of the Netherlands, the UK and Germany gives more mixed results.

---

[287] Benefit Level is defined as a weighted average of three different benefit ratios calculated for a single pensioner retiring in 1985. The three benefit ratios are: the minimum benefit granted irrespective of prior labor market participation, the standard benefit claimed by a standard production worker and the maximum benefit allowed by the system. Benefit Range is defined as the distance between the minimum and the maximum benefit (the square root of the absolute difference in percentage points).

[288] Some measurement error could be involved here. I suspect that the German score on Benefit Level is underestimating the real average generosity of the public pension system in Germany. The net replacement for a standard worker recorded in the SCIP data-files appears to be unreasonably low. Compare for instance with the average benefits received by German old age pensioners as reported in Graph 5.7.

Graph 7.4: Bivariate plot of Benefit Level against Benefit Range.



Nevertheless, in the following analysis I shall take for granted the degree of trade-off that actually emerges from the simple nine-country comparison. I start the presentation by investigating the empirical links between the institutional variables and variation in Gini inequality that were suggested in Chapter 3.

From institutional variables to variation in Gini inequality

Table 7.4 shows the scores and measures of correlation between Benefit Level and Benefit Range on the one hand, and the degree of Gini inequality in disposable income found among the old age pensioners in the respective countries, on the other.

Benefit Level shows a substantial negative correlation with the respective Gini scores. Pearson's r is equal to -0.655, while the negative rank-correlation is somewhat stronger, at -0.77. The Gini scores also appear to show a negative association with Benefit Range. In other words, there is a slight tendency for countries with pension systems that are close to the flat-rate/means-tested pole to do worse than countries where public pension benefits are allowed to vary according to pre-retirement income levels. The negative zero-order correlation is estimated to be –0.24, with the corresponding rank-correlation at -0.37.

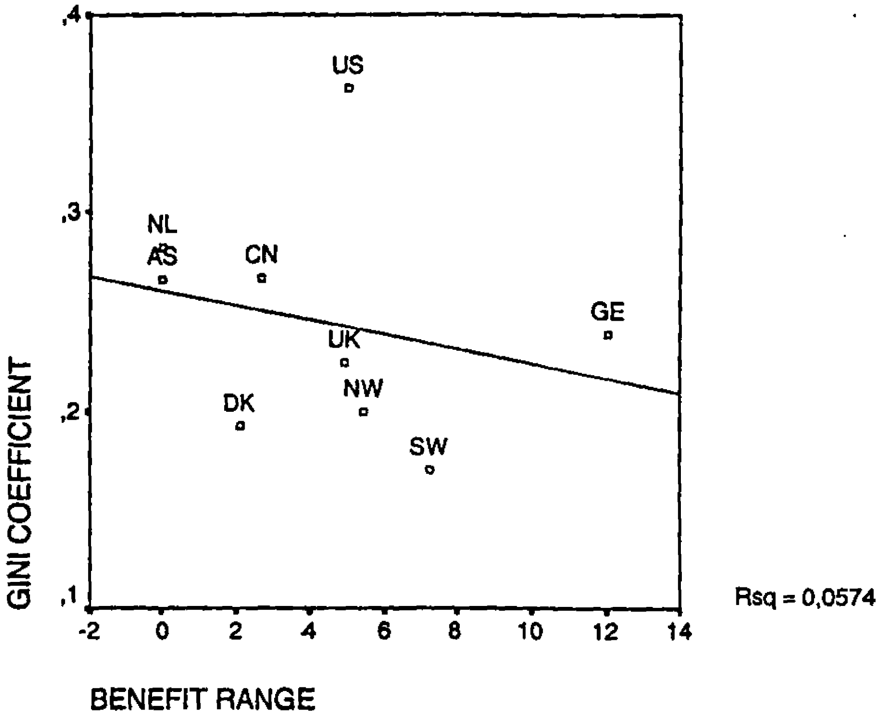
Table 7.4: Country scores on Benefit Level, Benefit Range and Gini coefficients disposable income. Zero-order, rank- and partial correlation coefficients with Gini scores.

	Benefit Range	Benefit Level	Gini disposable income
Australia	0.00	33.28	0.266
Canada	2.70	44.52	0.267
Denmark	2.09	56.38	0.193
Germany	12.03	63.68	0.239
Netherlands	0.00	50.18	0.282
Norway	5.43	64.64	0.200
Sweden	7.28	75.07	0.170
UK	4.91	50.69	0.225
US	5.00	46.88	0.362
Correlation with the Gini coefficient for disposable income			
Zero-order correlation	-0.240	-0.655	
Spearman's r	-0.368	-0.767	
Partial correlation	0.365	-0.691	

I have also calculated partial correlation coefficients where indirect effects through the positive association between the two independent variables have been controlled for. Keeping in mind that these latter figures are based on an extremely thin empirical basis (only 6 degrees of freedom are available for the calculation of the partial correlation coefficients), we can see that the estimates for the separate effects of the two variables turn out as expected. The part of the variation in Benefit Range that is *not* associated with Benefit Level appears to have a positive association with the degree of inequality found among old age pensioners, with a partial correlation coefficient of 0.37. This makes sense from a theoretical point of view. Increasing the Benefit Range without a compensating increase in the overall generosity of the public pension system can only be expected to enhance inequality.

Similarly, one should note that the independent variation in Benefit Level shows a marginally stronger negative correlation with the Gini scores, compared to the simple bivariate correlation. Again we would expect this pattern, since an increase in the generosity of public pension benefits, without any compensating increase in Benefit Range, can be expected to promote equality in total income. The most interesting point is, however, the strength of the negative bivariate relationship between Benefit Level and Gini inequality, which includes an indirect, inequality increasing effect via Benefit Range.

Graph 7.5: Bivariate plot of country scores. Gini coefficient for total disposable income against Benefit Range. Regression line and R-square.



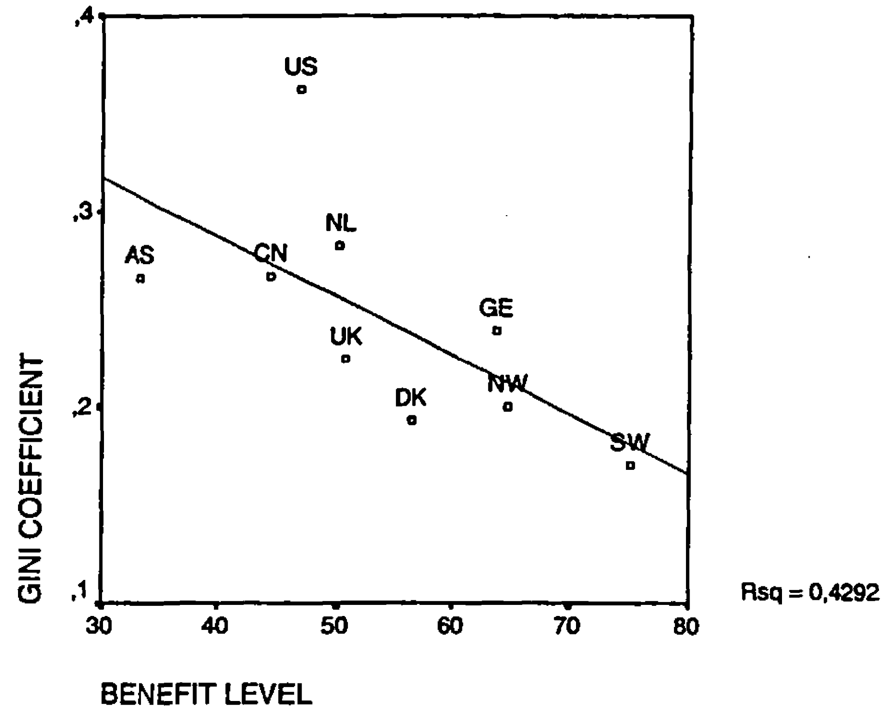
The bivariate association between Benefit Range and measured Gini inequality is fairly weak, as can be seen from Graph 7.5. The overall tendency is – if anything – negative. However, Germany and Sweden are highly influential cases for determining the slope of the regression line. When Germany is excluded from the sample, the negative slope of the regression line becomes steeper and the degree of association stronger. It is obvious that the exclusion of Sweden will have the opposite effect of further weakening the negative relationship.

In the following analyses I use Benefit Level as the main independent variable. Since Benefit Level is linearly associated with Benefit Range, effects of Benefit Range will be indirectly included in the measures of association between Benefit Level and potential dependent variables. However, the part of the variation in Benefit Range that is not a linear function of variation in Benefit Level, will be left out of the analysis.

The pattern presented in Graph 7.6 is encouraging from the point of view of the overall hypothesis and the associated argument in favor of social insurance. The relative generosity of public pensions does seem to be a tolerably good predictor of the level og Gini inequality found among contemporary cohorts of old age pensioners. Variation in Benefit Level appears to explain a significant proportion – 43 percent to be precise – of the variation in Gini inequality across the nine country cases.

There are a number of strong outliers, however, including the US, Denmark and Australia. The US displays a far higher level of inequality among retirees than predicted by the generosity of public pensions. The opposite is true – to a significant degree – for Denmark, Australia and the UK.

Graph 7.6: Bivariate plot of country scores. Gini coefficient for total disposable income against Benefit Level. Regression line and R-square.



Furthermore, it should be recognized that the ability of Benefit Level to explain variation in Gini inequality across the nine countries hinges – to a large degree – on external differences between the three groups of countries: the Scandinavian countries, the group of (additional) European countries and the three non-European, Anglo-Saxon countries. The three Scandinavian countries display the three lowest Gini scores, and they rank among the top four in terms of Benefit Level. Germany, UK and the Netherlands, are found towards the middle of the distribution on the independent and dependent variables, while the three non-European countries occupy positions in the upper left part of the graph.

Internal comparisons of individual countries within these three "clusters" lead to more ambiguous results. The relative performance by Denmark represents a serious anomaly for the overall argument – in particular when the comparison is restricted to the three Scandinavian countries. Contrary to the situation in the two neighboring countries, the Danish pension system is based almost exclusively on a combination of flat-rate and means-tested benefits. Part of the mechanism that would be responsible for the finding of substantially higher level of income inequality among Danish pensioners is also present: benefit levels are relatively modest in Denmark as compared to the two neighboring countries. Nevertheless, the level of Gini inequality found among Danish pensioners is only modestly higher than the level found among Swedish pensioners, and it is slightly lower than the degree of inequality found among Norwegian old age pensioners.

Among the second group of European countries, we see that a comparison of the scores of the Netherlands and Germany fits nicely into the overall pattern, while the position of the UK represents a serious deviation. The UK displays benefit levels just above the Netherlands but far below the German figure, while we find that the level of inequality among old age pensioners in the UK is lower than in both the two remaining countries – and far lower than in the Netherlands. Within the group of non-European countries the pattern is entirely inconsistent with the overall argument. Australia and Canada display rather similar levels of

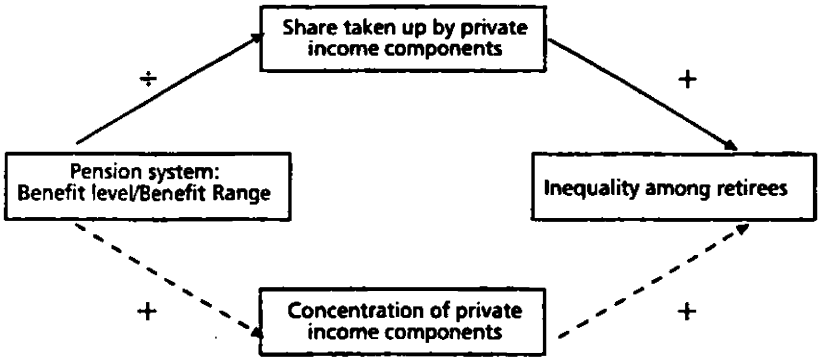
Gini inequality despite the observation of somewhat higher benefit levels in Canada. More importantly, the US displays both the highest benefit level and the highest level – by far – of Gini inequality.

To summarize the discussion so far, we can say that the pattern of covariation between institutional variables and the outcome variable lends conditional support to the overall argument. Let us move on to investigate the patterns of covariation with a selection of more intermediate variables: Which of the links in the hypothesized causal chain appear to be unbroken and where are the possible sources of inconsistency?

Links in the chain

The hypothesized relationship between the institutional variables, on the one hand and the outcome variable, on the other is expected to involve two intermediate variables: the share taken up by private income components and the degree of dispersion in private income components. The associated model is presented in Diagram 7.1.

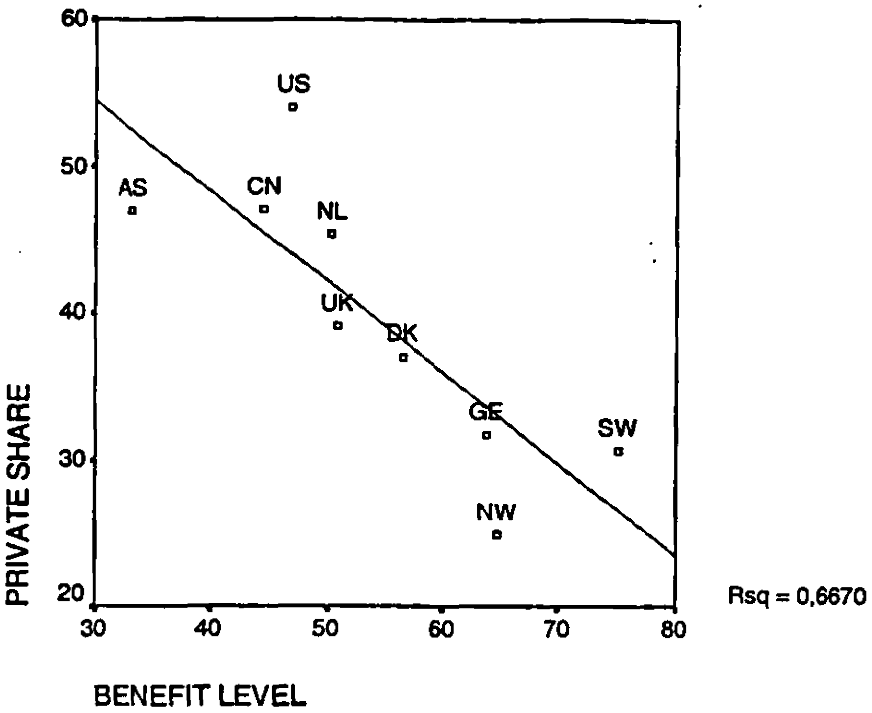
Diagram 7.1: Hypothesized model of the causal links between variation in public pension systems and Gini inequality among the retired.


Share taken up by private income components
÷
+
Pension system: Benefit level/Benefit Range
Inequality among retirees
+
Concentration of private income components
+

The main mechanism through which higher average benefit levels is supposed to contribute to a low level of inequality in total income is the modest share taken up by private income components. We have already seen in Chapter 5 that the institutionally defined variable, Benefit Level, is largely in agreement with observed variation in the average level of public transfers received by the old age pensioners in the nine countries. We have also found a tendency for the relative scope of private income components to be negatively related to the generosity of public pensions across these nine country cases, although the relationship is somewhat less than perfect (Pearson's r=-0.56 and Spearman's r=-0.77).

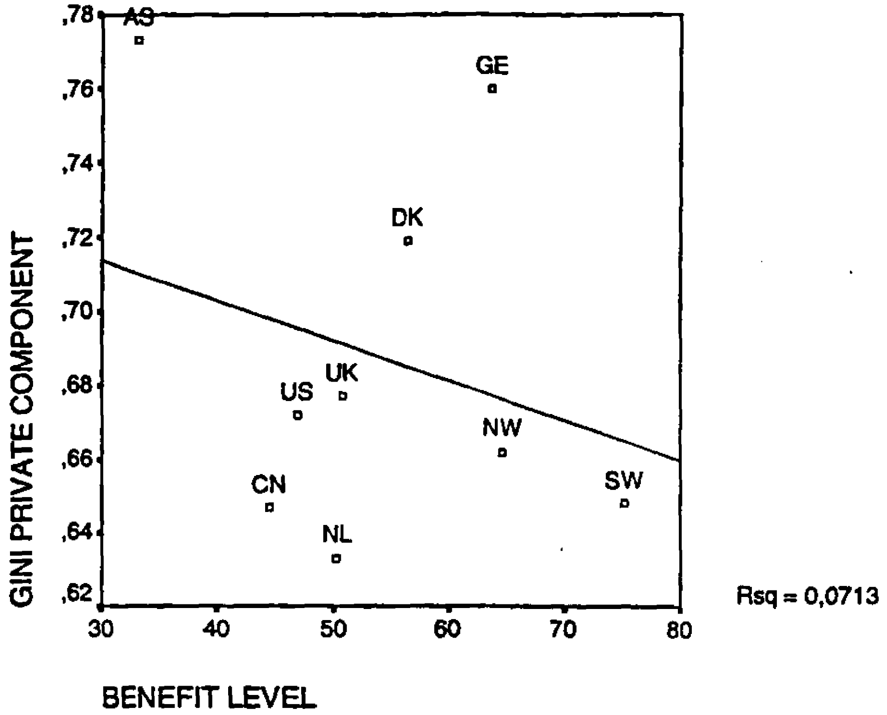
It is not surprising, therefore, that we find in Graph 7.7 a strong association between Benefit Level, on the one hand, and the share taken up by private income components on the other. The negative rank-correlation across the nine country cases is as strong as -0.92. The US appears to be an outlier, with a much higher private share than would be expected from the overall generosity of the public pension system. Also in Sweden we find that the share taken up by private income components is higher than would be expected when the comparative generosity of the public pension system is taken into consideration. In Norway, on the other hand, the share taken up by private income components is more modest than would be expected from the general linear relationship.

Graph 7.7: Bivariate plot of country scores: Share in the income package taken up by private income components against Benefit Level. Regression line and R-square.



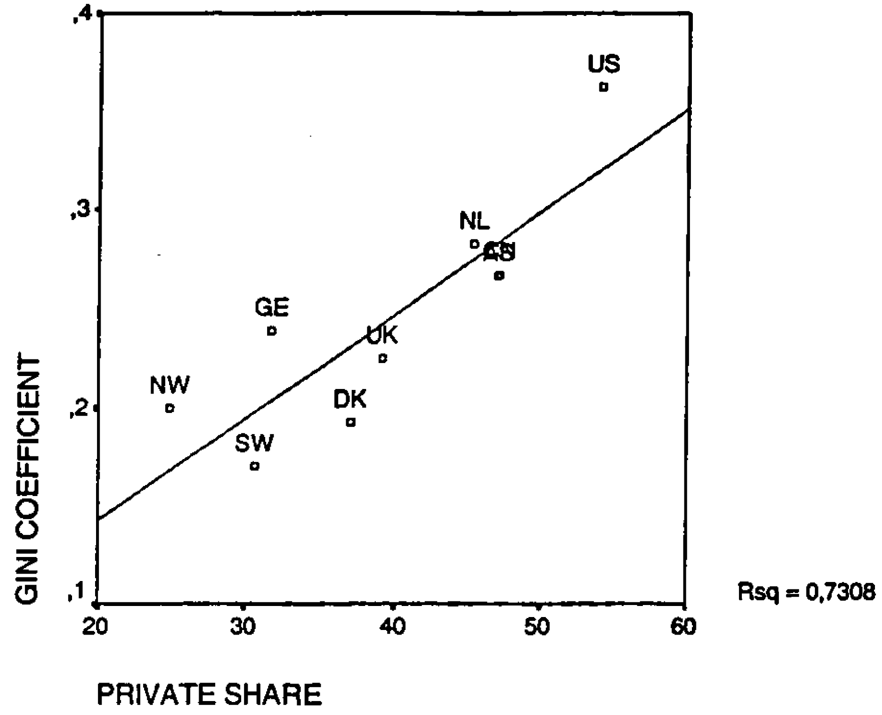
As suggested in Chapter 3, one might suspect that not only the scope but also the dispersion of private income sources would be systematically related to the level and distribution of public pensions. If the crowding-out of private income components should turn out to go hand-in-hand with a higher degree of concentration, this could represent a countervailing mechanism to the overall hypothesis – as suggested in Diagram 7.2. In order to highlight this issue, Graph 7.8 shows the degree of Gini inequality in private income sources against the country scores on Benefit Level. The general impression from Graph 7.8 is that the relationship between these two variables is weak. Earlier in this chapter we have already noted that there is rather little variation across the nine countries in the degree of dispersion in private income components. If anything, the relationship is negative, contrary to expectations. We can conclude, therefore, that this mechanism does not represent a serious counteracting force to the overall hypothesis; and hence the use of dotted arrows for this path in Diagram 7.1 seems to be justified.

Graph 7.8: Bivariate plot of country scores: Gini coefficient for private income components against Benefit Level. Regression line and R-square.



Finally, we can see from Graph 7.9 that the share taken up by private income components shows a strong relationship with the level of income inequality found among old age pensioners. An R-square of 0.73 is evidence of a strong linear relationship, and also for this pair of variables we find a rank-correlation of 0.92 – with the important difference, of course, that in this case the tendency for covariation is positive. Again the US appears to be an outlier (but not dramatically so), with a somewhat higher inequality score than would be expected from the general linear relationship. The same applies to Norway and Germany. Denmark and Sweden, on the other hand, show lower inequality figures than can be expected from the share taken up by private income components in the respective countries.

Graph 7.9: Bivariate plot of country scores: Gini coefficient against share by private income components. Regression line and R-square.



Let me summarize the findings so far in reverse order: The level of income inequality found among old age pensioners appears to be strongly related to the share in total retirement income that is provided through private sources. This relationship appears to be as strong as one could possibly have expected.

We also find that the relative scope of private sources in the income packages of retired households is systematically related to variation in the generosity of public pension systems, as measured by the stylized calculations of Benefit Level. The first condition for this relationship is a close correspondence between this purely institutional information and the relative level of public transfers received by old age pensioners as reported in the LIS data. By and large this is the case, as was demonstrated in Chapter 5.

The second, more interesting condition involves tendencies towards crowding-out/substitution between public pensions and private income components. There appears to be a negative association between the generosity of public pensions and the (absolute) level of income received from private sources. As pointed out in the discussion in Chapter 5, the latter relationship turns out to be somewhat weaker and more inconsistent across the available sample of country cases than one might have expected. So it seems reasonable to conclude that this is one of the weaker links in the hypothesized causal chain.

There is always the possibility that the true tendency towards substitution/crowding-out is stronger and more persistent than implied by the static comparison of a small cross-sectional sample of OECD countries. You could imagine, for instance, that some countries exhibit conditions that are particularly favorable for a large diffusion of private (occupational) pension schemes, while these conditions at the same time make the introduction of generous social insurance schemes more likely.[289] If the true tendency for substitution were in fact being partly concealed in the available cross-sectional material, it could alsp imply that also the overall estimate of a negative relationship between Benefit Level and the level of income inequality among retirees is downward biased. Hence, the empirical support for the overall hypothesis would be stronger and more consistent than has so far been recognized.

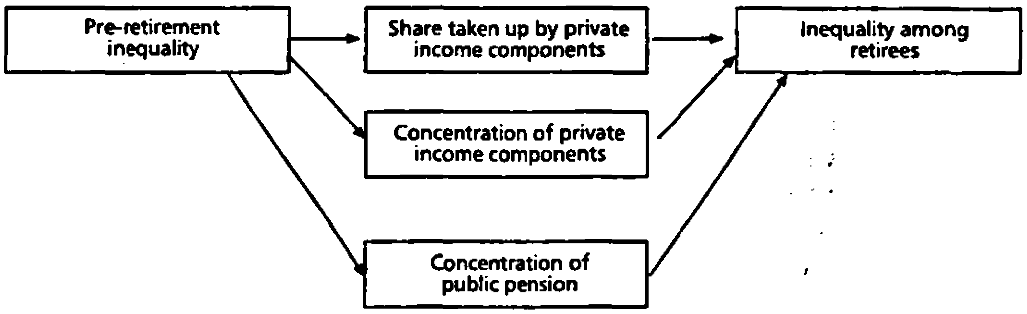
However, before speculating any further about possible ways to insulate the overall hypothesis from the ambiguities of the available data, we need to consider alternative ways to model the observed variation in Gini inequality among old age pensioners in the respective countries.

Pre-retirement levels of income inequality

Variation between the country cases in the degree of income inequality found among the present generation of old age pensioners could simply be the result of variation in the degree of income differentials experienced by this generation in its pre-retirement life-phase. As I have discussed in the theoretical chapters, the degree of income inequality prevailing among a cohort during its active life-phase is likely to spill over into the retirement phase – no matter how the pension system is organized.

The main mechanisms through which one would expect such a relationship to work are sketched in Diagram 7.2. The diagram suggests the potential role of three intermediate variables. A high degree of pre-retirement income inequality could be expected to increase the scope of private income components and *the share taken up by these components* in the income package of retired households. A high degree of pre-retirement income inequality is also likely to be associated with a high degree *of dispersion of both private incomes and public pension benefits.*[290] That the degree of pre-retirement inequality will tend to spill over into the distribution of public pensions is strongly indicated by the high degree of concentration found in the distribution of public pensions in the US. The figures presented in Table 7.1 and Graph 7.3 show that public pensions are far more strongly concentrated in the US than could be expected from purely institutional information.

Diagram 7.2: Hypothesized model of the causal links between variation in pre-retirement income inequality and income inequality among the retired.


Pre-retirement inequality
Share taken up by private income components
Inequality among retirees
Concentration of private income components
Concentration of public pension

---

[289] The strength and cohesion of the trade-union movement is a plausible candidate. For an argument in this direction based on a comparison of time-series data on the growth in private pensions in Denmark and Norway see Pedersen (1997).

[290] All these assertions are based on the assumption that all relevant institutional variables are kept constant. The last of the three mechanisms is, of course, only relevant if public pensions display a positive Benefit Range: i.e., benefits are allowed to show some variation according to pre-retirement income levels.

The potential role of pre-retirement income differentials as a determinant of post-retirement income differentials represents a serious challenge to the empirical evidence presented so far. The problem is all the more serious if one is prepared to consider the possibility that variation in the character of public pension systems could be partly endogenous. It is not unreasonable to suspect that generous and comprehensive pension systems are more likely to develop in countries with comparatively egalitarian social structures (for arguments in this direction see Atkinson, 1990; Pedersen, 1995; and Persson, 1995). This possibility has already been suggested with the idea that the countries might differ according to their "capacity for solidaristic pension provision. One could argue, therefore, that the distributive impact of a particular pension system is best conceived of as its ability to modify (or amplify) the reproduction of lifetime income differentials in the retirement phase.[291]

An adequate empirical treatment of this issue would require longitudinal data, preferably panel data. Ideally one would need historical data on pre-retirement economic stratification among the contemporary generation of pensioners. Of course, this type of information cannot be obtained from LIS (or any other comparable data-source).

As an imperfect substitute for the ideal longitudinal data, I shall use the respective LIS data-sets to estimate the degree of income inequality found among the (contemporary) economically active population in each country. In other parts of the study I have used the non-retired as a convenient reference group, but this is not a good choice in this particular purpose. The snap-shot picture of income inequality among the general population below the age of 65 will be contaminated by variation in the mean income position of cohorts as they move over the life-cycle and inter-generational inequalities (Paglin, 1975; Ankrom, 1989). In order to achieve comparability with the pensioner samples, I have selected a cohort band of individuals (household heads) between the age of 40 and 55.

This strategy presupposes that the degree of income inequality found among the economically active population remains fairly stable over time in each country. It should be kept in mind, however, that differential effects of business cycles and long-term trends in income inequality could make cross-national variation in present conditions among the economically active a bad approximation to historical differences among older cohorts.

Let me start by presenting the pattern of covariation between Gini estimates for the old age pensioners and for the reference group of economically active cohorts. As can be seen from Graph 7.10 and Table 7.4, there appears to be a fairly strong correlation between the level of income inequality found among the old age pensioners in each country and the level of inequality found among the economically active cohorts. Almost 40 percent of the variation in Gini inequality among the retired appears to be "explained" by variation in the degree of inequality prevailing among the economically active population.

The three Scandinavian countries form a separate cluster, with comparatively low levels of income inequality in both the two population groups. Canada and Australia form another cluster, with almost identical scores in both of the two subgroups. The US deviates sharply from the remaining countries with extremely high levels of inequality among both population groups.

---

[291] See the discussion in Myles, 1989: 126: "Inequality among the elderly reflects two facts: overall levels of inequality in society at large and the way the pension system alters or reproduces that inequality."

Graph 7.10: Bivariate plot of country scores: Gini coefficient among old age pensioners against Gini coefficient among the population aged 40-55. Regression line and R-square.

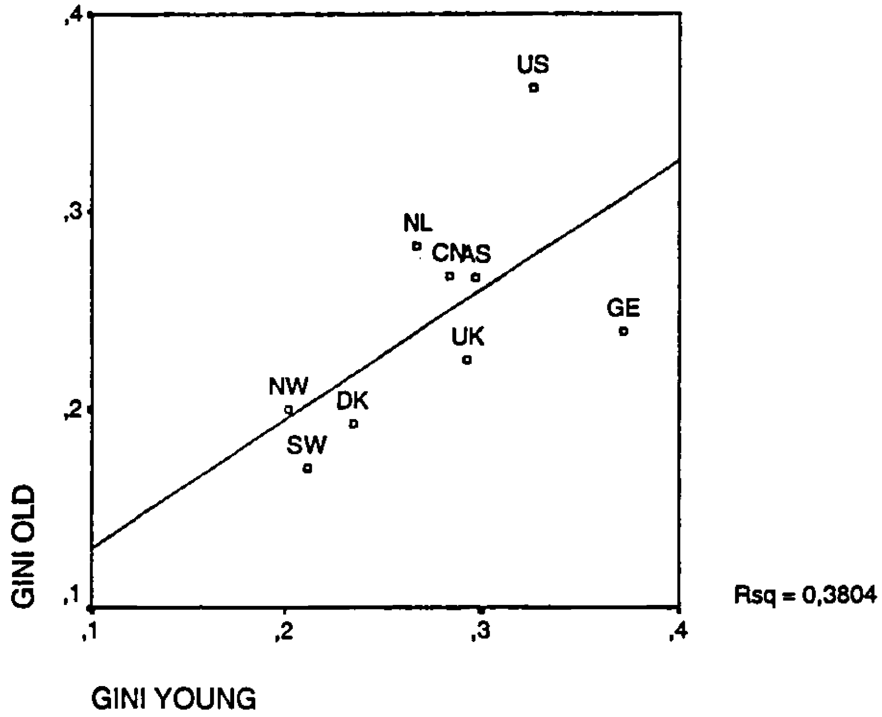


Table 7.4: Bivariate correlations between three variables: Gini inequality among the active cohort bands, the share of private income among retirees and Gini inequality among the retirees. Pearson's r and Spearman's r.

		Pearson's r		
		Gini reference group	Private income share	Gini retirees
Spearman's r	Gini reference group		0.459	0.617
	Private income share	0.567		0.855
	Gini retirees	0.600	0.833	

As suggested in Diagram 7.2, one of the mechanisms through which inequality in the pre-retirement phase is likely to affect the post-retirement income distribution is a potential effect on the share taken up by private components. It is reasonable to imagine that a high concentration of pre-retirement income will trigger a high level of pre-retirement saving and participation in private pension schemes. This hypothesis is supported by the data. There appears to be a non-trivial positive correlation between pre-retirement income inequality and the share taken up by private income components in the income package of retired in the respective countries.

Finally, we can see from Table 7.5 that there appears to be a moderate bivariate correlation between the degree of inequality found among the economically active cohorts and the main institutional variable, Benefit Level. If this correlation is produced by a tendency for pre-retirement income stratification to pre-determine which type of pension system is feasible in each country, the empirical support for the overall hypothesis about a systematic effect of instititutional variables on the degree of income inequality in retirement is in serious doubt.

Table 7.5: Bivariate correlations between two variables: Gini inequality among the cohort bands 40-55 and Benefit Level. Pearson's r and Spearman's r. Partial correlation with the level of Gini inequality among old age pensioners.

		Pearson's r	
		Gini reference group	Benefit Level
Spearman's r	Gini reference group		-0.403
	Benefit Level	-0.517	
Partial correlation with Gini retirees		0.510	-0.564

This entire pattern of bivariate correlations among the three key variables – Benefit Level, the degree of inequality among the economically active cohorts and inequality among the retired – could in principle be explained in terms of very different structural models. In Diagram 7.3, I have suggested three alternative models of the causal links between these basic variables, all of which are largely consistent with the observed pattern of bivariate correlations.[292]

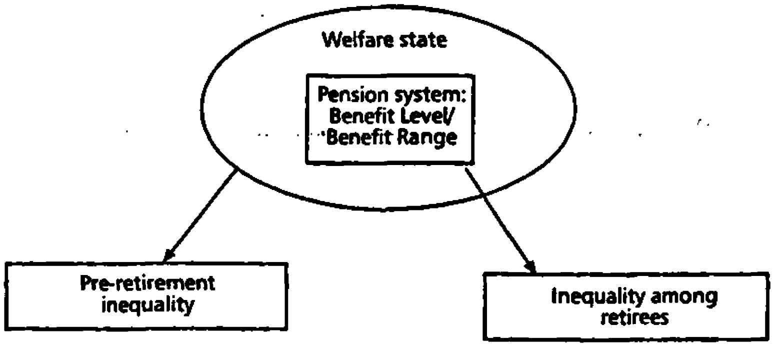
In all three models, I assume that the pension system (with its measured characteristics) is embedded in a broader configuration of welfare state institutions.

---

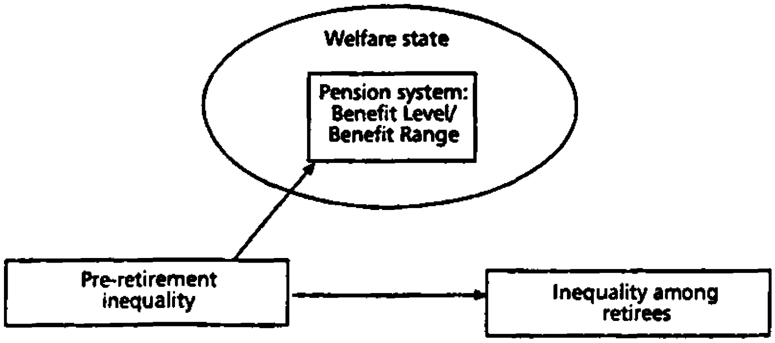
[292] Diagrams 7.1 and 7.2 can be seen to represent more detailed specifications of the central causal relationship implied, respectively, by the "Idealist Model" and the "Realist Model", as depicted in Diagram 7.3.

Diagram 7.3: Three alternative models of the causal relationship among 1) pre-retirement levels of inequality, 3) pension systems and the welfare state more generally and 3) the level of inequality among the retired.

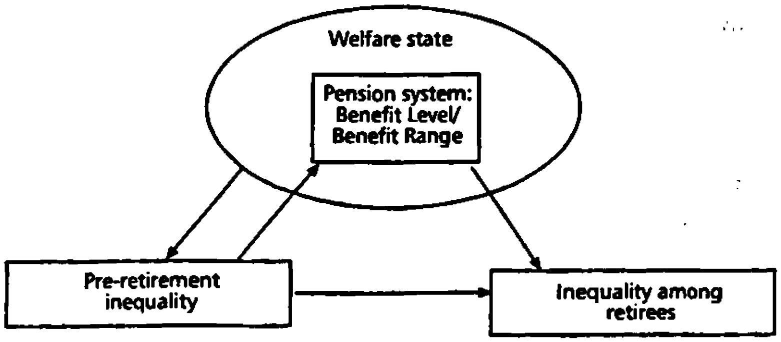
"Idealist Model"


Welfare state
Pension system: Benefit Level/ Benefit Range
Pre-retirement inequality
Inequality among retirees

"Realist Model"


Welfare state
Pension system: Benefit Level/ Benefit Range
Pre-retirement inequality
Inequality among retirees

"Saturated Model"


Welfare state
Pension system: Benefit Level/ Benefit Range
Pre-retirement inequality
Inequality among retirees

The first, "Idealist Model",[293] holds that the correlation between pre-retirement and post-retirement inequality is entirely spurious. Countries that display a low degree of inequality among old age pensioners do so because of the nature of their pension system. They also happen to show low degrees of pre-retirement inequality, for the simple reason that a generous pension system is likely to be part of a comprehensive and redistributive welfare state. In other words: the institutions of the welfare state make all the difference. (see Palme, 1989; 1993 and Korpi and Palme,1994 for an interpretation of available cross-national data where this particular model is chosen a priori).

The key to this Idealist Model is the exclusion of two causal arrows. The model allows no direct relationship between pre- and post-retirement inequality, and no causal effect running from distributive structures prevailing among the economically active population and the type of pension system to be found in each country. Variation in the welfare state and the pension system is completely exogenous.

In direct opposition we find the Realist Model. It holds that all the observed bivariate correlations are produced by two basic relationships – now with the degree of pre-retirement income stratification as the only exogenous impulse. The degree of pre-retirement inequality influences the type of pension system that is found in the respective countries, and it directly shapes the degree of post-retirement inequality.[294] In other words, institutional variation plays no role at all. Any effect of welfare state institutions on the pre-retirement income distributions is ruled out, and the observed correlation between the nature of public pension systems and the degree of income inequality among the retired is assumed to be entirely spurious.

The pattern of bivariate correlations that has been described so far is roughly consistent with either of these radically different models/interpretations.[295] To make an a priori choice in favor of one or the other of these two restrictive models would require strong theoretical reasoning. One would need a convincing argument against the possible existences of one or more of the causal links that have been included in the final Saturated Model. I believe that the theoretical as well as the common-sensical foundation for any such argument is missing.

If one accepts the Saturated Model as the point of departure, it follows that in order to make any inference about the effect of variation in pension systems, one must somehow control for variation in pre-retirement income inequality. This point holds even for the more restrictive version of the Saturated Model, where the variation in pension systems is assumed not to be causally influenced by the level of pre-retirement income stratification (i.e., where the upward pointing arrow linking these two variables is left out of the model). Even in this case, part of the apparent effect of the pension system proper will be spurious – due to an indirect effect of general welfare state arrangements, which influence the degree of pre-retirement income stratification.

The last row of Table 7.5 shows partial correlation coefficients, with the ultimate dependent variable – Gini inequality among the retired – for each of the two independent variables. It turns out that both these partial correlation coefficients are rather close to the original zero-order correlations. This can be taken to suggest that the hypothesis about an inequality reducing effect of Benefit Level might survive a control for variation in pre-retirement levels of inequality.

---

[293] The labels used for these models – Idealist and Realist – refer to the discussion in Chapter 2 of competing theoretical positions on the big questions about the (re-)distributive achievements of the welfare state.

[294] Note that in this model, the general institutions of the welfare state are assumed to play no causal role in variation in pre-retirement income stratification.

[295] Only with a large sample of cases (and depending on very strong assumptions about linearity, additivity, the distribution of residuals, etc.) would it be possible to make an empirically grounded choice in favor of one of the two restrictive models, based on the pattern of bivariate correlations.

An alternative – more rigid – approach to control for variation in pre-retirement for the analysis of potential institutional effects is to change the ultimate dependent variable from inequality among the retired to *the relative difference in measured inequality between the reference group and the retired.* This particular standardization of the dependent variable represents one possible specification of the more general idea that the effect of variation in pension systems should be seen in terms of a propensity to modify or amplify the projection of pre-retirement inequalities into the retirement phase.[296]

As shown in Table 7.6, some of the countries display higher degrees of inequality within the pensioner sample than they do in the sample of younger cohort bands, but more display the opposite pattern, with less inequality among the old age pensioners. In the US, Gini inequality among the retirees is 0.04 points higher than the level of inequality found among the younger cohort band – corresponding to a difference of 11 percent. Also in the Netherlands we find – slightly – higher levels of inequality among the retirees, while in Norway the level of inequality appears to be almost the same in the two population subgroups. This is partly due to the fact that inequality among the younger cohort bands is very low in Norway.

In Germany and the UK, inequality appears to be significantly lower among the retirees than among the younger reference group – with the relative difference amounting to 36 and 23 percent, respectively. The German score is primarily driven by the finding of extremely high levels of inequality among the younger cohort bands. Also in Sweden, Denmark and Australia we find a substantial relative difference in favor of the pensioner samples.

In Graph 7.11 the relative difference in Gini inequality between the two subgroups is plotted against the respective scores on Benefit Level. One can register a rather weak tendency for the relative performance of the pensioner sample to improve with scores on Benefit Level. The picture of covariation with the main institutional variable does not disappear completely through the application of this particular approach to control for variation in pre-retirement levels of inequality, but it certainly fades.

Norway and Australia are highly influential cases contributing significantly to the overall weakness of the bivariate correlation. In Australia we find considerable less inequality among the retired than among the reference group, despite a low score on Benefit Level. The pattern is the reverse in Norway: inequality among the retired is at about the same level as found among the reference group, despite a relatively high score on Benefit Level.

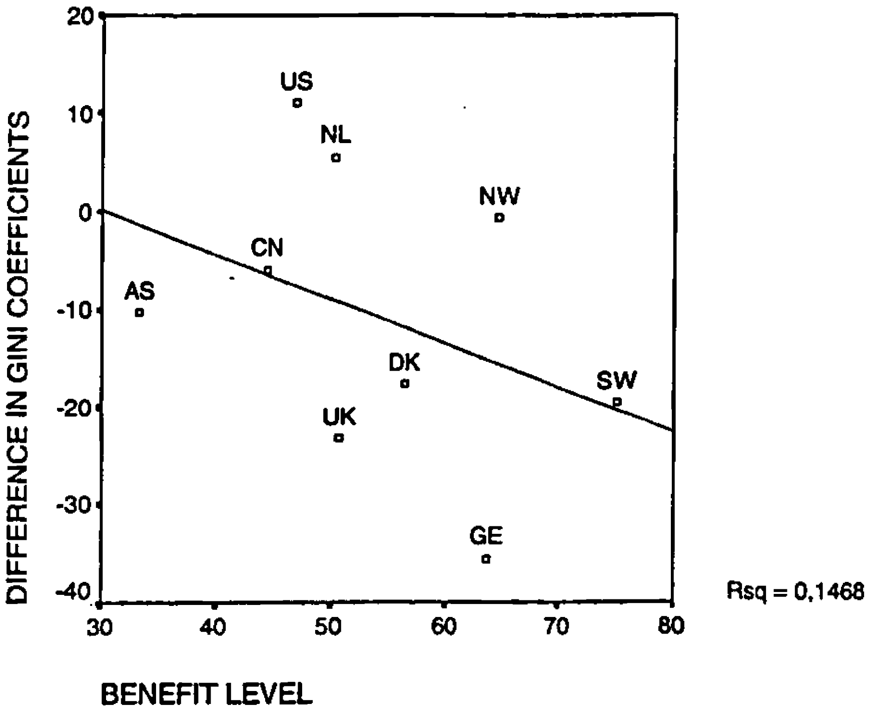
---

[296] This "differencing" of the dependent variable has the technical advantage vis-à-vis the estimation of a multivariate equation that it preserves degrees of freedom. It is equivalent to a multivariate equation where the coefficient for pre-retirement inequality has been fixed a priori.

Table 7.6: Gini scores for the population 40-55 and for old age pensioners in the respective countries. Absolute difference in Gini scores between these two population subgroups and relative difference in percentage of Gini score among the population 40-55.

	Gini score population 40-55	Gini score retirees	Difference in Gini scores	Relative difference in Gini scores
Australia	0.30	0.27	-0.03	-10.3
Canada	0.28	0.27	-0.02	-5.9
Denmark	0.23	0.19	-0.04	-17.6
Germany	0.37	0.24	-0.13	-35.6
Netherlands	0.27	0.28	0.01	5.5
Norway	0.20	0.20	0.00	-0.7
Sweden	0.21	0.17	-0.04	-19.6
UK	0.29	0.23	-0.07	-23.2
US	0.33	0.36	0.04	11.0
Correlation with Benefit Level:				
Pearson's r	-0.403	-0.655	-0.321	-0.383
Spearman's r	-0.517	-0.767	-0.417	-0.417

Graph 7.11: Bivariate plot of country scores: The relative difference in Gini scores between the retirees and the younger reference group is measured along the Y-axis. Benefit Level is measured along X-axis. Regression line and R-square.



We can conclude that the support for the main hypothesis becomes weaker when the dependent variable is taken to be the relative difference between inequality levels found among pensioner and non-pensioner cohorts in each of the countries. This is all the more so when we concentrate on the group of Scandinavian countries. Despite substantial differences between the respective pension systems, Sweden and Denmark show similar scores on this difference variable, while the middle-of-the-road case of Norway appears to perform more poorly regarding this dependent variable.

On the other hand, these findings do not amount to anything like a falsification either. The level of income inequality found among the younger cohort bands could be a very poor approximation of the level of inequality that did in fact prevail among the contemporary pensioner generation in its active life-phase, and this is what one should ideally have tried to control for. We know that a number of OECD countries – in particular the US – have experienced a very substantial increase in wage differentials and overall income inequality since the late 1970s, while the degree of income inequality appears to have remained largely stable in other – in particular some European – OECD countries. Countries that have experienced rising inequality among the economically active population over the last decades will appear to do well on the "difference" variable, while countries with stable (and low) levels of inequality among the economically active population will appear to do relatively badly – all purely an artifact produced by different historical trends.

This effect might help explain the relatively poor performance of a country like Norway. Norway is probably one of the countries in this sample where income inequality among the economically active population has risen since the 1960s – and perhaps even declined. Therefore, the real historical pre-retirement income distribution that was experienced by the present generation of retirees might not have been as relatively favorable in Norway than it would appear from the comparison with contemporary active cohorts.

Average income levels and the level of taxation

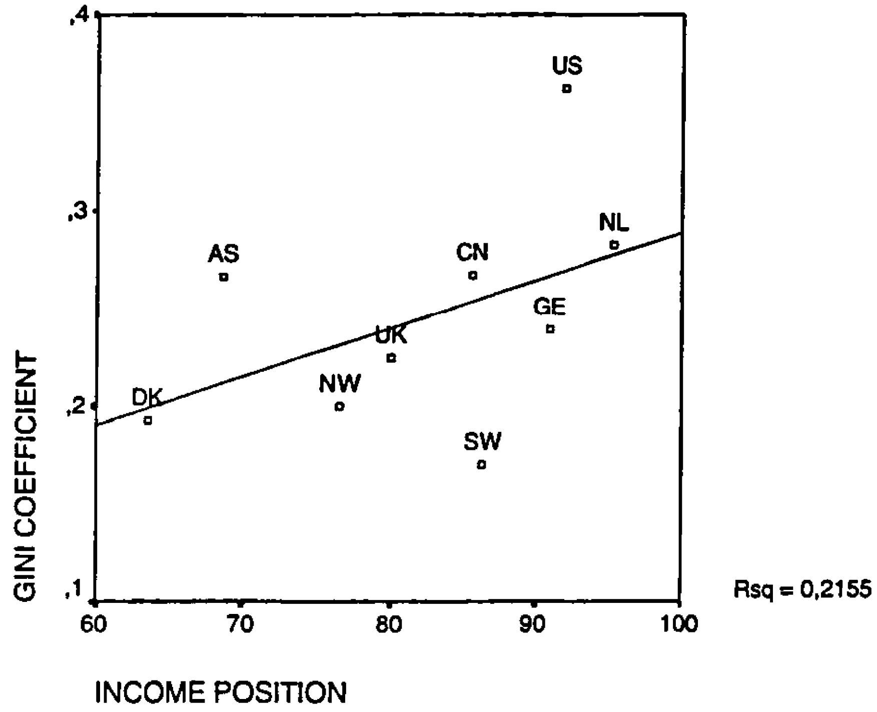
Before closing this section, let us briefly inspect the pattern of covariation between the main dependent variable and a further pair interesting correlates: 1) the relative income position of the retired and 2) the average level taxation "suffered" by this population subgroup.

In Chapter 5 we saw that there is considerable variation across the nine countries in the relative income position enjoyed by old age pensioners. Furthermore, there appeared to be a surprisingly weak relationship between the replacement levels offered by public pension systems per se (Benefit Level) and the final relative income position of old age pensioner vis-à-vis the remaining population – defined in terms of total disposable income. There was hardly any systematic tendency for the old age pensioners to be richer in countries where public pensions are relatively more generous. The main explanation for this lies with the tendency towards substitution between public pensions and private income sources in retirement.

Without reference to these findings, one might have expected a negative relationship between the level of income enjoyed by old age pensioners and the level of Gini inequality – so that inequality is minimized in countries where old age pensioners are relatively wealthy, thanks to generous public pensions. This does not appear to be the case. The joint distribution of these two variables – degree of inequality and the average income level found among old age pensioners – is shown in Graph 7.12. The relationship is – if anything – the opposite. There is a weak and rather inconsistent tendency for inequality to be highest in the countries where the old age pensioners are found to be relatively rich. The US and the Netherlands score high on both variables, and also Denmark shows scores consistent with a positive relationship since both income levels and inequality levels in this country are among the lowest. You could put it this way: In countries like the US and the Netherlands where average income levels among old age pensioners are relatively high, it is mainly due to the particularly high income levels enjoyed by the more well-off segments of the pensioner population. Hence, in these countries inequality is high. In Denmark, on the other hand, few old age pensioners are terribly rich.

However, not all country cases conform to this pattern. Sweden and Australia show scores on these two variables that are highly deviant. Sweden combines low inequality with relatively high income levels, while Australia features an opposite pair of bivariate scores with high inequality combined, with low average income levels.

Graph 7.12: Bivariate plot of country scores: Gini inequality among the retired is plotted against the relative income position of the retired. Regression line and R-square.

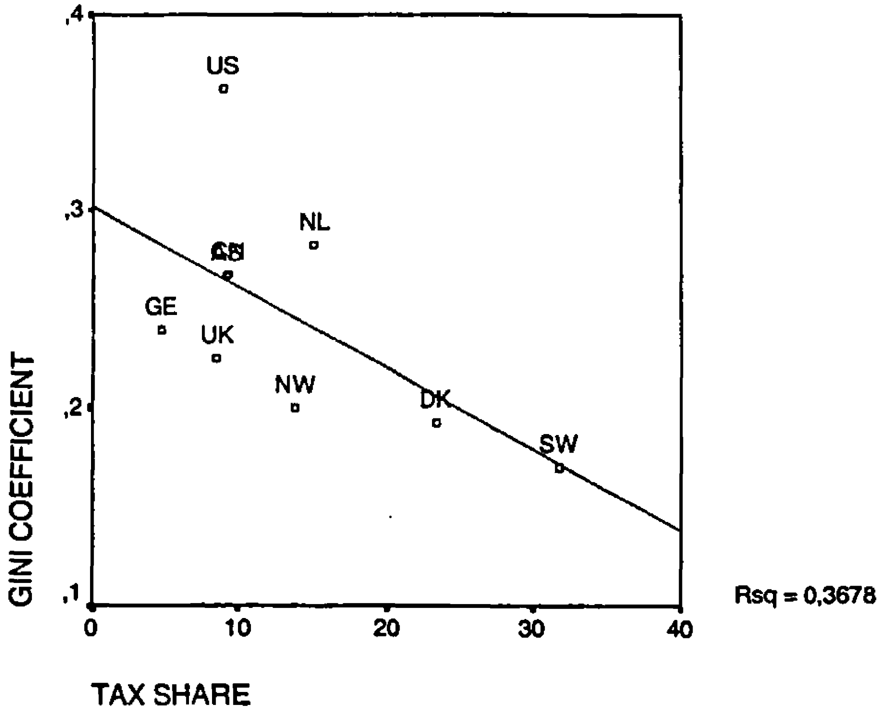


In Chapter 2, I mentioned the substantial cross-national differences in the rules of taxation applicable to pensioners and pension income, and we have seen both in Chapter 5 and in Section 7.2 of the present chapter how the average rate of taxation paid by old age pensioners varies widely across the nine countries. As suggested in section 7.2, differences in the systems of taxation might be seen as a complementary or even competing explanation for the observed differences in the degree of inequality in disposable income found in the respective countries. Certainly the various methods to decompose inequality in disposable income pointed to a very important role for taxation in some of the most "egalitarian" countries (Sweden and Denmark).

When we look at variation in tax-rates as a correlate to the degree of inequality in disposable income – as displayed in Graph 7.13 – this impression is reinforced. Variation in average tax-rates paid by the old age pensioners appear to "explain" more than one-third of the total observed variation in Gini inequality. In other words, and from a purely statistical point of view, variation in this taxation variable is almost as powerful as variation in Benefit Level as a predictor of the degree of inequality in disposable income. Of course there are inconsistencies to the general pattern of a negative relationship. Germany, Norway and the UK exhibit lower levels of inequality than would be predicted by their low or modest levels of taxation. The German case is particularly influential in this respect. The level of inequality found among German pensioners is quite modest, despite the fact that Germany shows by far the lowest level of taxation among its population of old age pensioners.

When we once again turn our attention to the three Scandinavian countries, the performance of the taxation variable is impeccable. With Norway as a partial exception, the level of taxation appears to "explain" the general position of the three Scandinavian countries, and it also fits with the internal ranking of the three countries on the dependent variable.

Graph 7.13: Bivariate plot of country scores: Gini inequality among the retired is plotted against the level of taxation paid by this population group. Regression line and R-square.



It is far from obvious how one should interpret these findings. Do they provide support for an explanation that competes with the main hypothesis (tax systems matter but pension systems do not), or do they simply suggest a further specification of the egalitarian argument?

As I have already indicated, policy-makers are likely to look at the benefit formula and the tax schedule as complementary policy parameters. This has been recognized in the way the main institutional variables – Benefit Level and Benefit Range – have been defined and operationalized here: i.e., in terms of after-tax benefit ratios. One might argue, therefore, that it makes no sense to try and distinguish between separate effects of the pension system and the tax system.

On the other hand, a certain score on Benefit Level and Benefit Range could be the result of very different combinations of gross benefit schedules and tax schedules. The findings reported here indicate that – for a given (after-tax) Benefit Level – a combination of high gross benefits and high tax levels (as in Sweden) tends to be more favorable than the alternative combination, where more modest gross benefits go together with low levels of taxation (as in Germany). Similarly, one could easily imagine that a high pre-tax benefit range that is compressed through high and progressive taxation is more conducive to equality than an equivalent system where the same degree of compression is built into the gross benefit structure itself. The potential mechanism is obvious: High levels of progressive taxation – on pensioners and all types of pension income – are likely to be associated with high marginal tax-rates on (in-egalitarian) private income components.

7.4 CONCLUDING DISCUSSION

The results presented in this chapter do not justify firm conclusions – either in favor or against the main hypothesis.

The internal analysis, focussing on the way public and private income components contribute to inequality in total disposable income, has confirmed the validity of important auxiliary hypotheses.

- In all the country cases *private income* – earnings, occupational pensions and income from capital – forms a highly regressive component in the income packages of retired households. The distribution of these private income components shows a high degree of concentration, and it is strongly correlated with the distribution of total disposable income in most countries. The three different ways to decompose overall inequality that have been applied here all confirm the notion that the private income components contribute to enhance inequality. This applies to the private sources when taken together, as well as to a separate evaluation of the contribution made by earnings, occupational pensions and income from capital. The observation made by Pestieau (1992) that the distribution of private pensions is everywhere highly in-egalitarian has been confirmed. However, it does not follow from this observation that a growth in private pensions – or in private income provision generally – will necessarily be associated with increasing inequality. Although it appears to be universally true that the total amount private income received by old age pensioners forms a highly regressive income component, any increment to these income sources will not necessarily do the same.
- As could be expected, the distribution of *public pensions* shows considerable variation across the nine country cases. In some countries public pensions are almost uniformly distributed or even (in Australia) weakly concentrated among the less well-off segments. In other countries the average level of public pensions received does correlate positively with total disposable income and hence according to a simultaneous decomposition of overall inequality they contribute moderately to the overall level of inequality found among the pensioner population. This confirms the claim made by Delhausse et al. (1994) that the degree of income inequality would diminish in these countries if public pensions had been distributed equally among all old age pensioners (everything else remaining constant). However, it has also been shown that a marginal increase in the scope of public pensions will everywhere tend to trigger a reduction of inequality among the retired, and conversely that a marginal reduction in the scope of public pensions will be associated with increasing inequality.[297] This holds even in the countries where public pensions are allowed to vary according to pre-retirement income levels and hence show some degree of concentration among the more well-off segments of the pensioner population.
- It is somewhat more surprising that we find *taxation* to be highly progressive among pensioners and responsible for a substantial reduction in the level of income inequality

---

[297] Put in more technical terms, the elasticity of overall inequality with respect to marginal increases in the scope of public pension benefits is found to be negative. The Swedish sample is the only exception, and the explanation for this anomaly is technical rather than substantial.

prevailing in several countries. In the countries where the tax burden on old age pensioners is particularly high (Denmark and Sweden), the inequality reducing effect of taxation (sometimes called the degree of "residual progressivity") is particularly strong. Similar findings have been reported by Kohl (1992), but their implications for the general argument are ambiguous.

At first sight the application of the causal analytical approach did bring out the expected bivariate relationship between institutional variables and the level of Gini inequality found among the pensioners populations in the respective countries. So far the findings are in agreement with those reported by Palme (1989), Kohl (1992) and Korpi and Palme (1994), although the present analysis has been based on more recent waves of LIS-data and has involved a somewhat different sample of country cases – including the strategically important case of Denmark.

However, this result cannot be taken as proof of a genuine causal effect without considering competing explanations for the observed variation in income inequality among the retired. In particular, I have argued that an attempt to control for pre-retirement levels of income inequality is indispensable. The (admittedly) tentative application of such a control appeared to seriously weaken but not remove the original bivariate relationship. Of course, this does not settle the issue either. The operationalization of the control variable was far from ideal, and its application to a sample of nine cases is inherently dubious. But this is not all. As pointed out by Lieberson (1985), the application of statistical controls for some but not all the relevant variables could very well produce estimates that are further from the true causal effect than the plain bivariate relationship. If we had been able to include all relevant variables in a correctly specified model, the result could have been to eliminate what remains of the empirical support for the overall hypothesis, but it could also, quite to the contrary, have revealed an even stronger relationship than the one appearing from the simple bivariate analysis.

In an attempt to supplement this kind of quasi statistical reasoning based on the full nine-country sample, I have given special attention to the comparison of smaller groups of "similar" country cases – in particular the three Scandinavian countries.[298]

As we have seen, the separate comparison of Denmark, Norway and Sweden is not particularly encouraging for the overall hypothesis. Despite the considerable differences that exist between the Danish pension system on the one hand and the Norwegian and Swedish pension systems on the other, the level of inequality found among the respective pensioner populations does not show strong and systematic differences. We would, of course, have expected inequality to be significantly higher in Denmark than in Norway and Sweden, but this has turned out not to be the case. Undoubtedly the performance of the Danish case represents the single most serious anomaly in relation to the main hypothesis.

A comparison of Germany, the Netherlands and the UK appears to give conditional support to the overall hypothesis, thanks primarily to the fairly modest degree of inequality found among German pensioners and the high degree of inequality found among the Dutch pensioner sample. The fact that Germany does not outperform the UK can be explained with reference to the fact that Germany lacks a proper minimum pension and hence does not comply with the supposedly ideal mixture of minimum pensions and social insurance pensions.[299] Finally, one cannot help but note that the group of Anglo-Saxon countries shows a highly inconsistent pattern. Despite the fact that the US scores highest on Benefit Level, the degree of inequality is by far the highest in this country. This anomaly can probably to a large extent be explained with reference to the high degree of inequality that characterizes the general population in the US. However, this argument can only be invoked if one is prepared to recognize that it will at the same time effectively undermine any attempt to make positive inferences based on the very poor performance of the US vis-à-vis the three Scandinavian countries.

---

[298] The intra-Scandinavian comparison is given particular emphasis for two reasons. First, these three countries can be claimed be more genuinely "similar" than the any other grouping among the nine countries. Secondly, the available LIS data-sets for these three countries are of a different and, arguably, higher quality than the data for the other six countries (see the discussion of data quality in Section 5.1). Hence, the assessment of the degree of inequality prevailing among the retired is more directly comparable and probably more valid for these three countries than it is for the other country cases.

To turn the fundamental issue around, one could also direct attention to the fact that we have not found a pattern that is directly in opposition to the overall hypothesis. There is certainly no convincing empirical support for the alternative hypothesis that complete reliance on flat-rate or means-tested public pensions is the only effective bulwark against a high degree of income inequality in retirement. This holds both for the full nine-country sample and for the comparison of the three Scandinavian countries.

The most pessimistic conclusion warranted by the comparison of the three Scandinavian countries, is that the Danish system, with its combination of flat-rate and means-tested benefits (and high levels of taxation), appears to do about as well as the two Scandinavian neighbors featuring the (a priori) favorite combination of a flat-rate minimum pension and earnings related social insurance pensions.

All the important mechanisms that have been stipulated to operate in favor of the main hypothesis were shown to be present in the comparison of Denmark, Norway and Sweden. The decomposition of overall inequality in the three countries showed a characteristic picture: The distribution of public pensions is far more egalitarian in Denmark than in the two remaining countries; however, when the distributive impact of private income components is taken into account, the ranking of the three countries is reversed completely (see Graph 7.3). The trade-off between equality and generosity in the provision of public pensions is clearly reproduced in the three-country comparison (see Graph 7.4). We also see traces of the tendency for generous public pensions to crowd out private income provision, although the cross-country pattern is undoubtedly more mixed on this point (see Graph 5.9).

This appears to be one of the weaker links in the chain of mechanisms that was expected to produce a high level of inequality among Danish pensioners. As argued in Chapter 3, one would need a rather strong tendency towards crowding-out/substitution between public superannuation and private (occupational) pension provision in order for the hypothesized relationship to materialize. Therefore, the main reason for the mixed result with respect to differences in inequality among the retired in the three Scandinavian countries can be suspected to lie with the apparent inconsistency and weakness of the tendency for private income to proliferate as a response to the public provision of modest flat-rate pensions.

It could be argued that Denmark performs about as well as the two neighboring countries in terms of inequality, because the scope of private pension provision has not become so much larger vis-à-vis Sweden and Norway as one would have expected. This assertion might even hold the key to a rehabilitation of the main hypothesis. If, for instance, it could be argued that certain historical peculiarities of the Danish case have – maybe only temporarily – stalled the growth of private pensions, a real tendency for crowding/substitution between public and private pensions in each of the three countries could very well be stronger than suggested by the static cross-country comparison (Pedersen, 1997).

---

[299] As we have seen in Graph 7.4, Germany deviates quite sharply from the general pattern of trade-off between Benefit Range and Benefit Level. The German score on Benefit Range is much higher than justified by the score on Benefit Level.

Furthermore, one should note that, although the aggregate degree of income inequality among Danish pensioners is roughly on par with the situation found in Norway and Sweden, other aspects of the income distribution among Danish pensioners have been shown to deviate rather strongly. First, as we saw in Chapter 5, the relative income standard enjoyed by Danish old age pensioners is significantly lower than the standard found among Norwegian and Swedish pensioners. Secondly, we found in Chapter 6 that income inequality among Danish pensioners appears to be structured in a different way. Among Swedish and Norwegian pensioners average income differentials between younger and older pensioner cohorts and between different family types make an important contribution to overall inequality. This is so to a lesser extent in Denmark, and it means that the degree of income concentration found within each of these subgroups tends to be stronger in Denmark than in the two neighboring countries.

These apparently unrelated observations could be brought together in a rather simple story that would help to insulate further the main hypothesis from the disturbing Danish anomaly: Norwegian and Swedish pensioners are richer than their Danish counterparts thanks to the maturation of the generous second-tier schemes installed in the 1960s. The process of maturation has not yet been completed,[300] however, and this is likely to be an important explanation for the significant inter-cohort income differentials found among Swedish and Norwegian pensioners. In other words, the maturation of the social insurance schemes in Norway and Sweden is creating temporary inter-cohort income differentials that feed into the aggregate level of income inequality. Once the systems have become fully mature and a steady state has been reached, this effect should vanish and overall inequality decline below the level found among the poorer Danish pensioners.

However, there is a serious catch to this story, no matter how correct or incorrect it might be. It will typically take about 70 years for a pension system to mature. Considering the almost inevitable tendency for public pension systems to be modified from time to time (if not to be completely replaced), and the equally inevitable tendency for the social environment to change (c.f. the historical increase in female labor force participation), no pension system is ever likely to reach a steady state. This raises fundamental questions about the way I have chosen to frame the overall research question. The main hypothesis was developed and justified in terms of the situation that is expected to prevail when a pension system (flat-rate or earnings related) has matured and reached a steady state. Given what has just been said, it would be rather absurd to insist that a certain change in the existing pension system should only be evaluated according to the expected steady state implications, while implications of the very process of maturation/transition are ignored.

I shall return to these issues, as well as to a more detailed discussion of the Danish case in Part III of the thesis and in the concluding chapter.

Finally, I want to mention an important qualification to the forgoing analysis and discussion of tentative conclusions.

Even if we had been forced to conclude that the specific architecture of the respective pension systems has little or no systematic effect on the degree of income inequality prevailing among a generation of old age pensioners, it would not rule out any role for politics and social institutions in shaping the income distribution in retirement.

---

[300] The strong increases in labor force participation between older and younger birth cohorts of females adds to the length of the maturation period.

Results presented here clearly support the (highly plausible) expectation that the level of income inequality prevailing among the economically active population is an important (co-) determinant of the level of inequality to be found among the retired in each of the country cases. When, for instance, the three Scandinavian countries display a significantly lower level of income inequality among their respective pensioner populations than do the other six OECD countries, surely it must be ascribed – at least partly – to the low level of economic inequality that presumably has prevailed among these Scandinavian pensioner cohorts in earlier phases of their life-course. However, if we assume that this characteristic of the Scandinavian societies to some extent stems from the broader nature of welfare state institutions in these countries[301] – as suggested by the causal arrow appearing in both the Idealist and Saturated models in Diagram 7.3 – we would still be justified in talking about an institutional effect on the post-retirement income distribution. The lesson would be that institutions capable of modifying the degree of economic inequality prevailing among people in their active life-phase are also effective with respect to the aim of achieving a low degree of income inequality in the retirement phase.

Nevertheless, such a lesson – however optimistic regarding the impact of more general welfare state structures – is quite different from the basic notion that has motivated the present thesis that measurable variation in the nature of public pension systems must be expected to have important and specific distributive consequences.

---

[301] It falls outside the scope of the present thesis to discuss the validity of this assumption.

PART III

LONGITUDINAL ASPECTS: THE CASE OF DENMARK

CHAPTER 8

REFINING THE MEASUREMENT OF INEQUALITY

8.1 INTRODUCTION

The comparative analysis presented in Part II of the present thesis was based on conventional cross-sectional data. A yearly accounting period was used to characterize the level of income enjoyed by each income unit, and information on individuals from different cohorts and at different stages in the retirement process was pooled together and treated as part of a single distribution.

Different criticisms can be raised against this conventional approach to the measurement of income inequality. Here I shall concentrate on three sets of problems.

1) As information on different cohorts is pooled together, the resulting measure of inequality will be sensitive to both intra-cohort and inter-cohort income differentials. For normative as well as analytical reasons, one might be interested keeping these aspects separate in order, for instance, to focus particular attention on the intra-cohort distribution.

2) Both short-term fluctuations in income streams from one year to the next and more long-term variation in income over the life-cycle will feed into the inequality figure that is obtained when using a yearly accounting period. The result is that vertical aspects (income differentials across individuals or households) get mixed up with horizontal aspects of the income distribution (income changes across time periods).

3) Finally, the measurement of inequality among a population of retirees is complicated by the high mortality rates that tend to characterize this population subgroup. If there is a tendency for the members of more well-off households to outlive members of poorer households, it could seriously affect the measurement of inequality. This might even be a source of bias in the comparative analysis, if mortality rates and the degree of class specific variation in mortality risks shows substantial differences across countries.

The purpose of the present chapter is to analyze the degree of inequality experienced by cohorts of old age pensioners in Denmark, while trying to take account of these three sources of bias: between-cohort income differentials, income mobility and class-specific mortality rates. In the following I shall discuss how each of these problems can be overcome with the appropriate longitudinal data, and I shall specify some relevant hypotheses for the application to data on old age pensioners in Denmark.

Before doing that, let me briefly recapitulate central aspects of the Danish case as they have appeared in the comparative analysis. The Danish old age pension system is characterized by an exclusive reliance on relatively generous flat-rate benefits – partly universal and partly means-tested. Private income sources play a relatively important role in the income package of Danish old age pensioners, although the average level of private income received is smaller than could be expected, given the nature of the public pension system. The overall degree of income inequality found among cross-sections of Danish pensioners is relatively modest – and roughly on par with that found in the two other Scandinavian countries, Norway and Sweden.

Sorting out the intra-cohort distribution

The first of the three problems mentioned above would – at first glance – seem to be the least serious in the present context. When standard cross-sectional data are used to measure income inequality within a more specific subgroup, like the elderly, the analysis will at the outset have been concentrated on a more narrow band of cohorts. However, as was shown in Chapters 6.4 and 6.5, there appear to be quite substantial differences in average income levels enjoyed by younger and older cohorts of retirees in some of the country samples. In order to gain control over such remaining effects from inter-cohort differentials, one can carry out separate estimations using a finer breakdown of the sample into separate cohort bands (if the sample size will permit such an exercise), or one could use one of the available methods for decomposing total inequality according to the contribution made by different age-groups among the retired – as it was done in Section 6.5.

However, the results from such an exercise can easily be misinterpreted. It makes a lot of difference whether observed differences in income differentials between younger and older pensioners is mainly a cohort/period effect, or whether they are a symptom of a life-cycle effect that tends to repeat itself for each successive cohort. On the basis of a single cross-sectional sample it is impossible to know which of these interpretations is closer to the truth.

In order to adequately characterize the degree of inequality experienced by a particular cohort of pensioners, information is needed on the actual development of income differentials within particular cohorts as the members move through their retirement years. With such information, the degree of intra-cohort inequality in yearly income can be summarized by taking a (weighted) average of the inequality figures obtained for each year in retirement.[302] This does not necessarily require access to panel data. A series of cross-sectional data-sets would in principle suffice.

As suggested in the final section of Chapter 4, two specific hypothesis can be stated for such a cohort analysis with reference to the special institutional characteristics of the Danish pension system: According to hypothesis B.1 one could expect income differentials between successive cohorts of old age pensioners to be relatively modest in Denmark. The reason is be that no second-tier scheme was introduced in the 1960s in Denmark, and hence the level of public pension benefits received by successive cohorts should remain fairly constant. According to hypothesis B.2, one could expect the degree of income inequality within a Danish pensioner cohort to tend to decline over the retirement years. The argument here refers to the fact that Danish pensioners rely quite strongly on private income sources, and that the overall degree of inequality found among Danish pensioners is driven entirely by the distribution of private income components. If private income components have a tendency to decline with time, it follows that the degree of inequality prevailing within a cohort will decline too.

Permanent income and the concept of inequality persistence

True panel data are needed in order to address the second problem – the role of income fluctuations and their interaction with vertical aspects of inequality. If each individual can be followed over time, the effect of short-term fluctuations can be eliminated by extending the accounting period. For each of the income units under study, the income streams over a number of years can be summed and averaged. The resulting measure of "permanent income" can then be used to assess the degree of "permanent inequality" across the income units (Shorrocks, 1978; 1981; Atkinson et al., 1992; Aaberge et al., 1996; Burkhauser and Poupore, 1997).[303]

---

[302] The average level of income enjoyed by a cohort in a particular year is used to weight the corresponding inequality figure.

Shorrocks (1978; 1981) has shown that a weighted average of inequality in yearly incomes must be equal to or greater than inequality in permanent income.[304] With any rank-mobility taking place over the extended accounting period, the Gini inequality in permanent income will always be smaller than the weighted average of Gini inequality in yearly incomes.[305] On the basis of these results, he suggested using the relative difference between permanent and yearly inequality as a measure of income mobility, and correspondingly, the ratio of permanent to yearly inequality can be used as a measure of "inequality persistence".[306]

An extensive literature on earnings and income dynamics confirms that inequality in permanent earnings/income is often quite significantly lower than inequality figures based on the conventional yearly accounting period (Atkinson et al., 1992). In a study of earnings mobility in the US, Shorrocks (1981) made a series of calculations for various age-groups using a range of inequality indices and accounting periods. The results from calculations based on the Gini index and a nine-year accounting period showed a rather high degree of inequality persistence, except for the youngest workers. The persistence measure showed values between 92 and 94 percent among 30-50 year old workers, while it was significantly lower at 84 percent among 20-year olds (age at the start of the panel).

Burkhauser and Poupore (1997) have applied these concepts and techniques to panel data for the US and Germany.[307] They conclude, rather surprisingly, that the well known differences in the scope of income inequality between Germany and the US become even stronger when yearly income is replaced with permanent income. For Gini inequality in "after government income", they report that a good 10 percent of the yearly inequality figures can be ascribed to transitory fluctuations in Germany, while such fluctuations only account for 7-8 percent of yearly inequality figures for the US. Aaberge et al. (1996) made a rather similar attempt to compare estimates of permanent inequality and income mobility between the Scandinavian countries and the US.[308] Their findings indicate that inequality persistence is relatively high in Denmark as compared to the two other Scandinavian countries, and close to the level found in the US. For an 11-year accounting period they find the degree of inequality persistence to be

---

[303] It is a matter of debate how far the accounting period should be extended beyond the conventional one-year period. Most would agree that fluctuations in income streams from one year to the next will tend to be harmless, especially if they are anticipated and hence do not affect the pattern of consumption (Atkinson et al. 1992). It is quite a different matter to assume that more long-term changes in the income conditions enjoyed by an individual are socially irrelevant and, if taken to the extreme, that the distribution of lifetime income is all that matters (see Tullock, 1983).

[304] The result applies to a broad class of inequality indices that satisfy a number of basic requirements, including the "Principle of Transfers" – see Appendix II.

[305] For inequality indices belonging to the Generalized Entropy Family, any relative change over time in the income position of an individual will trigger a reduction in the level of permanent inequality (Shorrocks, 1978).

[306] Income received in a particular year can be seen as a source of permanent income. Hence, the Shorrocks measures of income mobility and income stability have, when applied to the Gini index, very close affinities to the methods for decomposing Gini inequality by income source that have been used in several places in the present thesis.

[307] The study uses an accounting period of six years, and it covers the entire population in the two countries, with parts of the analysis restricted to more specific age and gender groups.

[308] The concept of income mobility (M) is of course closely related to the concept of inequality persistence (P). P is simply equal to 1-M, and vice-versa

92.2 percent, and for an accounting period of 5 years they find the degree of persistence to be 95.6 percent.

Estimations of permanent inequality and income stability over the retirement could have important implications for comparisons of income inequality between retired and non-retired segments of the population, and in turn for comparisons across different populations of retirees.

I have not found any attempts in the literature to estimate the degree of income mobility/inequality persistence among old age pensioners. It seems reasonable to expect, however, that short-term fluctuations will tend to play a relatively minor role among old age pensioners and hence that the degree of income stability will be high, in comparison with the economically active population. In other words, even if conventional studies show that the degree of income inequality among the elderly is fairly modest in many countries, permanent inequality could still be relatively high among this population segment.

It is also possible that the degree of stability/persistence in income inequality among pensioner households will differ systematically across countries, according to variation in the institutional framework for retirement provision. One might expect that the scope for transitory fluctuations will be greater in systems where pensioners rely heavily on private income sources, in contrast with systems that are more dominated by public social insurance pensions. Conventional efforts to compare the degree of income inequality among the elderly across countries and time periods could, if this is the case, be somewhat misleading.

In other words, a priori expectations about the degree of income mobility found among old age pensioners in Denmark are ambivalent (see hypothesis B.3 in Chapter 4). On the one hand it is expected that the degree of income stability is high among pensioner populations (vis-à-vis the economically active population). On the other hand, the relative salience of private income components among Danish pensioners feeds the expectation that income mobility could be relatively high among Danish pensioners as compared to other pensioner populations.

Controlling for class-specific mortality rates

Finally, let me turn to the last of the three problems associated with the standard cross-sectional analysis of income inequality among retirees. Mortality rates are high among this population segment, and there are reasons to believe that mortality is linked to factors like economic status and social class. This needs to be considered as a potential source of bias in cross-national comparisons. Observed differences in inequality between pensioner populations in different countries could to some extent be driven by differences in gender and class-specific mortality rates.

On this point, I have no specific expectations about the performance of the Danish case compared to pensioner populations in other countries. If it can be shown, however, that observed mortality patterns play only a modest role for the assessment of income inequality among Danish old age pensioners, this can be taken as an (albeit weak) indication that differential mortality patterns might not be a serious source of bias in inequality comparisons across pensioner populations.

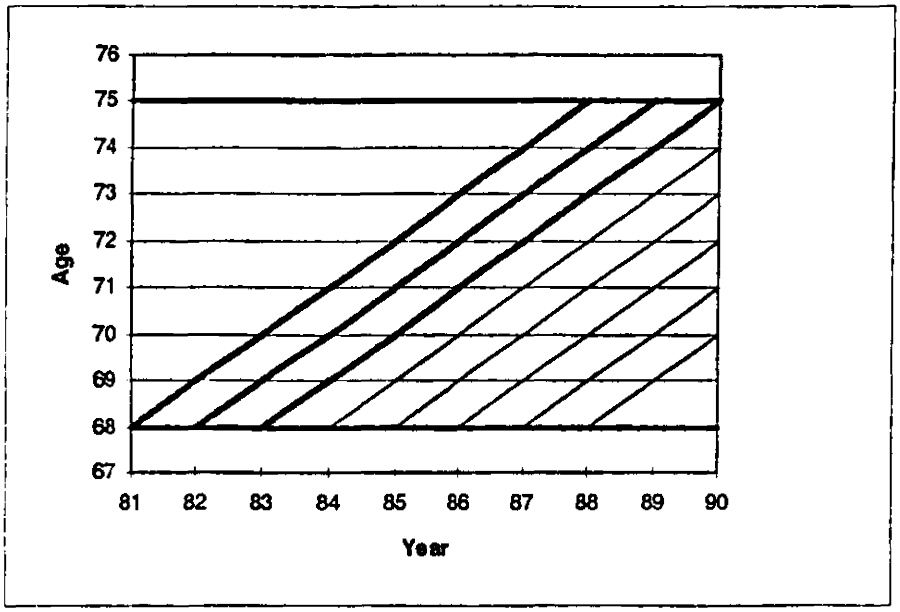
The remaining part of the chapter is organized in the following way. Section 8.2 describes the panel-data used in this chapter and in Chapter 9. Section 8.3 presents the results of a pure cohort analysis, while Section 8.4 moves on to investigate the consequences of the transition from a yearly accounting period to a concept of permanent retirement income based on an eight-year accounting period. The results are summarized in the concluding section.

8.2 PRESENTATION OF THE DATA

The analyses in this and the following chapter is based on public register data, which have been compiled and prepared for analysis by Statistics Denmark. The master sample is a 5 percent, random sample of the resident Danish population. From this master sample I have selected a sub-sample of individuals from the eight cohorts born between 1913 and 1920. For most of the analysis presented below I have further limited the sample to only include individuals belonging to the three birth cohorts born in 1913, 1914 and 1915.

The longitudinal structure of the sample is illustrated in Graph 8.1, where each line represents one birth cohort, from the 1913 cohort furthest to the left to the 1920 cohort furthest to the right. The time units included in the panel are restricted both in terms of the historical period and the biological age of the individuals. The panel spans the historical period from 1981 to 1990, both years included, and individuals are followed from the year they reach 68 until the year they reach 75. In other words, the sample of individuals is representative of the members of the respective birth cohorts who have survived up to the year they reach 68. Persons who die (or migrate) between the age of 68 and 75 are included in the data-set with yearly records up to the time when they disappear from the data.

Graph 8.1: Longitudinal sample design.



The lower age limit at 68 was chosen in order to make sure that the data were not too much "contaminated" by income changes triggered by the transition from work to retirement.[309] In Denmark, old age pensions can be drawn from the age of 67, while an important scheme for early retirement takes effect from the age of 60. The overwhelming majority of a birth cohort will have terminated their ordinary labor market carreers and begun to draw a public pension before the year they reach 68 (Zeuner and Nørregård, 1991 and Nørregård et al., 1995).[310]

---

[309] While the income dynamics of the transition to retirement is an extremely interesting field of research, they fall outside the scope of the present study, where all attention is focused on the income dynamics over the retirement phase. See Atkinson and Sutherland (1993) for an excellent study of the distributional ramifications of early retirement patterns in the UK.

The upper limit at age 75 is more arbitrary – a constraint that was imposed by the nature of the master sample. The fact that individuals are not observed beyond the age of 75 does, however, help to ensure that the material will only to a modest extent pick up processes of institutionalization and their effects on the income distribution and income trajectories in the later phases of retirement. Institutionalization and its relationship to the income dynamics in later phases of retirement is an interesting research topic, but it will not be pursued here.

Table 8.1 shows summary information on the core sample of the three birth cohorts 1913-1915 that can be followed over the entire eight-year period, from the year the cohort members reach age 68 to the year they reach age 75. Information pertaining to the complete sample of individuals who are represented in the data at the age of 68 is given in the first column, while the second column shows corresponding figures for the balanced panel, i.e., a sample that only includes those individuals who are observed in each year from the age of 68 to the age of 75.

Table 8.1: Sample size (individuals) and summary statistics for data pertaining to the birth cohorts born between 1913 and 1915.

		Gross sample	Balanced panel	Total rate of attrition
N	1913	2485	1938	22.0%
	1914	2459	1905	22.5%
	1915	2325	1798	22.7%
	All	7269	5641	22.4%
Sex	Males	44.8 %	42.0 %	27.3%
	Females	55.2 %	58.0 %	18.5%
Married at age 68	Males	75.1 %	77.7 %	
	Females	51.8 %	51.5%	
	All	62.26 %	62.48 %	
Widowed*	Males	9.9%	10.7%	
	Females	28.5%	30.9%	
	All	18.5%	20.4%	
Mean yearly household income[311]		65052	65840	

* Percentage of those married at age 68 who change marital status to non-married sometime during the period of observation.

As can be seen from Table 8.1, the data set has a number of distinctive features in comparison with the typical survey-based panels:

First of all, one should note the extraordinary sample sizes, which make it feasible to concentrate the analysis on a narrow band of birth cohorts. Each birth cohort is represented by approx. 2400 individuals at the age of 68, and hence the pooled sample of individuals born between 1913 and 1915 consists of almost 7,300 individuals.

More on the negative side, the data are very parsimonious with respect to the information available on each individual. Only variables that measure income and demographic status are included, and here with no "historical" information pertaining to the period before the individual reaches the age of 68. This is not a necessary feature of register-based panel data, but of course, with this kind of data, the type as well the range of information is likely to be rather restricted in comparison to some of the available multi-purpose panel data sets.

---

[310] In the analyses presented here, the sample has been further restricted to include only individuals who draw a public pension by the age of 68. In turns out that this criterion has very little practical significance, as the number of 68-year olds who do not receive a public pension appears to be very low.

[311] All income figures are in Danish Kroners (Dkr) adjusted to 1990 price levels.

In the present context, it is an important advantage of these public register data that there is no survey-related attrition to worry about. The attrition that does take place over the course of the panel is related to the real-life process of mortality (and migration). As suggested in the introduction, the role of mortality and its impact on the income distribution and income trajectories among old age pensioners is a central substantial and methodological issue in the present study. Problems of survey-related attrition tend to be relatively severe among elderly respondents and hence the questions addressed in the present study could only with great difficulty have been pursued with survey data.

It should immediately be recognized, however, that two important simplifying assumptions have been made with respect to the demographic processes that are reflected in the data. First, I assume that all attrition over the course of the panel is driven by mortality alone. Although migration is another potential reason for drop-out, it is likely to be modest. Since I do not have data to separate the two types of event, I proceed as if the rate of attrition were identical to the rate of mortality. The total, cumulated rate of attrition/mortality over the eight-year panel is 22.4 percent, with significant differences between the two sexes. 18.5 percent of the females and 27.3 percent of the males who were alive at age 68, do not survive until the year they reach age 75.

Similarly, I assume that all observed changes in marital status from married to non-married is triggered by the death of the spouse. Of course, divorce is also a potential cause for such a change in marital status, but this possibility will be ignored, as the divorce rate among this age-group is very low. As shown in Table 8.1, widowhood is a frequent event, in particular among females. Approximately 30 percent of the females who were registered as married at the age of 68, lose their husbands in the course of the panel, while a similar fate strikes 10 percent of the married males.[312]

In contrast with the structure of the most prominent survey-basedpanels, the basic sampling unit is here the individual rather than the household. This implies that those males and females who are registered as married, will only as a rare exception be married to an individual represented in the data.

As could be expected, there are quite substantial differences between the sexes with respect to marital status. At age 68, 75 percent of the males and only 52 percent of the females are registered as married. A main reason for the relatively low marriage rate among 68-year-old women is, of course, that many women have already lost their husbands at this age. Without historical information it is impossible to distinguish between unmarried/divorced persons and persons who were widowed before reaching the age of 68. Only sampling units who lose their partner during the observation are registered as widows/widowers.

Since there is a tendency for male spouses to be somewhat older, on average, than their female partners, the married males and married females in a particular birth cohort will be drawn from and represent two rather different populations of married couples. The husbands of 68-year-old women tend to be quite significantly older than the wives of the 68-year-old men. This phenomenon explains why the mortality of the husbands of the female sampling units appears to be somewhat higher than the mortality among the male sampling units, married as well as non-married.[313] Similarly, it explains why mortality among the wives of male sampling units is very much lower than mortality among female sampling units.

---

[312] Although the waves of the panel span a period of eight years, we only observe individuals under risk of dying or of losing a spouse over a period of seven years – from age 69 to age 75. In order for an individual to be included in the sample he or she must be alive at age 68; and in order to be classified as married, the partner must be alive in the first wave of the panel.

The construction of a set of meaningful income concepts – in particular at the household level – has been a major challenge in the preparation of these data for analysis. The main original source of the data is public tax registers, where the individual is the primary data unit. Fairly detailed information was available on the personal (taxable) incomes of the sampling units themselves, while there was little information about the income brought home by other household members. Fortunately, the gross income of the spouses of sampling units are recorded in the data, but in order to arrive at a net-income figure for married couples, the amount of taxes paid by the spouses of sampling units had to be estimated. In each case the amount of income deductions was estimated using the available information on married sampling units, and a detailed tax model was applied to calculate the amount of income tax paid by the spouses in each year.

As a further complication, information on benefits from a very important housing allowance program was only available for the years 1988-1990.[314] In order to impute the amount of allowance received in earlier years of the panel, an estimate of "qualified housing expenditures" was calculated for each individual/household in the data-set, using the available information on housing allowances received and the income situation of the household in the years 1988-1990. On the assumption that the individuals did not change dwelling and hence that housing expenditures remained stable over the course of the panel, the housing benefits received in the earlier waves of the panel could then be estimated on the basis of the available income information in the particular year.

Having estimated a value for the "qualified housing expenditure" of each individual/household in the sample, I chose then to use it actively to construct an income figure net of these estimated housing expenditures.

A number of scholars have recently made strong arguments that variation in housing costs should be included in the concept of income – in particular in connection with the study of economic well-being and income inequality in retirement (Mitchell, 1995; Whiteford and Kennedy, 1995; Castles, 1997). The Danish pensioner population is divided into home-owners and tenants, where the former group will tend to have very low expenditures on housing at the time they reach retirement. Hence, for a given level of after-tax income, the home owners will be able to uphold a higher level of consumption. Even among tenants, a significant part of the variation in rents will reflect institutional conditions and regulations in different sectors of the housing market.[315]

---

[313] One would initially expect the opposite pattern, since there is a well known tendency for mortality rates to be lower among married as opposed to unmarried men. As we shall see below, such a tendency does make itself felt in these data.

[314] Benefits from this program are not taxable, and hence information on the amount of benefits received had to be obtained from a different public register. Roughly speaking, the size of the benefits received from this program is a function of the rents/housing expenditures and the level of income enjoyed by the household. Only expenditures on a "reasonably" sized dwelling count for full in the benefit formula. In the case where the size of a dwelling exceeds the standards specified, only parts of the housing expenditure count. Both tenants and home owners are in principle eligible. In the latter case, housing costs are calculated on the basis of mortgage payments, expenditures on maintenance, etc. However, in practice most elderly homeowners have paid down their mortgages and their estimated housing expenditures become too small to qualify for any benefits (their incomes are often too high as well).

The standard solution to this problem is to add an "imputed rent" to the observed income of people who own their dwellings. I have followed the opposite approach and deducted an estimate of the household's (net) expenditure on housing – where only the expenditure on a reasonably sized dwelling is allowed to count. This is particularly attractive since in this way the estimated "housing expenditure" should refer more to differences in the relative costs of housing than to the quality and the "amount and quality" of housing consumed.

In the case of Danish pensioner households, this is arguably a far more valid measure of economic well-being than the more conventional *disposable income* or *disposable income plus housing allowances* received by the household.

The bottom row of Table 8.1 shows the mean value of disposable household income net of housing expenditure, where total household income has been adjusted according to the standard LIS equivalence scale that was used as the default option throughout the comparative analysis in Part II of the present thesis. The built-in assumption is that a single pensioner would need 2/3 of the income level enjoyed by a married couple in order to achieve the same level of economic well-being.[316]

8.3 COHORT ANALYSIS

It is logical to start the application of longitudinal perspectives on income inequality among Danish pensioners by looking at the snap-shot picture that emerges from the standard cross-sectional approach.

The first column of Table 8.2 shows the general result for a cross-section of pensioners who were between the ages of 68 and 75 in 1988. The overall Gini coefficient is estimated to 0.235, and mean income for the cross-sectional sample is 68,000 Dkr (adjusted to 1990 prices). One should note that the Gini coefficient presented here is significantly higher than the coefficient that was calculated on the LIS data and presented in Chapter 6. The main reason for this discrepancy lies with the difference in the income concept. As could be expected, measured inequality among Danish pensioners is systematically higher for an income concept net of estimated housing expenditures.

Separate estimations for each of the eight age-groups reveal rather striking differences – both in terms of average income levels and in terms of subgroup specific Gini inequality. Both income levels and measured inequality decrease consistently from the younger to the older age-groups. Gini inequality among the 75-year olds is estimated to 0.184, which is only 70 percent of the inequality figure for the youngest age-group. The average income level enjoyed by the 75-year olds is just above 80 percent of the income level enjoyed by the youngest pensioners.

If this pattern were driven by a pure cohort effect, and thus if both income levels and income differentials within each cohort tended to remain stable over time, we would have to conclude that a fairly radical increase in income inequality among old age pensioners was under way in Denmark. Such a hypothesis about the positive facts could also have consequences for social evaluation. The older cohorts appear to be clearly disadvantaged in terms of average income, but "blessed" with a lower level of intra-cohort inequality.

---

[315] Calculations based on the present data-set reveal that inequality in income net of housing expenditure is somewhat higher than inequality in household income with no adjustments for variation in housing costs.

[316] Note, however, that one could very well argue that the equivalence scale and the built-in assumptions about economies of scale should have been changed, as housing costs have been excluded from the income concept.

Table 8.2: Gini coefficients and mean household income for a cross-section of old age pensioners in 1988.

	All	age68 (1920)	Age69 (1919)	age70 (1918)	age71 (1917)	age72 (1916)	age73 (1915)	age74 (1914)	age75 (1913)
Gini	0.235	0.264	0.240	0.247	0.234	0.231	0.215	0.213	0.184
Stdv[317]	*0.003*	*0.007*	*0.007*	*0.007*	*0.008*	*0.009*	*0.008*	*0.008*	*0.007*
Mean income	68063	74839	70922	69831	68316	67407	65900	63617	60786
Stdv	*313*	*971*	*869*	*913*	*875*	*932*	*872*	*821*	*596*
N	17491	2676	2327	2264	2212	2111	1973	1990	1938

Of course, the pattern shown in Table 8.2 could alternatively be driven by a general tendency for both income levels and income differentials to decline over time. In order to sort out these issues we must turn to longitudinal data, and – in the first instance – to cohort analysis.

Graphs 8.2a and 8.2b show the actual time-path from 1981 to 1990 of average income levels and income inequality for the eight pensioner cohorts born between 1913 and 1920. It can readily be appreciated that both income levels and income inequality show tendencies to change over time for each of the cohorts involved. This is particularly true for the inequality figures that are shown in Graph 8.2a.

There appears to be a very strong tendency for cohort-specific income inequality to decline over time, especially among the older cohorts. Over the eight years of the panel, income inequality among the 1913 cohorts drops by almost 40 percent. The tendency for decline is consistent among all cohorts (except for the very last calendar year), but not quite as strong as the decline experienced by the 1913 cohort. For 1914 and 1915 cohorts the decline in Gini inequality between the ages of 68 and 75 is just below 30 percent.

Note also that the longitudinal pattern completely reverses the impression from the cross-section. Instead of a rising tide of inequality, cohort-specific income differentials appear rather similar when the comparison is made between the cohorts at similar stages in the retirement process. As a matter of fact, if there is a tendency for change over time, it is in the direction of less inequality, at least as far as early phases of retirement are concerned. The younger cohorts appear to enter the early phases of retirement with less income inequality, as compared to the older cohorts.

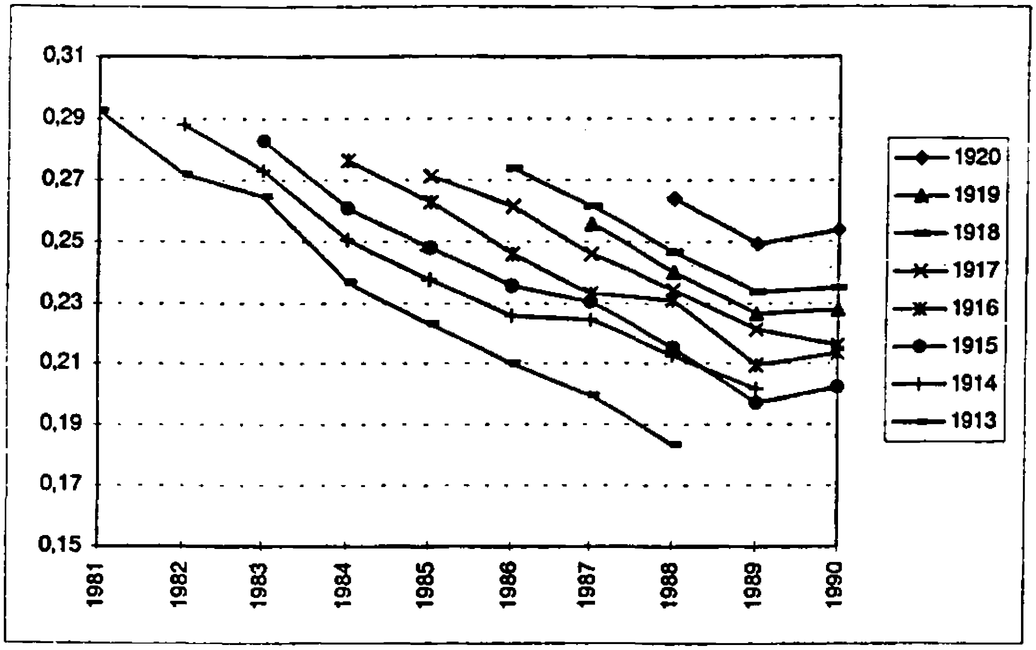
The picture is much more blurred with respect to developments in income levels. Here the impression from the cross-sectional analysis of higher income levels among younger cohorts is partly confirmed, although the tendency is much weaker than it appeared to be in Table 8.1. At the same time, income levels do appear to decline over time, but weakly and not entirely consistently. In certain calendar years, in particular 1987, all the cohorts experience a real increase in average income levels that seems to persists through the following years. A similar but weaker "bump" can be identified in 1989.[318]

---

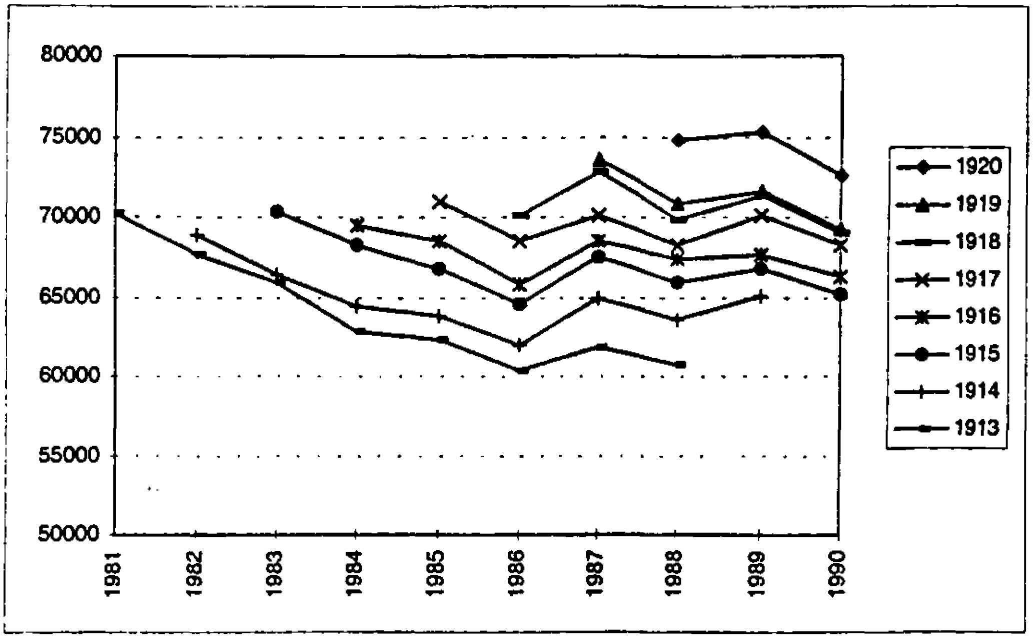
[317] Standard deviations for the Gini coefficients have been estimated in a program written by Rolf Aaberge, Statistics Norway. The program uses results on the sampling properties of the Gini coefficient described in Aaberge (1982).

[318] The explanation for this phenomenon can be found primarily in favorable indexation of public pensions and discrete adjustments in the taxation of old age pensioners. According to estimations made by the Danish Ministry for Economic Planning, typical pensioner households should have experienced quite substantial real income increases both in 1987 and in 1989 (Økonomiministeriet, 1996). We might talk of a Golden Age of Social

Graph 8.2a: Year/cohort specific Gini coefficients for eight birth cohorts. Unbalanced panels.*



Graph 8.2b: Year/cohort specific income levels for eight birth cohorts. Unbalanced panels.*



* The figures with standard errors can be found in Table A.2 in Appendix IV.

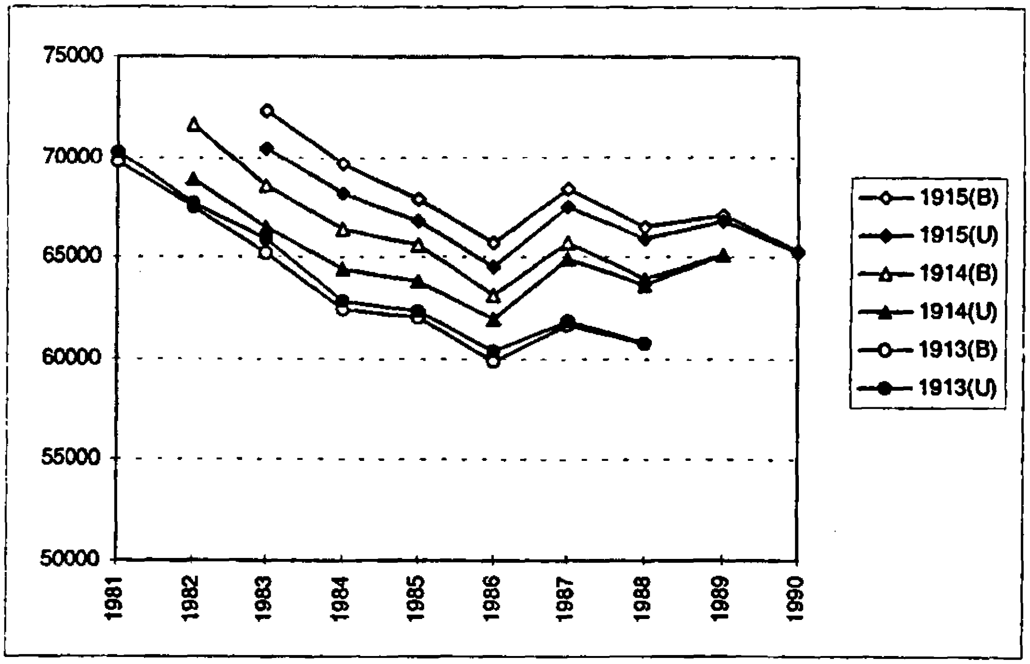
Security in these years, to paraphrase Holden et al. (1988) in their comments to a similar phenomenon in panel data on retirees in the US from the 1970s.

It should be stressed at this point that the figures represented in the two panels of Graph 8.2 do not adequately address the question of the existence and strength of a tendency for average income levels to decline in real terms over retirement.

The pattern of mortality could seriously contaminate the picture of average income changes over time. As shown in Table 8.1 above, a good 20 percent of those individuals who are included in the gross sample by the age of 68 disappear from the sample sometime before they reach age of 75. If mortality is systematically related to income (either directly or via background characteristics like social class, employment histories, life-styles, etc.), those who eventually survive the entire panel will be systematically over-sampled among more well-off segments, and a real tendency for income to decline will be obscured.

This problem can be addressed by concentrating the analysis on those members of the cohort who survive the entire observation period. Graph 8.3 shows the time path of cohort specific income levels in the balanced as well as the unbalanced panels. Gini calculations and mean income figures for the balanced sample with associated standard errors can be found in Table A.3 in Appendix IV.

Graph 8.3: Year/cohort specific income levels for three birth cohorts. Unbalanced panels (U) and balanced panels (B).



The pattern shown in Graph 8.3 confirms the suspicion about a systematic effect of mortality for two of the three birth cohorts. In the early phase of retirement, the balanced sample shows higher average income levels than the unbalanced sample that includes those who die sometime during the observation period. Average income levels decrease more steeply for the balanced panel, where the process of mortality does not interfere with the time path of average income levels in each cohort.

In order to conduct a more systematic test for the existence of a relationship between income and mortality, I have estimated a discrete-time hazard-rate model for the risk of dying over the course of retirement. The analysis is based on a pooled sample of the three birth cohorts, and the concept of time used in the analysis is the biological/social clock of age, rather than calendar time. A lagged income variable is entered, together with a set of basic demografic variables: sex, marital status and the possible event of widowhood. The widowhood and income variables are entered as time-varying covariates, and the results are presented in Table 8.3.[319]

Table 8.3: Estimates from a discrete-time hazard-rate model of the risk of dying in a particular year between the age of 68 and 74. Logit specification. Pooled longitudinal sample of birth cohorts 1913-1915.

		Estimate	Prob.
Constant		-2.087	0.0001
Sex(male)		0.346	0.0001
Married at age 68			
	Male	-0.123	0.0001
	Female	0.034	0.1688
Exposure to widowhood			
	Male	0.168	0.0001
	Female	0.117	0.0148
LN(Income lagged)*			
	Male	-0.143	0.0001
	Female	-0.224	0.0001
Age	69	0.03	0.2578
	70	0.042	0.1255
	71	0.096	0.0006
	72	0.172	0.0001
	73	0.172	0.0001
	74	0.251	0.0001
N=92705	Log likelihood= 13409.491		

*Income is in each case measured relative to the average income of the cohort in the particular year.

Estimated parameters are in accordance with a priori expectations: The risk of dying in a particular year is substantially higher for men than for women, and it grows with age. To be married at age 68 reduces the risk of dying in subsequent retirement years for men, while it has a small insignificant effect of increasing the risk for women. However, among those who were registered as married at age 68, the event of widowhood increases the hazard of dying in subsequent years – both for men and women. Finally, and most importantly in the present context, the relative income position of the individual in the previous year has a highly significant effect on the risk of dying in a particular year, and the effect is in the expected direction. High relative income is associated with lower mortality risks, both for men and for women.

---

[319] I use an approach originally suggested by Allison (1982), which allows discrete-time hazard-rate models to be estimated on the basis of simple logit or probit estimation techniques. In addition to its practical convenience, the approach has the advantage of being completely non-parametric with respect to the functional form of the duration dependency, and time-varying covariates are handled very easily. See also the discussion in Jenkins (1995).

8.4 FROM YEARLY TO PERMANENT INCOME

This relationship between the level of income and remaining life expectancy complicates the definition and measurement of income inequality among the retired – in particular as one moves towards a concept of permanent income.

As a first step in this direction, the cohort specific degree of inequality in yearly income during retirement can be summarized by taking a weighted average of the yearly inequality figures for each cohort. The results are presented in the first row of Table 8.4, for the balanced as well as the unbalanced panels. For the balanced sample, mean yearly inequality varies from 0.225 in the 1913 cohort to 0.244 in the 1914 cohort, while there is hardly any variation in yearly inequality across the cohorts when the estimation is based on the entire, unbalanced sample.

As discussed in the introductory section, these yearly inequality figures are likely to contain a transitory element produced by short-term income fluctuations from one year to the next. In order to focus attention on more persistent aspects of the income distribution, inequality can alternatively be measured on the basis of permanent income; i.e., the total amount of income received by the individual over a longer period. To the extent that individual cohort members change rank-position in the income distribution over time, yearly income figures will exaggerate the degree of permanent Gini inequality. The Shorrocks measure of income stability is simply calculated as the ratio between permanent inequality and yearly inequality, and it can be interpreted as the share of yearly inequality that persists over time.

The concept of permanent inequality and the Shorrocks measure of income stability are only properly defined for a sample of individuals who can be observed in each of the years spanned by the panel, and hence over the entire expanded accounting period.

The results of estimations for the balanced panel are presented in the first three columns of Table 8.4. They show that permanent inequality varies between 0.209 in the 1913 cohort to 0.231 in the 1914 cohort, and hence the picture of a lower level of inequality in the 1913 cohort becomes more pronounced. The degree of income stability is estimated at 93 percent in the 1913 cohort and at 95 percent in the 1915 cohort. In other words, transitory income fluctuations (re-ranking) account for 5-7 percent of the yearly income inequality figures.

The fact that the calculation of permanent income has been based on the balanced panel is somewhat problematic. To exclude a substantial share of the retired population from an assessment of inequality is difficult to defend, in particular since, as we have seen, those who do not survive until the age of 75 tended to be relatively disadvantaged in terms of income levels up to the time of death. In order to test whether this restriction of the sample has had any serious effects, I estimated Gini coefficients for two alternative distributions of permanent income inequality.

In the first version of these alternative calculations I have simply used the entire unbalanced panel, where the accounting period is allowed to differ according to the number of years people actually stay alive.

Table 8.4: Mean yearly inequality, permanent inequality and the degree of inequality persistence for three birth cohorts.

	Balanced sample			Unbalanced sample			Weighted sample		
	1913	1914	1915	1913	1914	1915	1913	1914	1915
Mean yearly inequality	0.225	0.244	0.235	0.237	0.240	0.235	-	-	-
Permanent inequality	0.209	0.231	0.223	0.233	0.231	0.228	0.210	0.232	0.223
Inequality persistence	92.9%	94,4%	94,9%	-	-	-	-	-	-

In the second, I have based the estimation on a weighted version of the balanced sample.[320] The weighting procedure is clearly the most attractive from an analytical point of view. In connection with comparative analyses, you might be interested to clean out the potential effect of cross-national differences in gender- and class-specific mortality rates on observed variation in income inequality among the population of pensioners. In principle, this can be achieved by basing the comparisons on a measure of permanent inequality where a balanced sample of individuals is weighted according to (gender- and class-specific) survival probabilities. With an ideal set of weights, the procedure should produce a picture of the degree of inequality that would have obtained without mortality – if everybody in the gross sample had survived the panel period.

However, the weighting approach is not unproblematic from a normative point of view, because it describes a completely counterfactual situation that has never and will never take place. Therefore one might be inclined to prefer the more simple calculation based on the unbalanced sample, since it refers a real state of affairs: the distribution of mean yearly income for a cohort of 68-year olds over the years they can expect to stay alive between the age of 68 and 75.

It turns out that the results for permanent inequality do not differ much. As can be seen, the weighting procedure has hardly any effect in comparison with the unweighted estimates. The conclusion must be that, although mortality appears to be systematically related to income among Danish pensioners and although this relationship does tend to obscure a tendency for average income levels to decline over time, the picture of permanent income inequality is little affected in this particular case.

---

[320] A set of weights were calculated on the basis of observed survival rates among eight subgroups of the sample, divided according to sex and income (quartiles) at age 68.

8.5 CONCLUSION

The purpose of this chapter has been to explore some of the possibilities offered by longitudinal register data for the development of a more adequate description of the income distribution among retirees.

The longitudinal perspective is particularly important in this area because of the complex interaction between the distribution of income and the distribution of demographic variables such as the risk of mortality (life expectancy) and the risk of widowhood.

It has been shown how a simple cross-sectional picture of income inequality among Danish pensioners tends to confuse and obscure horizontal and vertical aspects of the income distribution in retirement.

The hypotheses that were formulated for the cohort analysis in Section 8.3 have been largely confirmed. There is a tendency for each new cohort of old age pensioners to be somewhat richer than their older colleagues when entering retirement, but the tendency is very weak and inconsistent – in particular in the first half of the 1980s. In other words, as could be expected, inter-cohort income differentials are relatively small among old age pensioners in Denmark. In countries where a second tier of earnings related pensions has been in the process of maturation (like in Sweden and Norway) differences in mean income between successive cohorts are likely to be more substantial.

However, the average level of income enjoyed by each particular pensioner cohort appears to decline systematically with time in Denmark – at least in the 1980s. Only in certain calendar years is this general tendency broken. The tendency for average incomes to decline over time stands out more clearly when the effect of differential mortality is controlled for. The relatively poor segments of each cohort are more likely to die during the observation period, and hence this process of selection works to obscure the real tendency for income levels to decline among those who actually survive the entire observation period. This decline in average income over the retirement years was expected due to the relative importance of private income components in the Danish retirement system. The question remains however, whether it is in fact private income components that are responsible for the decline in (average) total disposable income, and whether an increased incidence of widowhood, as the cohort members age, is part of the explanation. These questions are dealt with in Chapter 9 below.

The most striking finding of the cohort analysis is the very strong tendency for intra-cohort income differentials to diminish with the duration of retirement among these cohorts of Danish pensioners. Although also this finding is in line with expectations, the apparent strength of the decline is somewhat surprising. In the 1913 cohort, the Gini coefficient declines from 0.29 in the year the members turn 68 to 0.18 in the year the reach 75. The reduction in Gini inequality is slightly less dramatic – but still close to 30 percent the eight-year observation period for the 1914 and 1915 cohorts. The favorite explanation is, once again, the presumed decline over time in income from private sources and in the share taken up by income components that must be expected to contribute strongly to overall inequality. This finding has interesting implications for the general theme of the present thesis – the egalitarian argument in favor of social insurance. I shall return to this point in the closing remarks to the present chapter.

Extending the accounting period from the conventional one-year period to eight years turned out to have a rather modest effect on Gini inequality. The degree of inequality persistence over an eight-year accounting period was estimated to vary between 93 percent in the 1913 cohort and 95 percent in the 1915 cohort. In other words, although income differentials appear to shrink rather dramatically over time, the ranking of the income units remains fairly intact.

One possible yardstick for evaluating these results about the degree of inequality persistence among Danish pensioners, is the figures presented by Aaberge et al. (1996), based on similar calculations for the general population in the Scandinavian countries. Although the accounting periods differ somewhat, the impression is that the degree of inequality persistence found among these pensioner cohorts is about the same as in the general Danish population. Inequality comparisons between pensioner and non-pensioner populations that simply use a yearly income concept might not go wrong in terms of the more persistent aspects of inequality – at least in Denmark. The qualified guess is that they are even less likely to go terribly wrong in countries where the income packages of retirees are more strongly dominated by generous earnings related public pensions.

In addition to the expectation that income mobility would be relatively low among pensioners vis-à-vis the non-retired population, I suggested in the introduction that the degree of inequality persistence could vary systematically among countries with different retirement systems. It seemed plausible to assume that income mobility among old age pensioners should be higher in retirement systems – such as the Danish – that rely heavily on private institutions. The problem is, of course, that this is pure speculation as long as the degree of income stability among pensioner populations, who have been subject to other systems of retirement provision remains unknown.

The findings presented in this chapter have ambiguous implications for the egalitarian argument in favor of social insurance.

The level of permanent inequality found among Danish pensioners can be seen as the resultant of two opposing forces: a high degree of income inequality at the time when the cohort enters retirement, and a strong tendency for income levels to converge as the cohort moves through retirement. Both these phenomena can – at least in theory – be attributed to a relatively large role for private income components. In line with the general argument of the present thesis, a high share of private income is associated with high levels of inequality at initial stages of the retirement process. However, since private income components have a tendency to decline over time, also their in-egalitarian implications for the income distribution over the entire retirement phase become weaker.

It is possible to imagine that countries with a stronger reliance on public social insurance pensions will tend to show a somewhat different pattern: a lower level of initial inequality, but weaker tendency for regression towards the mean over the retirement years. Hence, differences in the resulting distribution of permanent income – when yearly income streams are summed over a large part of the retirement phase – could turn out to be smaller than expected.

CHAPTER 9

INCOME TRAJECTORIES: THE EFFECTS OF DURATION AND WIDOWHOOD

9.1 INTRODUCTION

A more adequate description of the degree of inequality among cohorts of old age pensioners begs a better understanding of the mechanisms that have contributed to produce this outcome. Some of these mechanisms are the subject of the present chapter.

The distribution of permanent income can be seen as the result of the interaction between two separate forces: 1) the scope of income differentials at the point in time when the cohort enters retirement and 2) the demographic processes and income dynamics that unfold over retirement. The analyses presented in this chapter are concentrated on the latter of these two aspects.

The questions to be addressed in this chapter are whether there is a general tendency among old age pensioners in Denmark for income levels to decline with the duration of retirement, and whether the event of widowhood is associated with a drop in income levels over the subsequent years for the surviving spouse. On both these issues I shall look at the specific role of private income components.

The existing comparative research on the income distribution among elderly households has repeatedly shown that the income distribution among old age pensioners is characterized by a common pattern: *The income position of pensioner households is least favorable among the very elderly and among single female households.* Although this pattern is more pronounced in some countries than in others, it does nevertheless appear to be universal among OECD countries (see for instance Smeeding, 1988; Hedström and Ringen, 1990; Achdut and Tamir, 1990; Smeeding, Torrey and Rainwater, 1993; Burkhauser et al., 1994; Hutton and Kennedy, 1994; Whiteford and Kennedy, 1995; Hauser, 1997).[321]

This general picture has been confirmed also in the comparative analysis of the present thesis. However, the findings presented in Chapters 6.4 and 6.5 indicate that Denmark is one of the countries where income differentials across age-groups and family types are relatively modest. The income gap between single females and married couples in the cross-sectional sample of Danish retirees is significantly smaller than the corresponding gaps found among Swedish and Norwegian pensioners. It was suggested that one of the possible explanations for this phenomenon could be the smaller inter-cohort income differentials among Danish pensioners. Since a second tier of earnings related pensions has not been introduced in Denmark, the increase in income levels between successive pensioner cohorts is likely to be small in this country compared to Norway and Sweden, where the maturation of such schemes is the source of rather strong increases in the 1970s and 1980s in income levels enjoyed by successive pensioner cohorts. In other words, the very elderly (female) pensioners in Denmark appear to do relatively well because the younger pensioner cohorts are almost equally "poor" upon entering retirement as they were themselves.

---

[321] Of course, any comparison of income levels across different household types depends strongly on the equivalence scale used, and hence on the assumptions made about the economic needs of different household types (Buhman et al., 1988; Burkhauser et. al., 1994). On the basis of a per capita scale, single females will in many cases tend to do quite well as compared to married couples, but under more conventional assumptions about economies of scale, the tendency for single female households to be relatively disadvantaged appears to be universal – see the discussion in Appendix I.

The cohort analysis presented in Chapter 8.2 roughly confirmed the suspicion that the increase in income levels between successive cohorts of Danish retirees was small during the 1980s. In fact, the relatively modest tendency for income levels to "decline" with age, in a simple cross-section of Danish pensioners, appeared to driven primarily by a real tendency for average income levels enjoyed by each cohort to decline with the duration of retirement. This tendency came out even more clearly when the effect of a higher mortality among the poorer segments was removed by concentrating the analysis on those individuals who actually survive the entire observation period.

The finding of a rather strong tendency in Denmark for income levels to decline with the duration of retirement is in line with general expectations formulated in Part I of the thesis. It was argued in Chapter 3 that private income components are liable to be less stable than public pensions as sources of retirement income. It was argued that private pensions are likely to be particularly vulnerable to inflation. A tendency towards decline in income from private sources could also be caused by a gradual erosion of private wealth holdings during retirement (and hence a decrease in income streams from financial assets) and a decreasing propensity to participate in gainful economic activities. Since Denmark is a country with a presumed strong reliance on private retirement provision, this led to the formulation in Chapter 4 of the hypothesis that the tendency for total disposable income to decline over retirement would be comparatively strong in Denmark.

Although this hypothesis has been largely confirmed, the analysis presented in Chapter 8 did not tell us anything about the mechanisms involved: whether and to what extent private income components are in fact responsible for the overall tendency. More importantly, it did not address the pertinent questions of whether there is a *general* tendency for incomes to decline over retirement and whether there might be a *specific* negative effect of the event of widowhood among Danish old age pensioners. It is obvious that the latter question has important policy implications – not the least in a gender perspective.

The chapter is organized in the following way. Section 9.2 offers a brief overview of existing studies on the income dynamics in retirement – all of which have been based on data from the US – with an emphasis on the methodological problems involved. Section 9.3 presents summary statistics from the Danish data on the distribution of permanent income – income averaged over an eight-year accounting period – according to gender, marital status at age 68 and whether the individual has been exposed to widowhood during the period of observation. Section 9.4 is devoted to results from the estimation of a "fixed-effects" model, where the role of private income components is given particular attention. Section 9.5 explores two more dynamic models of income developments over the eight retirement years. These latter analyses are only done for disposable household income and the focus is exclusively on the estimation of separate duration and widowhood effects. The results are summarized in the concluding section.

9.2 PREVIOUS RESEARCH ON INCOME DYNAMICS IN RETIREMENT

It is no simple matter to sort out which mechanism is primarily responsible for the fact that very elderly female pensioners tend to end up with relatively low average income levels – also in Denmark.

One possibility is that elderly female pensioners are victims of the tendency for income levels to drop significantly at the death of the (male) spouse; i.e., pensions and other income sources that the widows can claim in their own right (on the basis of their own previous labor market performance) and those that they derive from their late husbands, are insufficient to preserve the income levels enjoyed before the husband's death. If the event of widowhood is associated with a real drop in income for the surviving spouse, a growth in the share of widows/widowers will cause average income levels to decline (see Ross et al., 1987) and hence this could be an important mechanism behind the apparent decline in average income levels within each particular cohort.

On the other hand, it could also be the case that the low level of income often observed among single females/widows has little to do with the event of widowhood as such. The relatively disadvantaged position of widows as compared to other pensioner households could be due to at least two alternative mechanisms – in addition to any cohort effects, which appear to play a minor role in Denmark. First of all, it is logically possible that the low income levels enjoyed by widows can be fully accounted for by the fact that they tend to be relatively old, and hence they exhibiting a *general* tendency for income levels to decline over the retirement period. Second, it likely that a process of selection is involved too. As "poor" husbands tend to die earlier than "rich" husbands, it follows that widows will be disproportionally sampled from married couples with low income levels even before the husband dies.

In the US there have been a number of studies into the income dynamics during retirement, with a particular focus on the problem of low income among elderly widows (Holden et al., 1986; 1988; Ellwood and Kane, 1989; Hurd and Wise, 1987; Burkhauser et al., 1991).[322] Most of these studies were based on the so-called "Retirement History Survey", a panel data-set of elderly male workers/pensioners and their families collected in the nineteen 1970s. They demonstrated that the death of the husband was generally associated with a substantial drop in income levels for the surviving spouse (Hurd and Wise, 1987; Ellwood and Kane, 1989; Burkhauser et al., 1991) and an increase in the risk of falling into poverty (Holden et al., 1988). Hurd and Wise (1987) found that a large fraction of the couple's social security wealth and private pension wealth tended to be lost with the husband. These findings can be explained by the fact that the benefit formulas of social security and the most prominent forms of private (occupational) pensions in the US were rather unfavorable to the surviving widow (see also Burkhauser and Smeeding, 1995).

However, the studies also confirmed that selection played a major role in explaining the relatively low income levels observed among American widows: Many poor elderly widows belonged to households that were relatively disadvantaged already at earlier stages in the life-course, when the husband was still alive.

---

[322] I have been unable to find studies on similar topics outside the US.

More surprisingly, Holden et al. (1988) did not find a consistent tendency for the risk of falling into poverty to increase with the duration of retirement, once widowhood had been controlled for. In other words, their results pointed against the hypothesis of a general tendency for income levels to decline over retirement. They explain this result with reference to the peculiar historical circumstances in the period spanned by the Retirement History Survey: The 1970s were a "golden age" for Social Security in the US, with strong increases in real benefit levels. However, the negative finding for a *general* duration effect is in accordance with the results from a study by Ross et al. (1987) covering the period 1950-1980. On the basis of an analysis of US census data, the authors conclude that an observed tendency for incomes to decline over retirement is almost exclusively related to the specific effect of widowhood.

I shall attempt to follow up on these American studies by estimating some very simple models of the income dynamics over retirement among Danish pensioners.

The existence of a general duration effect and a specific effect of widowhood must be considered simultaneously, and they must be distinguished from processes of selection. In order to achieve this I have explored three types of models for the income dynamics over retirement:

- A static, fixed-effects model, where both dependent and independent variables are entered as deviations from the mean score over the panel for the respective individual
- A first-order-difference equation, where the (logged) relative change in income from one year to the next is used as dependent variable
- A first-order auto-regressive model, with the (logged) income in a particular year as dependent variable.

While the fixed-effects model focuses on deviations from mean income over the entire observation period, the two alternative approaches are more dynamic insofar as they model changes in income levels from one year to the next. The second model is a special version of the third, auto-regressive model, with the coefficient for the lagged income variable constrained to 1. In the third model, by contrast, the coefficient for the lagged dependent variable is estimated freely. If the coefficient for the lagged dependent variable should turn out to be smaller than one, it implies a tendency for regression towards the mean: high incomes decrease at a higher speed than low incomes. Hence, of these three alternative attempts to estimate duration effects and widowhood effects, only the last two models are truly dynamic, and even as such they are extremely crude. Nevertheless, I believe they are adequate for providing a rough answer to the questions raised at the beginning of this chapter.

Before I start to present the results of these estimations, it can be useful to look at some pertinent summary statistics on the distribution of permanent retirement income according to demographic characteristics of the individual retirees.

9.3 VARIATION IN PERMANENT INCOME ACCORDING TO GENDER, MARITAL STATUS AND WIDOWHOOD

In order to prepare the ground for the analysis of income dynamics over retirement in the following sections, Table 9.1 shows mean level of *permanent income* over the eight retirement years for male and female pensioners.[323] Both female and male pensioners are further divided into three groups: those who were non-married at the age of 68, those who remained married over the eight-year span of the panel, and finally those who experienced widowhood some time during the period of observation. In addition to the income concept used in Chapter 8 – disposable household income net of housing expenditure (HINCE) – the table gives figures on the permanent distribution of PDISP (personal disposable income) and PPRIV (personal income from private sources). PDISP is disposable income of the individual: gross taxable income *minus* taxes paid. PPRIV is the gross amount of income that the individual receives from private sources. The panel data used in Part III do not allow for a finer break-down of private income sources. However, we know from the analysis of LIS-data in Chapter 5 that the most important "private" income components among Danish old age pensioners are – in decreasing order of magnitude – occupational pensions, capital income and earnings.

The issue of equivalence scales becomes particularly important in connection with estimations of the income effects of widowhood. In some estimations I have chosen to rely on disposable household income without adjusting for household size (HINC), on the assumption that the estimated effects of the event of widowhood become more transparent with no built-in adjustment for household size.

Table 9.1: Mean permanent income by sex, marital status at age 68 and exposure to widowhood between age 68 and age 75. Balanced panel of birth cohorts 1913-1915.

	Males				Females			
			Married				Married	
	All	Non-Married	Intact couples	Eventual widowers	All	Non-Married	Intact couples	Eventual widows
HINCE	69339	62447	71730	67691	63350	59127	70472	60531
PDISP	81455	78289	82046	85151	65089	77129	48694	64705
PPRIV	67294	49165	73285	65562	30302	39834	17574	29415
N (%of all males/-females)	2369 (100%)	528 (22%)	1644 (69%)	197 (8%)	3272 (100%)	1587 (49%)	1164 (36%)	521 (16%)

Comparative studies of cross-sectional data have repeatedly shown a significant gender gap in income among old age pensioners. Such a pattern does appear also in these *permanent income* figures, where all cohort and age effects have been eliminated. Male pensioners in Denmark enjoy somewhat higher levels of permanent income than do female pensioners, although the overall difference of approximately

---

[323] The reader is referred to Section 8.2 of the previous chapter for a general introduction to the data used in these two chapters of Part III. One should note, however, that the analyses in the present chapter are based on the balanced sample; i.e., only those individuals who survive the entire eight-year observation period are included.

10 percent is modest in comparison with the conventional cross-sectional picture (see for instance Achdut and Tamir, 1990; Smeeding, Torrey and Rainwater, 1993).

For both sexes there are characteristic differences according to marital status: those who remain married over the panel do best, while the (eventual) widow(er)s and the non-married are relatively disadvantaged. If we compare the average income enjoyed by men and woman for each of the marital status groups, the differences are fairly small. The only more substantial difference is that between male and female widow(er)s. We can therefore conclude that a substantial part of the overall difference in income position between men and women is related to the fact that a much higher fraction of female pensioners belong to the categories non-married and widow(er) (see the bottom row of Table 9.1).

The fact that male and, in particular, female widow(er)s do worse than the married couples that remain intact over the panel, would seem to indicate that the event of widowhood is associated with a drop in income standards. Of course, this is not necessarily so, since there is every reason to believe that women and men who lose their spouse are systematically over-sampled from the lower income brackets. One should also keep in mind that the number of years spent in widowhood might be small, and in this case even a significant drop in income standards will not make much difference to average income levels over the entire eight-year observation period.

Turning to the two personal income concepts, one should note the much stronger difference between the sexes – particular between married men and mearried women. The net income of married men is 2/3 higher than the net income received by married women. Since the public pension system in Denmark is based on universal, flat-rate benefits, this difference in personal income levels must be almost entirely driven by differences in the receipt of private income: occupational pensions, capital income and earnings.[324] This suspicion is supported by the figures in the last row of Table 9.1. The amount of income received from private sources is very low among women – and in particular among married women. The eventual widows receive a much higher amount over the course of the panel, indicating a tendency for widows to take over at least a part of the private income that was previously received by the husband – or more precisely, that was previously reported in the husband's tax-return.

9.4 FIXED EFFECTS ESTIMATION: THE ROLE OF PRIVATE INCOME COMPONENTS

The results from estimation of a fixed-effects model for each of the four income concepts are presented in Table 9.2 below. The model estimates the absolute deviation in income received in a particular year from the average level of income enjoyed by the individual over the eight years of the panel, i.e., the deviation in each year from the individual's permanent income. Two different models were estimated for each income concept: one with age dummies as the only explanatory variables and one where also two variables measuring status as widow(er) are included – one for males and one for females, in order to allow for the expected differential impact of widowhood for men and women.

---

[324] It should be noted that capital income is routinely registered in the tax returns of the male partner, even in the typical case where the wealth holdings are shared property from a legal point of view.

Table 9.2: Estimates from fixed-effects models. Pooled longitudinal sample of birth cohorts 1913-1915. Parameters that are not significant at the 0.01 level appear within parentheses.*

	HINCE		HINC		PDISP		PPRIV	
Age 68**	5165	5179	9073	7321	6405	7931	10611	12130
Age 69	2994	2487	4703	3413	3228	4325	6289	7373
Age 70	(442)	(309)	1225	(396)	767	1467	2812	3502
Age 71	-1478	-1523	-1821	-2115.	-1110	-884	(-795)	(-579)
Age 72	-1504	-1453	-2301.	-1992.	-1634	-1911	-2647	-2925
Age 73	-1837	-1697	-3096	-2227	-2407	-3149	-4209	-4944
Age 74	-1617	-1377	-3174	-1680	-2566	-3830	-5528	-6776
Age 75	-2165	-1925	-4609	-3116	-2684	-3948	-6533	-7781
Widow female	-	-5755	-	-30846	-	32958	-	34680
Widow male	-	-(2343)	-	-26936	-	6174	-	(875)
Intercept	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Adj. R^2	0.028	0.030	0.043	0.084	0.029	0.080	0.038	0.059
N	44824	44824	44824	44824	44824	44824	44824	44824

* Deviation coding has been used for the age variables with age68 as the contrast category. **The parameter for Age 68 is not estimated but calculated as the negative of the sum of the parameters for the remaining age variables.

For all income concepts, the results are consistent with the expectation of a decrease in income levels over time. The inclusion of variables that pick up the effect of widowhood does not change the picture of a pure duration effect. The estimated deviations from permanent income according to age are presented in Graph 9.1.[325]

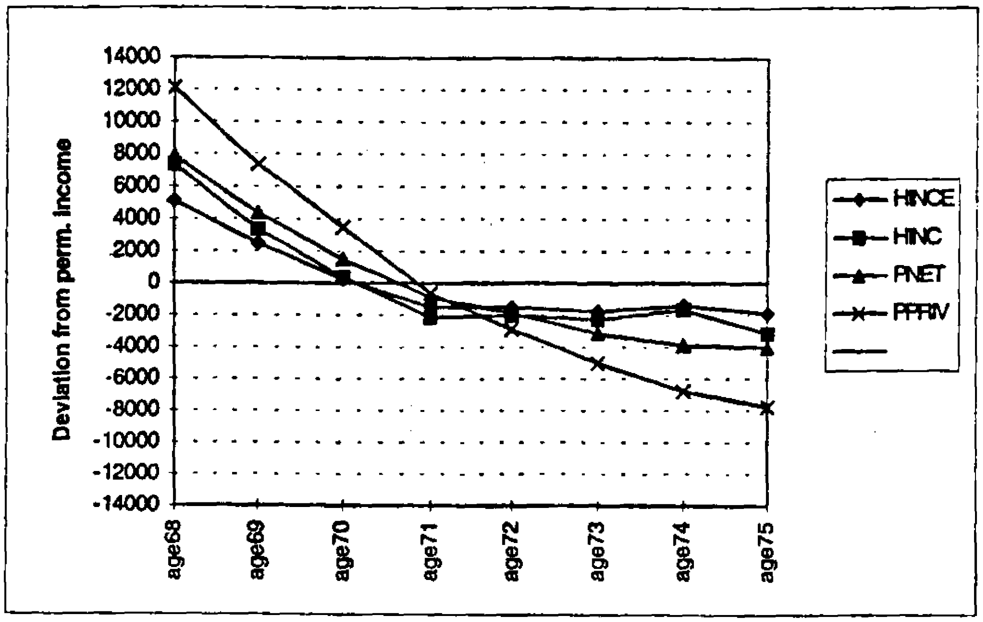
Household income (HINCE and HINC) as well as net personal income (PDISP) is estimated to decline over the initial retirement years, while they appear to stabilize from age 71 and onwards. I have not made any attempt to make a formal control for a possible period effect, but the pattern shown in Graphs 8.2b and Graph 8.3 in the previous chapter seemed to suggest that discrete policy changes in the later half of the 1980s have played a role in raising average income levels among these three cohorts, and hence counteracting an underlying tendency for decline that appears to be primarily related to private income sources.

The suspicion about a general tendency for decline in private income sources receives strong support. The tendency revealed in these estimates is strong and continuous over the retirement phase right up until the age of 75. One should further note that the duration effect on personal disposable income and private income appears to be stronger when the effect of widowhood has been controlled for. The reason for this is that the event of widowhood typically triggers an increase in personal income, and in particular the private income received by the surviving spouse – and this in particular for females. When this effect is not controlled for, it has the effect of concealing the general tendency for decline in these income concepts.

---

[325] The graph is based on estimated parameters from the equations with widowhood variables included.

Graph 9.1: Results from estimation of fixed-effects model of income levels enjoyed in a particular year. Pooled sample of cohorts 1913-1915.



Estimated parameters for the widowhood variables show that, for those women who lose they husbands sometime before the age of 75, the years spent in widowhood are associated with lower levels of household income. The effect is of course very strong for total, unadjusted household income (HINC) – even for men. There is also a modest (but clearly significant) negative effect on HINCE for women, while the eefect for males is small and insignificant.

For the personal income components the picture is completely different. The event of widowhood is estimated to trigger very substantial additions to net income and to gross private income for those women who become exposed to widowhood sometime during these eight retirement years. This could partly result from the fact that single pensioners are entitled to a higher basic pension than married couples and from a preferential treatment of single pensioners in the tax system, but private income sources clearly play an important role as well, as can be seen from the estimations made for PPRIV. Survivors' benefits from occupational pension schemes and income from financial assets that used to be declared by the husband are probably the main items here. Of course it is perfectly possible (and plausible) that the amount of private income brought home by the husband until his death was substantially higher than this new addition to the widow's personal income.[326] On the other hand, it cannot be denied that income from capital is an income source that is liable to perform relatively well from the point of view of a surviving spouse – at least in the short run.

The built-in equivalence scales of both public and private pensions will almost always give weight to household size, in the sense that the surviving spouse will receive less benefits in absolute terms than did the couple taken together. Sometimes occupational benefits are completely lost with the husband, as was not unusual for pension plans in the US (Hurd and Wise, 1987). By contrast, the built-in equivalence scale of income from financial assets that are owned jointly by the couple or are inherited by the widow does not give any weight to household size at all. The death of the spouse will not have any immediate effect on the income streams received by the household.

---

[326] Unfortunately, the data do not allow a decomposition of gross household income, since the composition of the income package brought home by spouses of the sampling units is unknown.

To summarize the findings so far, there can be little doubt that the expected general tendency for income levels to decline during retirement have been confirmed. There is even strong evidence that this tendency is primarily linked to private income components. The hypothesis that private income components are less stable as sources of retirement income has received strong support. However, the related hypothesis that private income components should also be more vulnerable in the event of widowhood – a hypothesis that appeared to be supported by studies from the US (Hurd and Wise, 1987) – has not received anything like the same degree of support.

9.5 RESULTS FROM THE ESTIMATION OF TWO DYNAMIC MODELS

The fixed-effects estimations presented in the previous section were based on the assumption that duration and widowhood have the same effects in absolute terms, independent of the level of (permanent) income.

Here I shall present the results from estimations of two more dynamic models of the typical changes in income levels that takes place from one year to the next. In these models I have used logged income variables, and hence the estimations are focused on *relative* income changes. The results from estimations of these two models are shown in Table 9.3.

While the first-order-difference model assumes that the tendency for income levels to decline (or rise) from one year to the next is the same for different initial levels of income, the auto-regressive model allows for regression towards the mean; i.e., a tendency for high incomes to decline faster than low incomes.

In order to capture the immediate as well any delayed effects of widowhood, separate dummy variables were introduced in both models for each of the first three years after the death of the spouse.

The two alternative model specifications give roughly the same results with respect to the effect of widowhood on total household income.[327] For females, the estimations imply that the first year of widowhood is associated with a 40 percent percent drop in total household income. The first-year effect for males is somewhat smaller, just above 30 percent. However, the event of widowhood does also appear to have further negative effects in subsequent years. If we concentrate on the estimates from the auto-regressive model, no negative effect appears for females in the second year, while there is a further 7 percent drop in Year 3. For males the delayed effects are even stronger – 5 percent in the second and 12 percent in the third year. In other words, the estimations imply that the cumulative negative effect of widowhood for males does in the end comes rather close to that for females.

---

[327] I have chosen to present the results with HINC as the dependent variable, in order to leave open the difficult question of implications for economic well-being.

Table 9.3: Parameter estimates from first-order difference equation with dependent variable= $\log(HINC_t/HINC_{(t-1)})$ *and first-order auto-regressive model with dependent variable=*$\log(HINC_t)$*. Parameters that are not significant at the 0.01 level appear within parentheses.*

		$\log(HINC_t/HINC_{(t-1)})$	$\log(HINC_t)$
Intercept		-0.06239	1.13003
Lagged dependent variable			0.89147
Cohort14		0.00830	0.01055
Cohort15		(0.00625)	0.01245
Age		0.02099	0.01651
Age^2		-0.00206	-0.00167
Sex(m)		(-0.00650)	(-0.00281)
Married at age 68	Male	0.01951	0.07509
	Female	(0.00527)	0.05986
Widow(er) t1	Male	-0.37601	-0.38036
	Female	-0.49141	-0.49554
Widow(er) t2	Male	(-0.00942)	-0.05194
	Female	0.04998	(-0.00512)
Widow(er) t3	Male	-0.08088	-0.12463
	Female	(-0.02630)	-0.07531
Adj. R^2		0.07	0.84
N		39221	39221

The equivalence scale used as the default option throughout this thesis – including Chapter 8 and the previous section of the present chapter – is the so-called LIS scale, where aditional household member are given weight of 0.5. It presupposes that the widow would need 2/3 of the income level enjoyed by the couple in order to uphold the same level of economic welfare. According to these estimations the actual drop in income levels tends to be somewhat bigger for females and, with some delay, for male pensioners in Denmark. Hence, we are led to conclude that, under the Danish regime for retirement provision, widows do experience a drop in economic well-being.

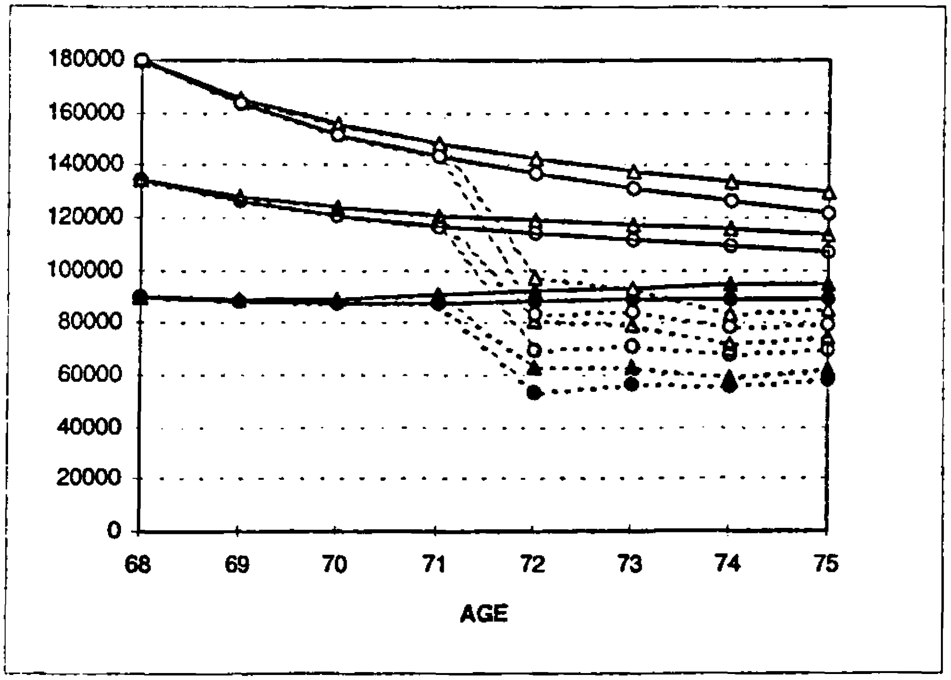
However, judgments about the economic needs of different household types are inherently controversial. It could very well be argued that the equivalence scale used here is too demanding with regard to single member households and hence of the surviving spouse, in particular since an estimate of housing expenditures has been deducted from the concept of household income. Clearly expenditure on housing is one of consumption items where the potential for economies of scale is substantial, and when it has been excluded, strong arguments can be made for moving closer to the per-capita pole. I shall leave this issue open.

It is interesting to compare these results with similar results obtained for pensioners/elderly in the US – but hare also one should be aware of the special concept of income that has been used in the present study. In a study of income dynamics in retirement based on data from the Panel Study of Income Dynamics, Ellwood and Kane (1989) estimated the income consequences of the event of widowhood for elderly Americans. For women they find that widowhood is associated with an initial drop in household income of no less than 77 percent. However, as income conditions are found to improve considerably from the second year, the level of income received by the widows eventually stabilizes at 41 percent below the level that would have been enjoyed if the couple had remained intact. Male pensioners in the US are reported to endure a more modest 30 percent decline in total household income upon the death of the spouse.

It would seem as if the income consequences of widowhood are not all that different for Danish and American pensioners, except for the finding in the Danish case that widowers are adversely affected to almost the same degree as widows. Of course, this last observation does not imply that the problem of widowhood is gender neutral in Denmark. The risk of widowhood and the duration of widowhood is of course very much lower for males than for females – as could be seen from Table 8.1 in the previous chapter and from the bottom row of Table 9.1 above. While 31 percent of the females who are married at the age of 68 lose their husbands sometime during the eight-year observation period, the same only happens to 11 percent of the married males.

Turning finally to the issue of a duration effect on total household income, the first-order-difference equation and the auto-regressive model give very different results, as could be expected. The difference equation conveys a picture of a rather modest general tendency for incomes to decline over time, while the less restrictive auto-regressive model produces a picture of very rapid decline at high income levels, combined with tendencies for a slight increase at low income levels. This can be verified by looking at Graph 9.2, where the income trajectories predicted by this latter model for individuals with different initial levels of income are displayed.

Graph 9.2: Predicted (simulated) income trajectories (HINC) over retirement for hypothetical married men and married women (rounded markers) in the 1914 cohort. Income levels at age 68 fixed at 180,000, 135,000 and 90,000 Dkr. Dotted lines represent income trajectories of individuals who are assumed to be widowed from age 72.



The model predicts that initial income differentials become sharply reduced over the course of retirement. The experience of widowhood at age 72 is seen to cause an initial drop in income that is stronger for females than for males. With the somewhat stronger delayed effects for males, the situation of widows and widowers converge at age75.

It makes perfect sense to assume that a real tendency for income levels to decline over time will be stronger at high initial levels of income. The very strong tendency for Gini inequality to decline over time for each pensioner cohort that was demonstrated in Chapter 8 is clearly evidence of the tendency for income differentials within Danish pensioner cohorts to diminish with age.

It is not difficult to find an explanation for these findings with reference to the nature of the Danish pension system, with its combination of a public pension system offering flat-rate universal as well as means-tested benefits and high share of private income components in the income packages of pensioner households. Whenever total household income is relatively high, the share taken up by private income components must also be high. Insufficient indexation of private annuities, the gradual erosion of financial wealth and a decreasing propensity to engage in some (post-retirement) gainful activity could all contribute to a tendency for private income to decline. Since public pensions have been indexed to keep track with prices in most of this period, there is no reason to expect a tendency for decline among the quite substantial proportion of Danish pensioners who rely more or less exclusively on the publicly guaranteed minimum income.

9.6 CONCLUDING REMARKS

The analyses of income dynamics during retirement that have been presented in this chapter confirmed the hypothesis about a tendency of income levels to decline, in particular among high-income brackets. The decline mostly impacts the rich and on private income sources, and hence it is not in itself likely to lead to any increase in the risk of poverty, according to any reasonable definition of this concept.

As suggested in the conclusion to Chapter 8, we might here have one of the main explanations for why income inequality among old age pensioners in Denmark is not significantly higher than the level found in countries like Norway and Sweden – as could one would have expected given the egalitarian argument in favor of social insurance. A stronger reliance of private income components do appear to be associated with high levels of income inequality in the early retirement years, but as the private income components tend to decline over time, so does their in-egalitarian repercussions. However, stability of income streams over retirement is a relevant social objective in its own right. If an equally low level of inequality in retirement income can be achieved in combination with a higher degree of stability for each individual pensioner, this might be socially preferable.

It has been shown that the event of widowhood is associated with a significant drop in total household income for both men and women. It is debatable whether the estimated size of the drop is big enough to imply a serious drop in economic welfare – if any. The size of the effects seems to be close to what has been found for females in studies of American pensioners – but since an estimate of housing costs have been excluded in the present study, the welfare implications are less likely to be negative.

The small differences in average permanent income between male and female pensioners in Table 9.1 confirm the impression from the analysis of cross-sectional LIS data (in Sections 6.4 and 6.5), that income inequality among Danish pensioners is to a very modest degree linked with gender differentials. Part of the explanation for the relatively modest degree of overall inequality found among old age pensioners in Denmark can be attributed to the small differences across gender/household types.

Finally, let me add a few remarks about the data used in this part of the thesis. I believe they have some clear advantages and some serious weaknesses. The extraordinary size of the sample has been very useful, since it has allowed me to follow particular cohorts over a significant part of their retirement careers, rather than having to pool together experience from different cohorts at different stages of the retirement process (see Ellwood and Kane, 1987). The fact that the sample does not suffer from any survey-related attrition is also important, because non-response and dropout rates in survey-based panels will tend to be high among the elderly and probably linked to morbidity and mortality.

The most obvious weakness is the very limited range of information available on the individuals in the sample. I have had to treat the income distribution among retirees as if it had no history. Of course the economic conditions enjoyed in retirement will be strongly linked with pre-retirement characteristics and, perhaps, with decisions made during the transition from work to retirement. Although it has been possible to take account of the impact of mortality patterns and transitions to widowhood over the span of the panel, these processes will already have made an imprint on the cohort when it reaches the age of 68. It is possible for instance, that widowhood has a more serious impact when it strikes in earlier phases of the life-course.

CHAPTER 10

SUMMARY AND CONCLUSIONS

10.1 INTRODUCTION

In most OECD countries, old age pensioners have experienced substantial improvements in their relative income position over the last four decades. At least in these parts of the world, old age is no longer a life-phase characterized by widespread economic hardship, and elderly people no longer constitute a homogeneously underprivileged section of the population – in terms of their command over economic resources. One of the principal factors behind this fundamental change is the strong expansion in public pension provision that has taken place over significant parts of the postwar period in all of the advanced capitalist countries.

The expansion of public pension systems and the associated increase in average benefit levels offered to old age pensioners is not likely to continue at the same pace – given the tough economic realities of globalization and the dramatic demraphics of aging to be expected over the next 50 years. Since the early 1980s private sources of retirement income have grown very fast in many countries, much faster than public pension expenditure. This means that the balance appears to be changing in favor of private provision, and even if the widespread efforts to curtail the growth in public pension expenditure should prove successful, it is possible that the long-term tendency for improvement in average income levels enjoyed by contemporary pensioners could continue. Both the relative economic prosperity found among contemporary pensioner cohorts in virtually all OECD countries and the almost universal tendency for private retirement provision to increase in relative terms justify a special concern for the distribution of income and the degree of economic inequality found among old age pensioners. How do public pension systems perform with respect to securing a fairly egalitarian income distribution in retirement?

Since the state provides income transfers on a large scale to the elderly in all OECD countries, it is difficult to conceive of a situation without public pensions. The pattern of retirement from the labor market would most likely be different, and various private institutions would undoubtedly have taken over some of the functions that are performed by national pension systems today. Nevertheless, there is little reason to doubt that, for a significant section of elderly population, life in retirement would be "brutish and short", if public pension systems did not exist. It also seems to be a safe prediction that the overall level income inequality found among the elderly would be high – both in absolute terms and compared to the degree of inequality prevailing among the economically active population.

However, the interesting question – from both an academic and a policy point of view – is not how a particular national pension system performs as compared to a completely hypothetical situation of no public intervention in the processes of retirement provision. Even the most radical proposals for "privatizing" the provision of old age pensions put forward today envisage an active role for the state – one way or the other. The interesting question is how alternative approaches to public retirement provision can be assumed to perform with respect to relevant social and economic objectives. How can public pension systems be adjusted to the economic realities of the 21st century, while at the same time do a good job in preventing the development of excessive income inequality among future generations of retirees?

The purpose of this study has been to explore what I have called the "egalitarian argument in favor of social insurance" with reference to the provision of old age pensions. The baseline of this argument is that national pension systems that combine a certain minimum protection with a second tier of earnings related social insurance will perform better in terms of keeping inequality in retirement low, as compared to systems that provide flat-rate or means-tested benefits only. To put the idea more sharply: A public pension system with a controlled concession to the distributive logic of the labor market is the more efficient approach to taming income inequality in retirement.

In the present thesis I have tried to specify the argument in terms of a more detailed set of mechanisms and in terms of testable hypotheses, and I have attempted to confront these hypotheses with relevant empirical evidence – primarily in the form of cross-national data.

The egalitarian argument in favor of earnings related pensions has received considerable attention in the comparative welfare state literature over the last decade. A number of studies have been presented that appear to give strong support to the general thrust of the argument. Most of these "affirmative" studies have been based on a comparative, cross-national design, while one study – arguably one of the more powerful contributions to the debate – has applied a time-series framework to one particular country (Jäntti, Kangas and Ritakallio, 1996). The literature also contains studies that appear to support the opposite conclusion: that a greater concentration on minimum protection at the expense of earnings related benefits is the most effective strategy to avoid excessive income inequality in retirement (Delhausse et al., 1994). This discrepancy among different empirical studies has a ready methodological explanation. Although the latter study uses micro-data from a sample of countries (virtually the same data as used in the "affirmative studies"), its main research strategy is not genuinely comparative. It focuses mainly on a static analysis of the contribution made by different income components to the overall level of income inequality observed among the respective pensioner populations. I should hasten to add that this does not mean the other more purely comparative studies have been methodologically sound or have made the more convincing case for their conclusion in favor of the egalitarian argument.

10.2 POLICY RELEVANCE, ACADEMIC DISCOURSE AND HISTORICAL EVIDENCE

As described in the introductory chapter, this argument in favor of earnings related benefits has appeared in both historical and contemporary debates on pension reform – in particular in countries where the public pension system is rooted in a historical legacy of means-tested or universal minimum protection, the "Beveridge" tradition for short. During the 1950s, 1960s and 1970s – the golden age of postwar capitalism -, proposals were launched in virtually all of these countries to add or significantly expand a second tier of earnings related public pensions. Reform proposals of this nature typically emanated from the reformist left and/or blue-collar unions – i.e., from political actors with a presumable commitment to egalitarian values. It was important for these proponents of reform to be able to justify their tactical commitment to a seemingly in-egalitarian principle of benefit distribution with reference to a higher-order egalitarian objective. It is precisely this kind of justification that is implied by "the egalitarian argument". The argument holds that concessions to the principle of earnings relatedness in the public pension system will help avoid an even greater evil: The further proliferation of a strongly in-egalitarian system of tax-subsidized occupational pension schemes and other private means of retirement provision.

In countries belonging to the "Bismarckian" tradition of earnings related social insurance the issue has presented itself from a different angle. How should one secure a satisfactory minimum protection for those segments of the elderly population that failed to earn satisfactory credits in the prevailing earnings related system? The egalitarian case for introducing some sort of minimum provision to complement the predominant earnings related systems in countries of the "Bismarckian" tradition hardly needed any sophisticated argument.

It is also primarily among countries with a "Beveridge" legacy that the public provision of earnings related pensions has reemerged as a controversial policy issue in recent years. The prospects of aging and of low economic growth rates during the first half of the 21st century has put retrenchment and cuts in pension expenditure on the agenda throughout the OECD area. In quite a few of the countries that share a historical legacy of minimum provision, proposals to dismantle the second tier of earnings related components of the respective national pension systems have emerged on the political agenda. There is no doubt that moves in this direction would give a strong stimulus to private retirement provision, and these reform proposals are often embedded in a more general policy strategy to change the balance between public and private retirement provision. Evidently the UK is about to take this path and return to an exclusive reliance on minimum provision. Also in countries such as Norway and Sweden the very continuation of the earnings related second-tier schemes has been seriously debated over the last decade, but so far with very different results, at least as far as Sweden is concerned.

In these debates arguments about the distributive outcomes of different policy approaches continue to play a role. Are concerns for the income distribution among future generations of retirees best served by letting the public pension system once again concentrate on flat-rate or income-tested benefits, while leaving the demand for income security to private initiative – stimulated by tax-incentives? Or will a two-tier public pension system, at the end of the day, tend to be superior?

As I have tried to argue in the first sections of Chapter 2, this preoccupation with policy related arguments can be reconciled with major theoretical debates in the comparative welfare state literature. The traditional debate pver whether "politics matters" has over the last decades developed into the debate, "how does politics matter". In either case, the more general issues covered under these broad headings can be subdivided into two fundamentally different types of research question. The first is concerned with the causal links between political variables and variation in policies and the institutions of the welfare state. How can we explain variation among welfare states and social policy approaches adopted in different countries? The second type of research question is concerned with the possible implications of this variation in policies and institutions for the final distributive outcomes. Do institutions matter and, if so, how? For this latter group of questions the close affinity to policy driven research efforts is undeniable. In particular this applies when welfare state research is concentrated on certain functional areas like pension systems and income provision in retirement.

In fact, I believe that comparative welfare state research would often benefit from a clearer recognition of the potential overlap as well as the inherent tensions between academically motivated research and policy relevant discourse. Claims about the (causal) effects of social institutions involve, by their very nature, counterfactual hypotheses about the (expected) outcome of alternative institutional arrangements. To say that a certain variation in social outcomes across countries can be explained by variation in the respective welfare institutions must imply a set of rather specific counterfactual claims about each of the country cases covered by the statement. Had an alternative set of policies and institutions been implemented, the (expected) outcome would have changed in a specific way. This is of course also the core interest of instrumentally minded policymakers and of much policy oriented research: to validate specific counterfactual claims about the expected outcome of alternative institutional arrangements.

Let me provide a concrete illustration of the idea that claims about the causal effect of certain institutions are only meaningful if they rest on a clear specification of the underlying counterfactual argument. If one country achieves a more favorable income distribution among its old age pensioners simply because it is able to spend more money on public pensions, it does not make sense to attribute this effect to the way retirement provision is organized in either of the two countries – unless the difference in spending levels can be directly attributed to the design of the respective pension systems. The relevant question must be: What would happen to the respective income distributions if the two countries swapped retirement systems? If one of the systems can be assumed to faciliate higher spending levels than the other, this should be taken into consideration.

The policy relevance of the egalitarian argument would be illusive without explicit assumptions about the levels of spending to be allowed under alternative retirement regimes. In fact, I would argue that any claim in the spirit of the egalitarian argument is meaningless if the relevant alternatives are not compared on the basis of cost neutrality, in some sense.

So far I have focussed on the close connection between policy issues and social policy research. There is, however, a fundamental difference. Policy discourse tends to be strictly future oriented, and interested only in explanations for outcomes presently observed if they accommodate valid predictions about the future consequences of alternative institutional choices. In academic studies the priority is typically turned around, if only for the simple reason that empirical social research is bound to work with evidence that is always in some sense historical. The primary interest lies with the provision of valid explanations for effects that have already materialized, while the eventual ability to make policy relevant predictions is more of a welcome by-product.

As I pointed out in the introductory chapter, the subject area of old age pensions and retirement provision is marked by a huge time lag between policy decisions and the final distributive outcomes. There is, therefore, in this field a particularly dramatic contrast between the policy related concern for future outcomes and the historical nature of the available empirical evidence. It takes half a century for a pension system to mature and for the final distributive outcome of a certain mixture of public and private retirement provision to materialize. When research is based on a comparison of distributive outcomes observed among present generations of old age pensioners, one is really studying the joint effect of policy inputs and structural factors spanning a historical period of almost half a century. One is essentially studying the effect of yesterday's institutional choices.

This is the fate of both the present and of similar comparative studies attempting to explain cross-national differences in the income distribution among contemporary pensioner cohorts. The cross-national data we have available today on the realized income distribution among retirees in different countries can at the very best speak directly to the problematic that was discussed by pension reformers in the 1950s and 1960s. What distributive consequences could be expected to follow from alternative ways to expand public pension provision during the later half of the 20th century in a situation characterized by increasing affluence, full employment and, seemingly, perpetual economic growth? Would a concern for income inequality among coming generations of old age pensioners, be best served by introducing a second tier of earnings related public pensions to supplement the existing flat-rate or means-tested schemes, or by a continuation of the minimum protection approach? As I argued in Chapter 1, it cannot be taken for granted that the correct answer to this question will automatically provide correct and relevant predictions about the (future) distributive outcomes of contemporary reform alternatives. In the final section of this chapter, I shall return to a discussion of the implications for current policy debates on pension reform of the results obtained in the present study.

10.3 MECHANISMS AND MICRO-THEORETICAL FOUNDATIONS

Although the egalitarian argument in favor of social insurance has been widely discussed by policy-makers as well as by academic researchers, a more precise understanding of the necessary mechanisms is often lacking – not to mention an explicit treatment of the potential micro-theoretical foundations.

In Chapter 3 I tried to explore the internal logic of the argument and its possible theoretical foundations. The conclusion was that that the egalitarian argument can be presented as a logically consistent and theoretically plausible hypothesis. Under certain conditions a public pension system that provides a mixture of flat-rate and earnings related benefits, will do a better job of taming inequality in retirement than either a purely earnings related social insurance system or a pure system of minimum provision.

Based on a highly stylized analysis of the income formation in retirement, four basic mechanisms or auxiliary hypotheses were pointed out as being essential ingredients to the argument.

The first of these mechanisms is internal to the policy making process. It concerns the budgetary constraints policy-makers are faced with when they choose among different styles of public pension provision. While the argument should be cast in terms of cost neutrality in a wider sense, it does not necessarily mean that we have to accept the assumption of fixed budgetary constraints. The egalitarian argument presupposes the existence of *a trade-off between equality and generosity in public pension provision.* If the choice for policy-makers is limited to deciding how to distribute a fixed amount of public pension expenditure between means-tested, flat-rate or earnings related benefits, the egalitarian argument is bound to fail. It is essential to the argument that the introduction of a second tier of earnings related benefits allows for an expansion of total public pension expenditure.

This, I argue, is in principle plausible, for political as well as economic reasons. An ideal-type earnings related pension scheme with a close correspondence between individual contributions and expected benefits will not contribute to the tax burden in the same way as the financing of a flat-rate or means-tested benefit. Or, to put the point in different words, the political and economic costs of an actuarially fair insurance scheme are smaller per dollar spent than the costs of a flat-rate or means-tested benefit. On the other hand, it would be utterly naive to assume that there were no joint limitations on the expenditure on flat-rate and earnings related pensions. The nature of a trade-off between the size of public pension expenditure and the degree of benefit equality is an important theoretical and empirical question for the validity of the overall argument.

The three remaining conditions or auxiliary hypotheses inherent in the "egalitarian argument" all refer to the performance of private income sources. First, it is a fundamental premise that private income sources tend to be highly concentrated as compared to the pre-retirement income distribution. While an ideal-type social insurance scheme will tend to reproduce (perhaps even in a modified form) the pre-retirement income distribution, the accumulation of private income sources within a cohort is expected to reinforce strongly pre-retirement income differentials – even in a hypothetical situation with no public pension provision.

Secondly, it is an important implicit assumption that the provision of earnings related public pensions will tend to crowd out or substitute for private means of retirement provision. The equalizing potential of earnings related public pensions is very much improved if they can be assumed to replace private means of retirement provision. The existence and the strength of this effect is critical to the overall argument.

This leads us to the final condition, which is concerned with the distributive profile of the presumed effect of crowding-out. The fact that private income sources are generally found to be relatively concentrated among more privileged strata does not necessarily imply that any reduction in the scope of private provision is beneficial from the point of view of overall inequality. The general argument requires that there is no strong tendency for private income sources to become even more extremely concentrated as a response to improvements in public retirement provision.

The key issue is how the introduction of an earnings related pension scheme might affect the quality of public minimum provision and the scope of private income sources. If earnings related public pensions simply tend to replace public expenditure on universal or targeted old age benefits, the argument is bound to fail. If they, on the other hand, do not infringe upon the quality of minimum provision and primarily tend to replace private occupational pensions and individual vehicles of retirement provision, the argument is true almost by definition. As neither of these extreme alternatives can be taken for granted, the joint performance of an entire set of more specific conditions needs to be considered.

Briefly stated, the validity of the argument requires that the total increment to public pension expenditure following from the introduction of earnings related benefits has a more favorable distributive profile than the associated reduction in income from private sources.

This is how far it is possible to come with a simple logic of accounting. I already provided the reasons why I consider the first auxiliary hypothesis about the nature of budgetary constraints to be theoretically plausible – at least in a weak version. The question remains whether it is possible to think of a coherent theoretical foundation for the last three auxiliary hypotheses concerned with the performance of private income sources. They entail general expectations about the behavior of private agents and the functioning of the relevant private institutions for retirement provision that clearly need to be spelled out and justified.

It is fairly obvious that this justification cannot be taken from two very basic and mutually opposed models of individual savings and retirement behavior – the life-cycle hypothesis and a model with myopic individuals.

The life-cycle hypothesis holds that individuals take a synoptic view of their entire lifetime, and that they engage in private saving in order to achieve a preferred level of consumption in retirement. In its simplest form, the life-cycle hypothesis does not give any reason to suspect that rich people have a higher propensity to save for retirement than poor people, and hence that the distribution of private retirement income should have an inherent tendency to be more strongly concentrated than lifetime earnings. According to the life-cycle hypothesis, one would certainly expect an expansion of public pensions to crowd-out private retirement provision, but the resulting income distribution in retirement would, nevertheless, remain largely intact. Any increment to public pension benefits would be met with a reduction in private savings efforts of a similar scope and distributive profile, and hence no systematic change in the distribution of total retirement income would be expected.

The alternative, extreme model of savings and retirement behavior is a model inhabited by completely myopic individuals who do not plan for their future retirement at all. If and when people save or participate in private retirement schemes, they do it for other reasons than retirement provision. This model does not fit the egalitarian argument either, because it would lead us to expect that the provision of earnings related public pensions has no significant effect on the scope of private income provision. In this kind of scenario, concerns for income inequality in retirement would almost inevitably be best served by the provision of means-tested public pensions.

The egalitarian argument in favor of earnings related public pensions is better served by more mixed (and arguably more realistic) models of individual motivation, in which people are concerned about their future retirement but where they do not always have clearly defined, self-centered or stable preferences about how to distribute their lifetime income and about the degree of protection they need against social risks.

Moreover, it is necessary to leave a frictionless neo-classical framework and draw on more specific arguments about the performance of the most important institutional alternatives to public pension systems. The pathologies of a free market for individual annuities are well established in economic theory. They provide justification for public intervention to redistribute income over the life-cycle, and they help explain why occupational pension schemes tend to be the most important vehicle of private retirement provision.

The egalitarian argument rests heavily on a pessimistic assessment of the distributive logic of occupational pension schemes.

When members of the "Titmuss Group" in the mid 1950s developed their famous proposal to introduce earnings related public pensions in the UK, they took for granted that such a scheme would to a large degree replace the existing system of occupational pension schemes – see Abel-Smith and Townsend (1955). They also took for granted that the fragmented system of company-specific occupational pension schemes was strongly in-egalitarian as an institutional arrangement for retirement provision.

While this might be true for the occupational pension scene in Britain in the 1950s, it is not necessarily true as a general rule. As pointed out in Chapter 3, occupational pension schemes have taken very different forms in different countries and in different time periods – depending on the nature of industrial relations, the nature of public regulation and different national legacies. On the other hand, it can still be argued that, unless a system of occupational pension schemes is made mandatory for the entire workforce and subject to strict regulation, occupational pension schemes do have built-in tendencies to be selective and in-egalitarian as instruments of retirement provision.

These scattered observations about private institutions for retirement provision clearly do not form a consistent theoretical model. One might as well recognize that the egalitarian argument in favor of earnings related public pensions does not have a simple and parsimonious micro-theoretical foundation. Still, I would insist that the central components of the overall argument are theoretically plausible and justifiable as historially contingent hypotheses.

What is needed next, of course, is a recapitulation of the empirical findings.

10.4 RESULTS OF THE COMPARATIVE ANALYSIS

Part II of the thesis presents a comprehensive comparative analysis of pension policy outcomes covering nine OECD countries. In order to prepare the ground for the comparative analysis proper, I devoted significant space and effort to defining and measuring the relevant independent and dependent variables.

The definition and measurement of independent variables

Many comparative studies that use micro-data in an effort to describe and explain variation in the distributive outcomes of social policy interventions do not take the measurement of institutional variation very seriously. They often make inferences about variation in institutional characteristics from the micro-data themselves, but this is not always satisfactory and it can easily degenerate to circular arguments.

By contrast I have insisted on using a separate and purely institutional definition and measurement of the relevant independent variables. However, many contemporary pension systems exhibit complex mixtures of different types of benefit provision, and hence the sample does not represent an ideal set of natural experiments for the purpose of a formal test of the egalitarian argument. It is not meaningful to classify the national pension systems found in the nine countries into clearly distinguished categories: purely flat-rate, purely earnings related and mixed systems. The institutional variation found among these countries is not simple and categorical but complex and largely a matter of degree, a balance among various elements and the benefit levels offered by various parts of the system. However, for smaller subsets of the sample a more categorical approach is justified. This applies in particular to the three Scandinavian countries, where the contrast between Denmark on the one hand and Norway and Sweden on the other appears to offer an almost ideal natural experiment from the point of view of "testing" the egalitarian argument. While Sweden and Norway both introduced an ambitious second tier of earnings related pensions in the 1950s and 1960s, Denmark remained faithful to the traditional Scandinavian legacy of universal minimum provision.

The independent variables used in the general comparative analysis – Benefit Level and Benefit Range – are only imperfect operationalizations of the theoretically relevant variation among alternative approaches to retirement provision. They are based on stylized calculations of the net benefit ratios offered by each national pension system. As shown in Chapter 5, these two institutional variables show a fairly close correspondence with equivalent variables measured directly on the micro-data: the relative benefit position of old age pensioners, and the degree of concentration in the distribution of public retirement transfers.

One of the important mechanisms stipulated by the overall argument receives strong support in the material presented in Chapter 5. The institutional variables Benefit Level and Benefit Range show a fairly strong and consistent tendency to be positively correlated across the sample of nine counties. As expected, countries with a significant emphasis on earnings related public pension schemes – and hence a high score on Benefit Range – clearly tend to provide higher average replacement rates (and higher relative benefit levels) compared to the countries that exclusively concentrate on minimum provision.

The definition and measurement of the dependent variable

It is essential for the comparative analysis that the country cases show credible and substantial variation in the degree of income inequality found among contemporary generations of old age pensioners. At least this is a fundamental precondition for a positive conclusion with respect to the egalitarian argument.

The measurement of income inequality among old age pensioners in the respective country samples raises complex conceptual and methodological issues. The initial comparison of the respective Lorenz curves in Chapter 6 showed that it is impossible arrive at more than a highly incomplete ranking of the nine countries in terms of inequality – unless one is willing to sharpen the criteria of social evaluation by choosing a more narrow set of inequality indices and a particular equivalence scale. In Chapter 2, I argued that the *Gini index* is particularly attractive from a sociological point of view, as it embodies a relativistic notion of inequality – see also the discussion of inequality measurement in Appendix II. The Gini index might be seen as measuring inequality on a cardinal scale, and at the very least it guarantees a complete ranking of the nine country cases.

It turns out that the nine countries show substantial variation in the degree of Gini inequality prevailing among old age pensioners. The degree of Gini inequality among old age pensioners is more than twice as high in the US, featuring the highest level of inequality in the sample, than it is in Sweden, showing the lowest level of inequality among the nine countries. Furthermore, the ranking of the countries in terms of Gini inequality appears to be fairly robust when random sampling error and the sensitivity to different equivalence scales are taken into account. Two groups of countries show almost identical scores on Gini inequality: The three Scandinavian countries form a clearly distinguishable group with a comparatively low level of inequality, while the Australian and Canadian data-sets show almost identical Gini-scores among old age pensioners. It is somewhat disturbing, however, that the ranking of the country cases is less stable across different waves of LIS data. The Gini estimates for the Netherlands and Australia show particularly strong fluctuations over time, indicating a potential problem of consistency in the measurement.

In addition to the measurement of the central dependent variable – the degree of Gini inequality found among old age pensioners – the two last sections of Chapter 6 are devoted to an analysis of the way inequality is structured across age-groups and household types in the respective country samples.

It is a general pattern in all the country samples that the very elderly and the single female households are categories with relatively low average income. Despite the common pattern, the country cases differ quite substantially in the degree to which these partly overlapping groups of the very elderly and the single females fall behind the general pensioner population in terms of average income levels. In some countries the age/income gradient is rather steep; in others it is almost flat. In some countries single males do worse than married couples and almost as poorly as single females; in other countries they do much better. In some cases different characteristics of the income distribution among old age pensioners can be readily explained with reference to the interaction between peculiarities of the respective national pension systems and the level of female labor force participation. However, one should be careful not to draw hasty conclusions. On the basis of simple cross-sectional data it is impossible to tell whether these income differentials are primarily a cohort effect related to the maturation of public and private pension systems and to increased female labor force participation, or whether they are a more stable feature of the income distribution among retirees in the respective countries.

Income differentials between subgroups of the elderly population can be said to contribute to the overall level of inequality found in each of the country samples. It is interesting to note, therefore, that there is no simple relationship between the scope of between-group income differentials and the overall level of Gini inequality. The US, Sweden and Norway all show relatively wide group differentials, while in the two latter countries the overall level of Gini inequality is comparatively low. Among the countries with the lowest level of overall inequality, the Danish sample is characterized by very modest between-group differentials, in rather sharp contrast to Sweden and Norway. Closer analysis reveals that the degree of income concentration found within the respective subgroups is extremely small in Norway and Sweden, while it is somewhat larger in Denmark.

Analytical results

In the core analytical chapter of Part II, Chapter 7, I have tried to combine different approaches to the analysis of available cross-national evidence. I have joined a genuinely comparative analysis (external analysis) with an analysis of the role played by different income components in each of the country cases involved (internal analysis). The results of this two-fold comparative strategy are mixed.

The internal analysis is based on different methods for decomposing overall Gini inequality with respect to the contribution made by income sources. They all show that private income sources form highly regressive components in the income packages of old age pensioners in the respective countries. Although the share taken up by private income components shows substantial variation across the nine countries, there is surprisingly little variation in the degree to which private income sources are concentrated among the more well-off segments of the pensioner population. Hence, an important auxiliary hypothesis for the overall argument in favor of earnings related public pensions appears to be confirmed.

According to expectations, public pension benefits show wide differences both in their relative scope and their distribution across the respective pensioner samples. In some countries – those with an emphasis on means-tested or flat-rate benefits – public pensions are almost uniformly distributed or even mildly redistributive. In other countries – those with significant earnings related systems – public pensions appear to contribute to the overall level of inequality from the point of view of a completely static analysis. However, it can also be shown that in all nine countries, a marginal increase in the scope of public pensions will tend to trigger a reduction in overall inequality. In this particular sense public pensions appear everywhere to have an equalizing effect. Finally, it should be noted that the various methods for decomposing inequality in total income show a very strong equalizing effect on the part of income taxes paid by old age pensioners. Income taxation appears to be clearly progressive among this segment of the population, and the higher the average level of taxes paid by the respective pensioner samples the stronger the total equalizing effect. It is not entirely clear how this latter finding fits in with the overall argument. Is the general system of income taxation and the special rules applied to pensioners and pensioner income in different countries a competing explanation for the observed variation in overall income inequality, or should the general tax system and special tax rules for pensioners be seen as an integrated part of the national pension system?

When we turn to the purely external analysis, and focus on the pattern of covariation between the independent and dependent variables, the results are more consistent with the "egalitarian argument" than with the completely opposite claim ("flat-rate and means-tested schemes do better"). Among the nine OECD countries covered by the analysis, those countries that combine generous earnings related benefits with a certain minimum protection for the elderly do tend to perform well in terms of the level of income inequality found among contemporary cohorts of retirees. However, the results obtained here are less clear-cut as compared to the results and conclusions presented in previous comparative studies in the field (see the literature review in Section 4.4). The degree of covariation found between the favorite institutional variables and the outcome in terms of Gini inequality rests heavily on the contrast between the scores of Sweden and Norway, on the one hand, and the other non-Scandinavian countries on the other.

It has been a central notion behind the present study that different national pension systems operate in different social and economic environments, and that the observed variation in distributive outcomes cannot unconditionally be attributed to the specific characteristics of the institutional regime for retirement provision. No matter how the pension system might be constructed, the degree of income inequality found among a cohort of retirees is likely to reflect the degree of labor market stratification experienced during the pre-retirement life-phase and the dispersion of lifetime earnings. At the very best a particular retirement policy package can help modify the degree to which pre-retirement income differentials are reproduced or even amplified in the retirement income distribution.

The low degree of pre-retirement inequality found in Sweden and Norway compared to the non-Scandinavian sample represents a powerful alternative explanation for the low level of inequality prevailing among old age pensioners in these countries.

When this possibility is recognized, and (imperfect) attempts are made to control for variation in pre-retirement income inequality among the countries involved, the balance of the available evidence still falls on the affirmative side, but the results become even less conclusive and more ambiguous. While some of the previous studies in this area claim to have found strong support for the egalitarian argument and therefore claim to have settled the issue once and for all, the degree of empirical support provided here is less conclusive.

In particular, one of the potential mechanisms that were stipulated to work in favor of the egalitarian argument appears to be weaker than expected – at least in the static cross-national comparison. The presumed tendency for generous earnings related pensions to crowd out private income sources has made a surprisingly weak and somewhat inconsistent imprint on the pattern of variation across the available country cases. Occupational pensions and income from capital play a larger role in countries such as Sweden, Norway and the US than one would have expected, given the relative generosity of the public pension systems. Conversely, these income sources continue to play a fairly modest role in Denmark – despite the absence of a second tier of earnings related public pensions and comparatively low average benefit levels.

In Chapter 3.4 I mentioned how both time-series and comparative studies have pointed to the apparent weakness of the tendency for generous public pensions to crowd out private income provision. The expansion of public pension systems in the postwar period appears in many cases to have been accompanied by a continuous increase in the demand for pensions and retirement income. One might speak of processes of preference adjustment. As the general level of income security in old age is improved, one could imagine that the more privileged strata seek to maintain their relative advantage by further improving their coverage with occupational pension schemes, etc. In any case, the result is to weaken one of the critical mechanisms needed for the egalitarian argument.

10.5 THE TROUBLING CASE OF DENMARK

The Danish case is extremely important for the ambiguity of the results obtained in the present comparative analysis. The performance of the Danish sample represents a serious anomaly for the egalitarian argument, in particular when the comparison is restricted to the three Scandinavian countries.

It could very well be argued that the divergence in pension policies between Denmark on the one hand and the remaining Scandinavian countries on the other presents us with an almost ideal natural experiment for testing the egalitarian argument. The result appears to be a draw. Despite the large differences in the architecture of pension provision, the final degree of income inequality found among Danish retirees is about the same as in Norway and Sweden.

One might, at this point, be tempted to conclude in favor of a structuralist interpretation – that is, the institutional fabric of retirement provision does not make much of a difference, one way or the other. The low degree of income inequality found among Scandinavian old age pensioners is simply driven by the low level of inequality among the economically active population or, more precisely, a modest dispersion in lifetime earnings.

Although there is certainly a case to be made for this view, there is also evidence indicating the presence of institutional effects – in the intra- Scandinavian comparison as elsewhere. One important difference, revealed in Chapter 5, is that Danish old age pensioners enjoy a more modest relative income position compared to their Scandinavian "colleagues". The absence of a significant second tier of earnings related pensions in Denmark has left the old age pensioners with more modest average income levels. As already mentioned, the lower level of public transfers has not been offset by a similar increase in the scope of private retirement provision. Another important difference relates to the way overall inequality among the contemporary generations of retirees is structured. In the cross-sectional data, the income distribution among Danish pensioners is marked by comparatively small differences between age-groups and family types and larger degrees of concentration within these respective subgroups, while the opposite is true for Sweden and Norway. There is reason to suspect that the continued maturation in the second-tier schemes of Sweden and Norway plays a significant role here. It has been shown that a certain reduction in both the between-group differentials themselves and in overall inequality can be expected among Norwegian pensioners, if and when a steady state is reached in the first half of the next century (see Gravingsmyhr, 1995; Arneberg and Gravingsmyhr, 1994).

The analysis of longitudinal income data presented in Part III of the thesis throws further light on the income distribution among Danish pensioners that might help to account for the Danish anomaly. Most importantly, it was shown that the income received from private sources has a strong tendency to decrease with the duration of retirement. This explains the finding that the overall degree of inequality found within Danish pensioner cohorts appears to decline sharply with age. At the initial stages of retirement private income components make up a large share of the average income package, and they contribute to a fairly high degree of overall income concentration. As the cohort ages, the amount of income from private sources tends to sink and the intra-cohort distribution grows more egalitarian, since the more stable income streams from public sources are almost uniformly distributed.

Although the general level of inequality in (permanent) retirement income is roughly the same, it seems reasonable to imagine that similar analyses in the other Scandinavian countries would have shown a different pattern. At initial stages of retirement, one could suspect that intra-cohort inequality is more modest in these countries, while it is likely to be more persistent as the cohort moves over retirement. The reason would be that the overall level of income inequality in these countries is to a large degree linked to the earnings related public pensions, and they do not have the same tendency as private income sources to wither away.

Finally, it is possible to argue that we have not yet seen the full effect of the failure to establish a second tier of earnings related public pensions in Denmark. The relatively modest scope of private occupational pensions found among contemporary pensioner cohorts in Denmark could be no more than a temporary phenomenon. For various historical reasons, the expected strong growth in occupational pension schemes was stalled for a decade rather than avoided in Denmark. In the late 1980s and early 1990s, the coverage with occupational pension schemes jumped up from below 40 percent to above 80 percent (Pedersen, 1997).

The future maturation of these occupational pension schemes can very well be expected to trigger a significant increase in the overall level of income inequality found among old age pensioners in Denmark. Hence, it is possible to imagine that the Danish case could eventually become consistent with the general expectation of the egalitarian argument.

10.6 IMPLICATIONS FOR CONTEMPORARY PENSION REFORM

This study has been focussed on what I have called the historical version of the egalitarian argument. Pension reformers in the 1950s and 1960s were confronted with a question about how to expand public pension provision. Would concerns for the income distribution among future generation of old age pensioners be best served by adding a second tier of earnings related public pension, or by improving on the existing system of flat-rate minimum protection?

It cannot be taken for granted that a correct answer to this question will also entail a correct prediction about the relevant choices facing contemporary pension reformers. Even if it could be firmly established that the egalitarian argument was largely correct in the historical context, it could, nevertheless, be both irrelevant and wrong in the present context – and vice-versa.

In the introductory chapter I suggested that three conditions must be met if a correct answer to the historical question is to render also a correct and relevant prediction about the distributive implications of contemporary reform alternatives. It must be assumed 1) that we have sufficient practical experience with the most relevant alternatives, 2) that the outcome of different policy approaches does not depend too much on aspects of the social context that have changed significantly, and 3) that the effects of expansion and retrenchment are symmetrical.

Starting with the last two conditions, let me just briefly suggest that the egalitarian argument is more likely to be valid in the contemporary situation where an existing second tier scheme is removed in order to return to some form of minimum provision. Although this is pure speculation, I am inclined to believe that expectations about retirement income will be less flexible in the face of second-tier scheme reductions than they appeared to be in the face of improvements in public pension provision. In other words, I assume that the tendency for substitution between public and private retirement provision will be stronger in the latter situation, and that the balance could change quite dramatically in favor of private provision. Furthermore, it could be argued that the tougher and more flexible labor markets to be expected in the future will imply that the distributive consequences of a spontaneously developed system of tax-subsidized occupational pensions will become even less attractive.

I am much more reserved about the first of these conditions. The egalitarian argument presupposes that the most likely alternative to an earnings related public pension system is a fragmented system of occupational pension schemes. However, in many countries the issue is whether to establish a system of mandated occupational schemes as an alternative to a public earnings related scheme.

We do not as of today have any practical experience with the final distributive implications of a fully mature system of mandated occupational pension schemes like tthose that have been introduced in Australia and the Netherlands. Finland is arguably a case that could provide such information, but although the Finnish second tier is privately organized it is closer to the public pole than any other mandated system – due to a very tight regulation of all aspects of the schemes including the benefit schedules.

We also lack results regarding the distributive outcome of a completely different type of alternative, represented today only by New Zealand: a flat-rate and/or means-tested national pension system combined with the denial of any tax-privileges for occupational pensions and other types of private retirement schemes.

APPENDICES

APPENDIX I:
THE CHOICE OF EQUIVALENCE SCALES

When economic well-being is measured in terms of total household income, a crucial issue is to achieve comparability (equivalence) across households with a different size and composition.

Most conventional equivalence scales can be seen to differ according their evaluation of the increase in economic need that is associated with additional household members; or to put it differently, they differ in their implicit assumptions about the economies of scale that is associated with sharing a household.[328] At one extreme we can think of a "scale" that does not differentiate at all between different types of households, thus assuming that the economic needs of a household are the same regardless of size. The opposite extreme is a "per capita" scale in which household needs are assumed to be directly proportional to household size. This would imply that there are no economies of scale associated with sharing a household. It is fairly obvious that a reasonable equivalence scale should lie somewhere between these extremes, but beyond that the choice of a specific scale is highly controversial

The choice of equivalence scales can have a very strong impact on the results of inequality measurement and poverty measurement and on comparisons of the income position of different age-groups and household types (Coulter et al., 1992). For instance, the hotly debated issue of whether the elderly as a group are economically underprivileged, or on the contrary privileged, compared to the rest of the population, hinges strongly on the choice of equivalence scale (O'Higgins et al., 1990).

Different methods for deriving equivalence scales are in use among social scientists. The classical method is to develop equivalence scales on the basis of econometric analyses of the consumption patterns of different household types (the econometric approach). A second approach is to survey people's opinions about the economic needs of their own household or of a set of different household types (the subjectivist or consensual approach).[329] In addition to these empirical or scientific approaches, it is widespread practice to rely on "expert" judgements about the different consumption needs of households, or simply to follow statistical conventions adopted by national authorities or international organizations. Finally, it is not uncommon to derive equivalence scales for research purposes from the implicit scales that are built into operational social security benefit formulas (see Gustafsson and Lindblom, 1993).

Buhman et al (1988) have demonstrated that there is a tendency for these different approaches to yield scales with specific characteristics. "Expert" scales are often rather generous towards additional household members and towards children (close to the per-capita pole), while scales based on the consensual or subjectivist (survey) approach tend to assume very strong economies of scale, with fairly small increments for additional household members (in particular for children).

---

[328] Buhman et al. (1988) have shown how most conventional equivalence scales can, at least approximately, be expressed in terms of a simple function where the elasticity of household needs with respect to household size is determined by a parameter that varies between 0 and 1. An elasticity of zero means that household size is without consequence for the assessment of the household's economic needs, while an elasticity of 1 implies a per-capita scale. This formulation ignores that many conventional equivalence scales treat adults and children differently.

[329] A prominent version of this approach was pioneered by economists affiliated with the University of Leyden (van Praag, 1971; van Praag and Kapteyn, 1973; Goedhart et al., 1977). The sociologist Lee Rainwater used a rather similar methodology in a study published in 1974, and the approach has been convincingly recommended by Rainwater (1990), on the grounds that it is compatible with a sociological conception of relative deprivation and poverty.

There are many suggestions in the literature for more complicated equivalence scales, where a broader range of information is taken into consideration. It is not unreasonable to think, for instance, that the economies of scale in family consumption will depend on the level of prosperity enjoyed by the household, and hence that the equivalence scale should somehow be sensitive to variation in household income. Another issue is whether the age (and sex?) of the household (head) should be allowed to play a role. The application of both the subjectivist/consensual approach and the econometric approach could in practice lead to the conclusion that the economic needs of elderly single women is particularly low, but the normative implications would hardly be acceptable to all.[330]

This only helps to underline the scope for legitimate disagreement on this issue, and there seems to be a broad (meta) consensus in the literature that the choice of a specific equivalence scale will always in some sense be arbitrary. A still more frequent solution is therefore to employ a set of different equivalence scales in order to make sure that the results obtained do not depend on the choice of one particular scale.[331]

The problem of finding an appropriate equivalence scale becomes particularly acute in comparative research, where a strong argument can be made for applying the same equivalence scale(s) to all the national data-sets. The argument is basically centered around the ideal of consistency in comparative social evaluation. It is undoubtedly the conventional practice in comparative work, to apply a common set of equivalence scales across the country cases, however it is possible to find exceptions to this procedure in the literature – see Saunders et al. (1994) and Gustafsson and Lindblom (1993).

The demand for consistency across country cases would seem to rule out any strict empirical foundation of the equivalence scales used for comparative purposes. Consumption patterns and the perceived needs of different household types are likely to vary among countries, and hence scales developed to fit in one national context cannot be expected to fit equally well in other countries. This is why there is a strong tendency in comparative work to use very simple conventional scales, like the traditional, so-called OECD scale, or – a more recent solution – a scale where the elasticity of household need with respect to household size is fixed at a certain level between 0 and 1, for instance 0.5 (see Atkinson et al., 1995).

---

[330] A further hotly debated issue concerns the treatment of children. Should they be counted as adding to the legitimate economic needs of the household, or should the decision to have children rather be seen as representing one alternative way of consumption for the parents? (Bradbury, 1992).

[331] The development and use of a more or less sophisticated set of equivalence scales, with or without sensitivity tests, is not the only way to handle heterogeneity of economic needs across different household types. In order to avoid the strong commitment to a specific view about the relative economic needs of different household types implied by any equivalence scale, a more recent alternative is to treat income and household characteristics as forming a multi-dimensional distribution of economic well-being. In an influential article, Atkinson and Bourguignon (1982) suggested a method for (incomplete) inequality ranking of two-dimensional distributions. They suggested a dominance criteria – with strong affinities to the idea of Lorenz dominance – that would guarantee agreement with the ranking obtained on the basis of any reasonable equivalence scale. The problem is that you might frequently encounter situations where dominance cannot be established.

In the present study I use the so-called LIS scale as the default option. The LIS scale gives the first household member the weight of 1 while each additional household member receives the weight of 0.5. For analyses of the income distribution within the population of old age pensioners, the choice of equivalence scales boils down to a question about the relative economic needs of single member households vis-à-vis married couples, as these are the two overwhelmingly dominant household types in most if not all the country cases. The LIS scale implies that the economic needs of a single member household is two-thirds of the economic needs of a married couple.[332] This can be seen as a kind of "middle-of-the-road" solution between the per-capita pole on the one hand and the zero elasticity solution on the other. It corresponds roughly to implicit judgements that can be read off from social security benefit formulas in some countries, while it is more at odds with benefit formulas in other countries.

A recent study of household consumption patterns among Australian retired couples and single people provides support for the properties of the LIS scale in connection with distributional analyses among old age pensioners. In an innovative application of the empirical/econometric approach to Australian data, Bradbury (1996) estimates the economic needs of a married couple to be in the area of 1.5 times greater than the needs of a single male or female pensioner.[333] Of course, this does not mean that the debate about the appropriate scale to be used among old age pensioners is settled, once and for all, in favor of something like the LIS scale. As always, the results obtained by Bradbury depend on contestable normative assumptions as well as other methodological choices, and it is obviously an open question how far they can be generalized to other institutional and behavioral settings.

As a consequence, I shall present simple sensitivity tests whenever it can be expected that the choice of equivalence scale could have serious implications for the results obtained. Results based on the LIS scale are compared to results obtained when using two different and more extreme scales: 1) a highly stylized "subjectivist scale" that gives relatively little weight to additional household members (assumes large economies of scale),[334] and 2) the standard so-called OECD scale, which comes relatively close to the per-capita pole.[335]

---

[332] The scale used by Atkinson et al. (1995), with a constant elasticity of 0.5, has only slightly different implications for the evaluation of the different needs of couples vis-à-vis single member households. It assumes somewhat larger economies of scale, implying that a single persons would need just above 70 percent of the income enjoyed by a couple in order to achieve the same level of economic well-being.

[333] The key method used by Bradbury is based on an attempt to separate out items of joint consumption from private/individual consumption undertaken by married couples.

[334] The first household member is given the weight of 1, while each additional household member is given the weight of 0.2.

[335] In the traditional OECD scale, the first household member receives the weight of 1, while each additional adult household member receives a weight of 0.7 and each child in the household is given the weight of 0.5.

APPENDIX II:
THE DEFINITION AND MEASUREMENT OF INEQUALITY

In order to be able to compare the level of income inequality found among old age pensioners in the nine country cases (in the late 1980s), it is necessary first and foremost to be clear about the very concept of inequality. What does it mean that one income distribution displays more inequality than another?

Inequality is a highly contestable notion and hence there are numerous approaches to the measurement and comparison of inequality between different distributions. As discussed in Section 2.6 of Chapter 2, the conception of inequality hinges, ultimately, on a core of normative assumptions. There I revealed a preference for one particular summary measure – the so-called Gini index.

Here I shall embark on the discussion from a different and somewhat more technical angle.

One of the contestable issues in the debate about inequality measurement is whether inequality can and should be measured on an ordinal or a cardinal scale, or whether one should settle for pair-wise rankings and partial orderings (for an argument in this latter direction see Sen, 1973). There is on this issue a clear trade-off between concerns for effectiveness and robustness in social evaluation. The higher the level of measurement, the more precise and effective becomes the measurement of inequality as a tool for social evaluation. However, a high level of measurement necessarily comes at a cost. In order to justify the choice of a particular summary index of inequality vis-à-vis the possible alternatives that are available, one must be prepared to defend an extended range of controversial assumptions. The lower the level of measurement the fewer assumptions are needed and the more easy it is to find a consensus about the criteria that must be invoked.

If the measurement of inequality is to have any practical role in social evaluation, a minimum requirement is that it should be possible to generate pair-wise rankings. For pairs of distributions, one should be able to decide whether one distribution displays more inequality than another, or whether the ranking of the two with respect to inequality is undecided.

The comparisons of Lorenz curves offers an opportunity to make such pair-wise rankings. The Lorenz curve is a classical tool for describing income distributions, and it shows the relationship between the cumulative share of the population (depicted along the X-axis) and the corresponding cumulative share of total income enjoyed by this population share (measured along the Y-axis), when the income units are ranked in ascending order according their level of income.[336] If total income were equally distributed, the Lorenz curve would follow the 45^0 line. The situation of maximum inequality (according to the mainstream conception of inequality; see, however, the discussion in Temkin, 1993) appears if one income unit is in possession of all income, and this will result in a Lorenz curve that creeps along the X-axis all the way to the last income unit, where it jumps to a score of 1 on the Y-axis.

For pair-wise comparisons of distributions, Lorenz dominance is defined as a situation where the Lorenz curve for one distribution (A) lies strictly above (closer to the 45^0 line than) the Lorenz curve for the second distribution (B). In this situation distribution (A) is deemed to be less unequal than distribution (B). If, however, the two Lorenz curves intersect at one or more points, Lorenz dominance does not obtain, and hence the ranking of the two distributions remains indeterminate according to this criteria.

---

[336] Se Graph 6.1 for a practical example of Lorenz curves.

In his seminal article on the measurement of inequality from 1970, Tony Atkinson showed that the criteria of Lorenz dominance is implied by any standard additive social welfare function where individual utility is a strictly concave function of income,[337] and, furthermore, that the criteria of Lorenz dominance will always agree with the ordering that can be obtained using any more specific inequality index (summary measure), provided that this more specific index satisfies a set of very basic and largely uncontroversial requirements:

- *The Principle of Transfers* (the Pigou-Dalton criterion). The principle requires that inequality must always decrease (never increase) as a result of a mean preserving progressive transfer, i.e., a transfer from a richer to a poorer income unit (the ranking of the two must not change as a result of the transfer). You might say that this principle captures a kind of minimum essence of what inequality is about (Shorrocks, 1988), and it is very seldomly contested as a necessary requirement.[338] The Principle of Transfers and the criteria of Lorenz dominance are basically equivalent, since an inward shift of the Lorenz curve can always be achieved by a series of progressive transfers.

- *Symmetry* (anonymity). This means simply that the measurement of inequality should take account of the size distribution of income only and ignore the position of particular individuals and their characteristics. This is a seemingly innocent principle, but one should be aware that it contrasts with implicit judgements in much social policy discourse, where the concept of equality is associated with the relative position of men and women, blue- and white-collar workers, or with some idea of reciprocity or continuity over time.

- *Scale invariance.* The idea is that the measurement of inequality should be independent of the "size of the cake". If all incomes are changed in the same proportion, measured inequality should remain unchanged. The rationale for this requirement is obvious, but it is not entirely uncontroversial. The requirement delineates what is sometimes called indices of relative inequality as opposed to indices of absolute inequality (Kolm, 1976a and 1976b). Although much can be said against the requirement of scale invariance and in favor of some absolute measure of inequality (see for instance Temkin, 1993), the practical application of any absolute measure of inequality will immediately raise very difficult questions – in particular in a comparative context.

- *Population invariance.* This is again a rather uncontroversial requirement saying that the size of the population should be irrelevant for inequality measurement. It is, however, possible to find arguments in the literature against this principle (Temkin, 1993).

---

[337] If the two distributions refer to populations of identical size and with the same total level of income, Lorenz dominance will imply higher social welfare according to any strictly concave SWF, i.e., an SWF with a negative second derivative.

[338] The Principle of Transfers is not satisfied by one particular inequality index that is quite often used in empirical work, the variance of logarithms (see Sen, 1973 and Lambert, 1993)

Although there is not complete unanimity in favor of these requirements in the literature, you can speak of a broad consensus about these principles and hence of the criterion of Lorenz dominance as a reasonable minimum platform of inequality measurement. Whenever one Lorenz curve lies strictly within (above) another we know that this distribution is characterized by less inequality.

Unfortunately, the criterion of Lorenz dominance cannot guarantee more than a partial (non-cyclical) ordering of a larger set of distributions. The partiality of the ordering springs, in the first instance, from the fact that any pair-wise ranking becomes undecided whenever the two Lorenz curves intersect. The real crux of the problem is, however, that this relationship of undecidedness between pairs of distributions is intransitive: The fact that distribution (A) dominates distribution (B) while the ranking of (B) and (C) is undecided does not imply that distribution (A) will necessarily dominate distribution (C). Similarly, undecidedness between (A) and (B) and between (B) and (C) does not preclude a situation of dominance between (A) and (C). Therefore, with many instances of crossing Lorenz curves, the partial Lorenz ordering can become extremely messy, forming a rather complicated web of pair-wise relationships.

In the previous chapter I made an extensive effort to develop at least ordinal measures of the *independent variable(s)* of the present study – measures of institutional variation – that can be used as independent variables in a quasi statistical comparative analysis. This effort would be wasted, and any attempt at causal inference seriously impaired, if the *dependent variable* cannot be measured at least on an ordinal scale. In order to guarantee such a complete ordering of a larger set of distributions (not to speak of a cardinal measurement of inequality), a choice between a wide range of alternative summary measures of inequality must be made, and hence a more comprehensive and controversial set of assumptions is needed.

Among the more specific inequality indices that agree with the minimum platform of Lorenz dominance, three important "families" of indices can be distinguished: Atkinson's index (family of indices), the Generalized Entropy Family and the Gini index (family of indices).

1) The Atkinson Index

In order to narrow down the range of alternatives and to guarantee a more unambiguous measurement of inequality, a number of supplementary criteria or principles have been suggested. One rather popular criterion is the so-called Principle of Transfer Sensitivity, which can be seen as a stronger version of the Principle of Transfers. The Principle of Transfer Sensitivity requires that an acceptable inequality index should be more sensitive to transfers (of a certain size) the further down the distribution they take place. The idea is that income differentials at the bottom of the distribution should be given priority in the measurement of inequality.[339]

The index suggested by Atkinson (1970) satisfies this principle, and the index is built directly on an explicit social welfare platform. Atkinson's index (or rather the Atkinson Family of indices) draws on an analogy between inequality aversion and risk aversion.[340] It measures the relative loss in terms of total welfare, associated with a certain level of inequality (risk of receiving a low level of income), as compared to a situation where the same amount of income had been distributed equally. A central feature of the index is the so-called epsilon parameter. The value of the epsilon parameter expresses the degree of inequality aversion, and this must be specified in advance by the researcher in order to obtain a specific operational version of the Atkinson index. The parameter decides both the degree of inequality aversion and the degree to which the index will give priority to income differentials at the lower end of the income distribution. With values for epsilon close to zero, the degree of inequality aversion is weak, and so is the special priority given to the lower end of the distribution (with epsilon=0, no inequality aversion is assumed and Social Welfare becomes a function of mean income levels alone). As epsilon is increased (in principle it can be increased ad infinitum) the degree of inequality aversion becomes stronger, and the index concentrates more and more on income differentials at the bottom of the distribution.

---

[339] The criterion is implied by a standard SWF, where not only the second but also the third derivative of the function linking income and individual utility is negative (Lambert, 1993).

2) The Generalized Entropy Family

Another way to move beyond the minimum platform of Lorenz dominance is to give preference to inequality indices that have attractive "practical" or analytical properties (see Shorrocks, 1988). In addition to describing the degree of inequality one will often be interested in engaging in explanatory efforts. If, for instance, income inequality has been found to grow over time, it naturally becomes interesting to know whether this growth can be attributed to changes in the distribution among certain subgroups of the population, and if changes in the size and distribution of certain income sources play a particular role (see Jenkins, 1995 for a comprehensive attempt to describe and explain the growth in income inequality in the UK from the early 1970s to the mid-1980s).

Hence, the practical approach to inequality measurement implies that one should prefer particular indices with mathematical structures that allow for straightforward analyses of the contribution to measured inequality stemming from the distribution within and between subgroups of the population and/or the contribution made by particular income sources.

Members of the so-called Generalized Entropy Family have attractive features in this respect. The most famous of this group of indices is the Theil index. Like other indices in this family, the Theil index draws on an analogy between (in-)equality and the mathematical notion of entropy (disorder). All members of this family satisfy the so-called Subgroup Consistency Axiom, and they lend themselves to a very convenient decomposition with respect to population subgroups.

Some members of this family also satisfy the Principle of Transfer Sensitivity. Cowell (1995) has shown that for every member of the Atkinson Family (for every value of epsilon) there exists an ordinally equivalent member of the Generalized Entropy Family – i.e., an index that will always produce the exact same ordering as the Atkinson index. Other members of Generalized Entropy Family violate the Principle of Transfer Sensitivity. One such index is the Squared Coefficient of Variation, which will tend to emphasize income differentials in the upper part of the (typically right-skewed) income distribution.

---

[340] There is a curious affinity here to important features of the famous theory of distributive justice developed by John Rawls (1972). Also in Rawls' theory, the idea of risk aversion is invoked in an attempt to specify and justify an egalitarian position.

A general weakness of the Generalized Entropy Family of indices is that they do not have a clear substantive/normative interpretation like those offered by the Atkinson index and the Gini index (Sen, 1973).

3) The Gini index

The Gini index is the single most widely used summary measure of inequality. It is at the same time one of the most strongly criticized indices in the more recent methodological literature.

The Gini coefficient is usually defined with reference to the Lorenz curve, as twice the area between the Lorenz curve and the 45^0 diagonal. There are alternative ways of writing the formula for the Gini index that reveal more about its special nature. The Gini index is equal to half the mean relative difference between all pairs of income units that can be drawn from the distribution, and it can alternatively be written as a weighted sum of individual income levels, where the weights are provided by the rank-order position of individuals when everybody is ranked in ascending order according to the level of income.

The Gini index fails to meet the Principle of Transfer Sensitivity, and it is not very "practical" either, since it does not lend itself to a convenient subgroup decomposition.

The last issue has already been discussed at some length in Section 2.6 above. There I argued that the "practical" properties of an inequality index cannot take precedence over the fundamental normative issues and convictions about the very conception of inequality. The Gini index can be seen to reflect a sociologically appealing conception of inequality, with an emphasis on relational aspects and on "relative deprivation". If one accepts the kind of SWF underlying the Gini index, where individual welfare (or the individual's contribution to Social Welfare) has a strong relative component, the call for a convenient subgroup decomposition rule is completely misplaced. According to this conception of inequality, there is no such thing as subgroup inequality to be measured independently of the situation prevailing in the general population.

This rationale for the Gini index comes at a cost in terms of its practical use. The formula for the Gini index and the underlying SWF assumes that everybody compares herself with everybody within a certain reference population. This implies that the index cannot be applied consistently to populations at different levels of aggregation. Hence, the application of the index requires an explicit choice about which is the relevant population – the general population in each country or various subgroups like, for instance, the elderly.

Here I assume that the current generations of old age pensioners in each country form a reference population. This means, strictly speaking, that the Gini index should be applied at this level only, while it cannot at the same time be consistently applied to the general population in each country or to various subgroups among the elderly.

The conflict with the Principle of Transfer Sensitivity raises more difficult issues. The Gini index is most sensitive to income differentials and transfers around the mode of the distribution, and by the same token it is rather insensitive to what is going on in sparsely populated upper and lower tails of the typical income distribution. Hence, the requirement to always give increasing weight to the lower part of the distribution is violated by the Gini index.

This is, arguably, a serious weakness. The Principle of Transfer Sensitivity does carry some intuitive appeal. After all, should we not be mostly worried about the situation of those who are worst off? In order to meet this type of critique, it has been suggested to extend the original Gini index to allow for a stronger focus on the lower part of the distribution (Yitzhaki, 1983; Kakwani, 1986). In these "generalized" Gini-indices, a parameter can be fixed at different values to decide the degree of extra priority given to the lower tail of the distribution, much in the same way as with the epsilon parameter of the Atkinson index.[341]

I believe, however, that it is possible to question the Principle of Transfer Sensitivity itself, despite its immediate intuitive appeal. It is not indisputable that an inequality index should always be increasingly sensitive to income differentials the further they are located towards the lower bound of the distribution.

It should be kept in mind that the implicit SWF of the original and more simple Gini index does give consistently higher weight to income received by the most disadvantaged members of the population – otherwise, the Gini index would have been in conflict with the more fundamental Principle of Transfers. The point is, however, that if the lower part of the distribution is thinly populated, the Gini index will not be too "impressed" by attempts to redistribute income internally among those disadvantaged segments of the population. The presumption is that a person's position close to the bottom of the distribution is a primary source of misery: to have some more money does not help you much if you don't also move closer to or past the rank position of some of your fellow citizens.

As already mentioned, the structure of the Gini index implies that everybody compares himself with everybody. Even for the very poor, the relative position vis-à-vis the very rich is assumed to be important and adding to their state of deprivation (whether this is conceived in purely moral terms or as a psychological state). The Gini index will give a very high credit to a certain transfer in favor of the poor if the transfer is taken from the very richest members of society (the reference population). Indices that satisfy the Principle of Transfer Sensitivity, on the other hand, will tend to be rather indifferent about from where in the general distribution a possible transfer to the poorest might come – from other not-so-poor people or from the very rich. In the extreme case, as with the Atkinson index where epsilon is set to an infinitely high value, all attention is focused on the relative income position of the very poorest member of society, while the remaining income distribution is ignored completely (Lambert, 1993). No attention will be given to where in the remaining income distribution a potential transfer to poorest individual might be taken from. A high degree of sensitivity to the lower part of the income distribution will tend to make the privileged situation of the rich socially irrelevant, and hence you might say that it involves a weakening of implicit judgements about a moral or social claim by the poor against the rich.

---

[341] Contrary to the Atkinson index, which always meets the Principle of Transfer Sensitivity, the generalized Gini index cannot guarantee fulfillment of the Principle of Transfer Sensitivity. The priority given to the bottom of the distribution might not be strong enough to outweigh the force of a (possible) higher density in other parts of the distribution. The parameter value needed in order to guarantee the satisfaction of the principle depends on the actual shape of the distribution, and hence it cannot be decided a priori.

While it can be argued that the Principle of Transfer Sensitivity is not a necessary part of the conception of inequality per se, it does not mean that a special concern for the most disadvantaged segments should be entirely abandoned in social evaluation. One might instead insist that inequality and poverty are two partly independent criteria for social evaluation, and that the special concern for the relative income position of the most disadvantaged is best captured by some specialized measure of poverty.

In the context of the present thesis, there is a specific and more pragmatic reason for being less concerned about the sensitivity profile of the standard Gini index. The point is that the Gini index is only relatively insensitive to differentials at the lower end of the distribution, if the area close to the lower range bound is in fact sparsely populated. The typical pattern of income distributions, where the density tapers off as you approach the lower range bound, does not necessarily apply to the case of old age pensioners in the countries under study here. In countries where public pension systems secure an effective minimum protection, the lower tail of the distribution should be truncated with hardly any observations below the minimum pension and (presumably) a substantial share of observations falling in the area just above this level. In such an environment the Gini index will not be particularly insensitive to the lower part of the distribution at all.

Finally, the relative insensitivity of the Gini index to the lower and upper tails of the typical income distribution is likely to make it more statistically robust and less vulnerable to measurement error. Indices that are highly sensitive to either the lower or the upper tail of the income distribution tend to give much emphasis to single, extreme observations, whether these have been produced by measurement error or not.

Appendix III:
A method for subgroup decomposition of the Gini index

The Gini index can be written as twice the covariance between the observed income (y) and the corresponding rank position in the cumulative frequency distribution (r) of each individual (when everybody is ranked in ascending order according to the level of income), divided by the mean income (Sen, 1973; Lerman and Yitzhaki, 1984):

$$G = \frac{2\,\mathrm{cov}[y,r]}{\bar{y}} \tag{1}$$

Here I shall present a method whereby the Gini coefficient for some general "reference" population can be decomposed into a set of within-group components and a between-group component. The method is a simpler version of the approach that has been suggested by Yitzhaki and Lerman (1991) and Yitzhaki (1994).

The within-group component is defined as a weighted sum over the K subgroups of a kind of pseudo Gini index calculated for each subgroup, here called the Subgroup Concentration Index. The Subgroup Concentration Index for group k (SC_k) is defined in the following way:

$$SC_k = \frac{2\,\mathrm{cov}_k[y_k,r]}{\bar{y}_k}, \tag{2}$$

where y_k is the income received by each member of group k and the denominator is the mean income of group k. Note, however, that r refers here to the (normalized) rank position taken up by a member of group k in the overall distribution.[342] This is what distinguishes the Subgroup Concentration Index from an ordinary Gini coefficient calculated for the subgroup k. The ordinary Gini index would be based on the covariance between income and the rank position within the particular subgroup.[343] When the Subgroup Concentration Index is applied to the general population, however, this difference vanishes and it becomes identical with the Gini index proper.

The Subgroup Concentration Index can be interpreted as measuring the degree of relative deprivation that the members of the subgroup inflict upon each other.[344]

Using the real Gini index as a measure of the degree of relative deprivation that arises within a subgroup is, arguably, inconsistent with the application of the Gini index to the total population. If one assumes that everybody compares herself with everybody in the general population, it is the overall ranking that matters.

---

[342] 'r' refers here to the rank number in the overall income distribution, normalized by the population size N. Hence, it can be seen as an estimate of the position in the cumulative frequency distribution. Whenever an 'r'-term appears in the following, it is always normalized by the population size.

[343] In this case the rank number within the subgroup would be normalized by the size of the subgroup.

[344] Yitzhaki (1982) defines subgroup deprivation D_k as the mean income in group k multiplied by the population share and the Gini index of group k (equation (14)). However, this definition presupposes that the subgroup members form a separate reference population where nobody cares about his/her position in the overall income distribution. In this situation, I would argue, the Gini index ceases to be a meaningful measure of inequality at the more aggregate, population level.

The Subgroup Concentration Index is consistent with the Gini index for the general population because it employs the same distance metric: absolute differences in income are weighted by the associated difference in rank-order position within the total population.

In other words, the Subgroup Concentration Index is faithful to the assumption that people are concerned with their relative position in the general population. If the dispersion of income within a subgroup implies that the members are spread very widely across the general cumulative distribution, the Subgroup Concentration index will tend to take on high values. If, on the other hand, the group members are strongly concentrated in a narrow segment of the overall income distribution, the Subgroup Concentration index will tend to show very small values, compared to the corresponding Gini coefficient for the subgroup.

The Subgroup Concentration Index is bounded by 0 and 2. Index values in excess of 1 occur when members of a (relatively small) subgroup are strongly polarized in the lower and the upper part of the general distribution.

The Subgroup Concentration Index can be further decomposed as the product of two separate terms: the real Gini coefficient for the subgroup, and a term measuring the degree of "overlap" between the subgroup and the general population O_k (see equation (4) in Yitzhaki and Lerman, 1991):[345]

$$SC_k = G_k \cdot O_k \tag{3}$$

O_k approaches its maximum value of 2 if the members of the subgroup occupy polarized positions in the overall income distribution (the remaining population is included within the range of the income distribution in group k), while it approaches zero if all member of the subgroup cluster in a particular segment of the overall distribution. The size of O_k (the ratio between the Subgroup Concentration index and the respective Gini coefficient) is systematically related to the size of the subgroup: the smaller the group, the stronger the potential for a significant deviation between the Subgroup Concentration index and the corresponding Gini index.[346] It is also related to the relative degree of income concentration found in each subgroup. If the income distribution within a subgroup displays a higher degree of dispersion than the distribution within the remaining subgroups, it is more likely that the members of the remaining subgroups will included within the range of group k, and hence O_k will tend to take on values higher than 1. Finally, the size of O_k is related to the scope of between-group differentials. If the mean income and the typical rank position taken up by different subgroups show strong variation, the degree of overlap will tend to be low.

In the methods for subgroup decomposition of the Gini index suggested by Yitzhaki and Lerman (1991) and Yitzhaki (1994), primary attention is focussed on the issue of overlap/stratification in its own right, and hence it becomes important to distinguish this aspect from the level of Gini inequality found in each subgroup. Here I am primarily interested in highlighting the role of between-group income differentials, and therefore I shall employ a more simple, dichotomous decomposition of the overall Gini coefficient into within- and between-group components. In this context, the Subgroup Concentration Index provides a convenient and meaningful summary expression for the within-group contribution to overall inequality/deprivation.

---

[345] The overlap term used here differs slightly from the index of absolute overlap 'O', defined by Yitzhaki and Lerman (1991) in equation (3). O_k is equal to the O index of Yitzhaki and Lerman multiplied by the population share of group k.

[346] Yitzhaki and Lerman (1991) also suggested a measure of relative overlap/stratification, Q_k, that is cleaned of any size effect. Q_k is equal to $(1-O_k)/(1-P_k)$.

The degree of relative deprivation felt within each of the K subgroups can be aggregated by taking a weighted average of the Subgroup Concentration Indices, where the weights are given by the income share taken up by each of the respective subgroups, S_k. In other words, the aggregate level of deprivation stemming from within-group comparisons, WG, can be defined in the following way:

(4)

$$WG = \sum SC_k \cdot S_k$$

In order to assess the between-group contribution to overall inequality, I shall use a measure that was first suggested by Yitzhaki and Lerman (1991:322). It is a pseudo Gini coefficient calculated for the entire population, where each individual is represented with the mean income of the group to which he/she belongs and the mean rank position of the group. The formula can be written in the following way

(5)

$$BG = \frac{2\operatorname{cov}[\bar{y}_k, \bar{r}_k]}{\bar{y}}$$

where yk and rk are the mean income and the mean rank observed among the members of group k.

The formula in (5) differs from the more usual measure of between-group inequality found in the literature, based on the counterfactual distribution that would have appeared if all income units had been observed with the mean value of the respective subgroup (like in Experiment 2 in Chapter 6.4). BG is instead based on the mean rank position that can actually be observed for the group within the existing overall income distribution. The actual mean rank will tend to be less extreme than the rank position that would follow if everybody is recorded with the mean income of the respective subgroups. Hence, BG as defined here will always be smaller than the alternative between-group measure, unless there is no overlap between the subgroups, in which case the two measures become equivalent. BG can in fact become negative in the case of a negative association at the group level between mean income and mean rank (Yitzhaki and Lerman, 1991). This situation can arise if the members of a subgroup are mostly found in the lower part of the income distribution, while this group at the same time display levels of mean income above the overall average thanks to a minority of very rich members.

Note how this feature is in line with the general spirit of the Gini index. Economic welfare (at the individual as well as the more aggregate level) is not a function of income alone. It is, rather, a function of the interaction between the absolute level of income and the rank position in the overall income distribution. If a relatively high level of mean income in a subgroup is not followed by a relatively high average rank-position of the members, the group as such is not unambiguously privileged, according to the relativistic conception of inequality.

It can be shown, that for any partitioning of the general population into K mutually exclusive subgroups, the within-group component WG and the between-group component BG must always sum to the Gini coefficient for the general population.[347]

$$\text{Gini} = WG + BG \tag{6}$$

It is important to note, however, that WG and BG are not mutually independent. One can say that the decomposition into WG and BG offers a pertinent description of the way overall Gini inequality is structured with respect to subgroups, while it does not provide an explanation for the level of Gini inequality found in the general population.

Any real-life intervention or hypothetical change in the income distribution that might affect WG will almost certainly affect BG as well – and often in the opposite direction. This is so, for both the two types of hypothetical experiments discussed in Chapter 6.4. A hypothetical elimination of between-group income differentials will reduce BG to zero, but the WG term will tend to increase somewhat, since the degree of overlap between the subgroups is likely to increase in a situation where the subgroup means are moving closer. Similarly, the elimination of all within-group variation will leave the WG term at zero, but it will at the same time trigger an increase the BG term.

---

[347] No proof is provided here. The reader is referred to Yitzhaki and Lerman (1991), equations (15) and (17).

APPENDIX IV: TABLES

Table A1: Lorenz curve coordinates.

LIS eq. scale

Decile no.	NL91	SW87	GE89	UK86	NW86	CN87	DK87	US86	AS89
1	4.2	5.8	4.3	5.4	5.7	4.4	5.5	2.4	4.3
2	10.3	12.9	10.6	12	12.4	10.5	12.7	6.5	10.8
3	16.9	20.8	17.6	19.1	19.7	17.3	20.3	11.5	17.8
4	23.9	29.1	25.2	26.9	27.5	24.7	28.4	17.6	25.4
5	31.5	38.5	33.9	35.2	36	32.6	37.2	24.9	33.4
6	40	48	43.2	43.8	45.5	41.1	46.6	33.9	42
7	49.6	58.4	53.5	53.7	55.8	50.8	56.7	44.5	51.5
8	61.2	69.7	65.3	65	67.4	62.2	67.8	57.3	61.9
9	75.4	82.9	79.2	78.8	80.6	76.1	80.8	73.6	74.6
10	100	100	100	100	100	100	100	100	100

OECD eq. scale

Decile no.	NL91	SW87	GE89	UK86	NW86	CN87	DK87	US86	AS89
1	4	6.1	4.3	5.3	5.9	4.4	5.4	2.5	4.3
2	10.3	13.3	10.4	11.9	12.8	10.5	12.5	6.6	11.2
3	16.9	21.5	17.4	19.2	20.3	17.3	20.1	11.7	18.4
4	24	30.1	25	27	28.2	24.8	28.3	17.9	25.9
5	31.7	39.1	33.7	35.3	36.8	32.5	37.1	25.3	34
6	40.2	48.8	42.9	44.3	46	41.3	46.5	34.2	42.6
7	49.8	58.9	53.4	54.2	56.2	50.8	56.6	44.7	51.9
8	61.5	70.3	65.1	65.3	67.7	62.3	67.8	57.6	62.2
9	75.5	82.9	78.8	79	80.7	76.2	80.9	73.6	74.7
10	100	100	100	100	100	100	100	100	100

Subjective eq. scale

Decile no.	NL91	SW87	GE89	UK86	NW86	CN87	DK87	US86	AS89
1	3.8	5.1	3.9	5	5	4.2	4.9	2.4	3.9
2	9.4	11.5	10.1	11.1	10.9	9.8	11.8	6.3	9.6
3	15.9	18.6	17.2	18.2	17.8	16.3	19.4	11.1	16.1
4	22.8	27.1	24.9	25.7	25.6	23.5	27.5	17.1	23.5
5	30.4	36.3	33.3	33.8	34.3	31.7	36.1	24.4	31.6
6	38.7	46.1	42.9	42.5	43.8	40.5	45.5	33.3	40.5
7	48.6	57	53.5	52.4	54.4	50	55.7	43.9	50.2
8	60.2	68.4	65	64	66.3	61.8	67	56.6	61
9	74.4	81.8	79	78.2	80.1	76.1	80.1	72.9	74.1
10	100	100	100	100	100	100	100	100	100

Table A.2: Age-specific Gini coefficients and mean income for three birth cohorts. Unbalanced sample.

	Age68	Age69	Age70	Age71	Age72	Age73	Age74	Age75	Permanent income
1913: N	2485	2409	2339	2272	2211	2126	2041	1938	2485
Gini	0.2927	0.2721	0.2647	0.2371	0.2231	0.2104	0.2002	0.1839	0.2332
Stdv	*0.0078*	*0.0103*	*0.0095*	*0.0092*	*0.0074*	*0.0067*	*0.0059*	*0.0073*	*0.008*
Mean	70270	67640	65958	62846	62381	60386	61839	60786	64400
Stdv	*1056*	*918*	*1109*	*945*	*887*	*725*	*669*	*596*	*840*
1914: N	2459	2397	2316	2246	2155	2076	1990	1905	2459
Gini	0.2877	0.2734	0.2507	0.2376	0.2259	0.2246	0.2127	0.2018	0.2308
Stdv	*0.0076*	*0.0071*	*0.0079*	*0.0077*	*0.0075*	*0.0087*	*0.0081*	*0.0073*	*0.0068*
Mean	68917	66475	64395	63880	61978	64962	63617	65080	64297
Stdv	*1010*	*915*	*888*	*850*	*787*	*895*	*821*	*764*	*759*
1915: N	2325	2264	2197	2126	2051	1973	1894	1798	2325
Gini	0.2831	0.2605	0.2477	0.2352	0.2306	0.2155	0.1972	0.2026	0.2282
Stdv	*0.0081*	*0.0085*	*0.0084*	*0.0086*	*0.0087*	*0.0082*	*0.0068*	*0.0086*	*837*
Mean	70432	68226	66816	64541	67535	65900	66771	65177	66547
Stdv	*1070*	*1018*	*960*	*922*	*954*	*872*	*754*	*862*	*810*

Table A.3: Age-specific Gini coefficients and mean income for three birth cohorts. Balanced sample.

	Age68	Age69	Age70	Age71	Age72	Age73	Age74	Age75	Permanent income
1913: N=1938									
Gini	0.2766	0.252	0.2451	0.2239	0.2110	0.1988	0.1938	0.1839	0.2091
Stdv	*0.0061*	*0.0064*	*0.0093*	*0.0094*	*0.0090*	*0.0059*	*0.0062*	*0.0059*	*0.0066*
Mean	69792	67536	65174	62444	62095	59885	61682	60786	63674
Stdv	*968*	*899*	*1014*	*928*	*869*	*630*	*635*	*596*	*737*
1914: N=1905									
Gini	0.2962	0.2792	0.2557	0.2417	0.2314	0.2282	0.2135	0.2018	0.2309
Stdv	*0.0088*	*0.0081*	*0.0088*	*0.0085*	*0.008*	*0.0092*	*0.0084*	*0.0073*	*0.008*
Mean	71632	68597	66452	65583	63178	65697	63928	65080	66268
Stdv	*1240*	*1090*	*1038*	*967*	*873*	*964*	*851*	*764*	*914*
1915: N=1798									
Gini	0.2839	0.2617	0.2488	0.2384	0.2334	0.2149	0.1978	0.2004	0.2226
Stdv	*0.0094*	*0.0098*	*0.0093*	*0.0097*	*0.0095*	*0.0087*	*0.007*	*0.0085*	*0.0086*
Mean	72307	69644	67887	65718	68388	66523	67093	65359	67842
Stdv	*1271*	*1190*	*1091*	*1050*	*1054*	*931*	*780*	*861*	*967*

BIBLIOGRAPHY

Aaberg, Rune. 1989. "Distributive mechanisms of the welfare state - A formal analysis and an empirical application." *European Sociological Review*

______. 1984. "Market-independent income distribution: Efficiency and legitimacy." *Order and conflict in contemporary capitalism*, Ed. John Goldthorpe. Oxford: Oxford Universty Press.

Aaberge, Rolf et al. 1996. *Income inequality and income mobility in the Scandinavian countries compared to the United States*. Discussion Papers(no. 168). Oslo: Statistics Norway, Research Department.

Aaberge, Rolf. 1982. *Om måling av ulikskap*. Rapporter(82/9). Oslo: Statistics Norway.

Aaberge, Rolf and Julie Aslaksen. 1996. *Decomposition of the Gini coefficient by income components: Various types of applications and interpretations*. Discussion Papers(No. 182). Oslo: Statistics Norway.

Aaron, Henry J. 1977. "Demographic effects on the equity of social security benefits." *The economics of public services*, Eds. Feldstein, M.S. and R. P. Inman. London: Macmillan Press.

______. 1982. *Economic effects of social security*. Washington D.C.: The Brookings Institution.

Abbot, Andrew and Stanley DeViney. 1992. "The welfare state as a transnational event: Evidence from sequences of policy adoption." *Social Science History* 16:245-275.

Abel-Smith, Brian and Peter Townsend. 1955. *New pensions for the old*. Fabian Research Series No.171. London: The Fabian Society.

Achdut, Lea and Yossi Tamir. 1990. "Retirement and well-being among the elderly." *Poverty, inequality and income distribution in comparative perspective: The Luxembourg Income Study*, Eds. Timothy Smeeding et al. Hertfordshire: Harvester Wheatsheaf.

Alessie, Rob, Annamaria Lusardi and Arie Kapteyn. 1995. *Saving and wealth holdings of the elderly*. (Working paper). Tilburg: CentER, Tilburg University.

Allison, Paul D. 1982. "Discrete-time methods for the analysis of event histories." *Sociological Methodology*, Ed. S. Leinhardt. San Fransisco: Jossey-Bass.

______. 1978. "Measures of inequality." *American Sociological Review* 43:865-880.

Allmendinger, Jutta, Hannah Brückner and Erika Brückner. 1993. "The production of gender disparities over the life course and their effects in old age - results from the West German Life History Study." *Age, work and social security*, Eds. Anthony B. Atkinson and Martin Rein. New York: St. Martin's Press.

Altman, Nancy. "Government regulation: Enhancing the equity, adequacy, and security of private pensions." *Private pensions and public policy*, Ed. Elizabeth Duskin. Social Policy Studies, No.9, Paris: OECD.

Amenta, E. and T. Skocpol. 1986. "States and social policies." *Annual Review of Sociology* 12:131-57.

Andrews, Emily. 1993. *Private pensions in OECD countries - The United States*. OECD Social Policy Studies(No. 10). Paris: OECD.

Ankrom, Jeff. 1989. *Two refinements in the measurement of income redistribution: Sweden the U.S., and U.K.* Luxembourg Income Study Working Paper Series 42. Luxembourg: CEPS/INSTEAD.

Arneberg, M. W. and H. A. Gravningsmyhr. 1994. "Pensjonistbeskatningen - kostnader og fordelingsvirkninger." *Økonomiske analyser* 7/94. Oslo: Statistics Norway.

Atkinson, Anthony B. et al. 1992. *Empirical studies of earnings mobility*. Chur, Switzerland: Harwood Academic Publishers.

Atkinson, Anthony B. 1987. "Income maintainance and social insurance." Pp. 779-908 in *Handbook in public economics*, Eds. Alan J. Auerbach and Martin Feldstein. Vol. 2 ed. New York: Elsevier Science Publications Co.

______. 1990. "Introduction." *Poverty, Inequality and income distribution in comparative perspective. The Luxembourg Income Study*, Eds. Timothy Smeeding et al. Hertfordshire: Harvester Wheatsheaf.

______. 1970. "On the measurement of inequality." *Journal of Economic Theory* 2:244-263.

______. 1995. *Public economics in action. The basic income/flat tax proposal*. Oxford: Clarendon Press.

______. 1993. "Work incentives." *Welfare and work incentives*, Eds. A. B. Atkinson and Gunnar Viby Mogensen. Oxford: Oxford University Press.

Atkinson, Anthony B. and F. Bourguignon. 1982. "The comparison of multidimensioned distributions of economic status." *Review of Economic Studies* 49:183-201.

Atkinson, Anthony B. and John Micklewright. 1983. "On the reliability of income data in the Family Expenditure Survey 1970-1977." *Journal of the Royal Statistical Society* 146:33-61.

Atkinson, Anthony B., Lee Rainwater, Timothy M. Smeeding. 1995. *Income distribution in OECD countries. Evidence from the Luxembourg Income Study*. Paris: OECD.

Atkinson, Anthony B. and Holly Sutherland. 1993. "Two Nations in early retirement? The case of Britain." *Age, work and retirement*, Eds. A. B. Atkinson and Martin Rein. London: Macmillan Press LTD.

Baker, Dean. *Robbing the cradle? A critical assessment of generational accounting*. Washington DC: Economic Policy Institute.

Baldwin, Peter. 1990. *The politics of solidarity*. Cambridge: Cambridge University Press.

Barro, Robert J. 1974. "Are government bonds net wealth?" *Journal of Political Economy* 82:1095-1118.

Barro, Robert J. and Glenn M. MacDonald. 1979. "Social security and consumer spending in an international cross section." *Journal of Public Economics* 11:275-289.

Bateman, Hazel and John Piggot. 1997. *Private pensions in OECD countries - Australia*. Labour Market and Social Policy(Occational Papers No.23). Paris: OECD.

Becker, Gary S. 1981. *A treatise on the family*. Cambridge Mass.: Harvard University Press.

Berkowitz, Edward D. 1997. "The historical development of social security in United States." *Social security in the 21st century*, Eds. Eric R. Kingson and James H. Schulz. New York: Oxford University Press.

Bhattacharya, N. and Mahalanobis B. 1967. "Regional disparities in household consumption in India." *Journal of the American Statistical Association* 62:143-161.

Bishop, John A. et al. 1991. "International comparisons of income inequality: Tests for Lorenz dominance across nine countries." *Economica* 58:461-77.

Bishop, John A., Chakraborti and Thistle. 1991. "Relative deprivation and economic welfare: A statistical investigation with Gini-based welfare indices." *Scandinavian Journal of Economics*

Björklund, Anders. 1998. *Income distribution in Sweden: What is the achievement of the welfare state?* Stencil. Stockholm: SOFI, University of Stockholm.

Blinder, Alan S. 1983. *Private pensions and public pensions: Theory and fact.* Ann Arbor: University of Michigan, Department of Economics.

Bloom, David E. and Richard B. Freeman. 1992. "The fall in private pension coverage in the U.S." NBER Working Paper(3973). Cambridge: National Bureau of Economic Research.

Bodie, Zvi. 1989. "Private pensions as retirement income insurance." NBER working paper series(2917). Cambridge, M.A.: National Bureau of Economic Research.

Boligministeriet et al. 1996. *Ældres indkomster og formuer*. Copenhagen: Boligministeriet.

Boudon, Raymond. 1974. *Opportunity and social inequality*. New York: Wiley.

Börsch-Supan, Axel. 1997. *Retirement income, level, risk, and substitution among income components*. Paper presented at the Joint ILO-OECD Workshop: Development and reform of pension schemes. Paris 15-17 December 1997. Paris: OECD.

Bradbury, Bruce. 1996. Paper presented at the 24. General Conference of the Internatioal Association for Research on Income and Wealth, Lillehammer, Norway, August 18-24 1996. Lillehammer: IARIW.

______. 1992. "The theory of family size equivalence scales: An overview." Lecture prepared for the 1992 Luxembourg Income Study Summerschool. Walferdange, Luxembourg: CEPS/LIS.

Burkhauser, Richard V. et al. 1990. "Economic burdens of marital disruptions: A comparison of the United States and the Federal Republic of Germany." *Review of Income and Wealth* 36:319-333.

Burkhauser, Richard V. 1994. "Protecting the most vulnerable: A proposal to improve social security insurance for older women." *The Gerontologist* 34:148-149.

Burkhauser, Richard V. et al. 1991. "Wife or Frau? Women do worse: A comparison of men and women in the United States and Germany after marital dissolution." *Demography* 28:353-360.

Burkhauser, Richard V., J. S. Butler and Karen C. Holden. 1991. "How the death of a spouse affects economic well-being after retirement: A hazard model approach." *Social Science Quarterly* 72:504-519.

Burkhauser, Richard V. and Greg J. Duncan. 1988. "Life events, public policy, and the economic vulnerability of children and the elderly." *The Vulnerable*, Eds. John L. Palmer et al. Washington D.C.: The Urban Institute Press.

Burkhauser, Richard V. and John G. Poupore. 1997. "A crossnational comparison of permanent inequality in the United States and Germany." *Review of Economics and Statistics* 79:10-15.

Burkhauser, Richard V., Timothy M. Smeeding and Joachim Merz. 1994. *Relative inequality and poverty in Germany and the United States using alternative equivalence scales*. All-University Gerontology Center. Public Policy Series Cross-national studies in ageing(Program project paper no. 18). Syracuse NY: Maxwell School of Citizenship and Public Affairs.

Burkhauser, Richard V. and Timothy M. Smeeding. 1994. *Social security reform: A Budget neutral approach to reducing older women's disproportionate risk of poverty.* Policy Brief(No. 2/1994). Syracuse NY: Maxwell School of Citizenship and Public Affairs Center for Policy Research.

Burkhauser, Richard V. and Jennifer Warlick. 1982. "Disentangling the annuity from the redistributive aspects of social security in the United States." *Review of Income and Wealth* 401-421.

Burkhauser, Richard V. and J. T. Wilkinson. 1983. "The effect of retirement on income distribution: A comprehensive income approach." *Review of Economics and Statistics* 65:653-58.

Castles, Francis G. 1993. *Families of nations. Patterns of Public Policy in Western democracies*. Aldershot: Dartmouth Publishing Company.

______. 1981. "How does politics matter? Structure and agency in the determination public policy outcomes." *European Journal of Political Research* 9:119-132.

______. 1997. "Leaving the Australian Labour Force: An Extended Encounter with the State." *Governance* 10:1-22.

______. 1985. *The working class and welfare. Reflections on the political development of the welfare state in Australia and New Zealand, 1890-1980.* Wellington: Allen & Unwin.

Castles, Francis G. and Deborah Mitchell. 1991. *Three worlds of welfare capitalism or four?* Luxembourg Income Studies Working Paper Series(No. 63). Luxembourg: CEPS/INSTEAD.

______. 1993. "Worlds of welfare and families of nations." *Families of nations. Patterns of Public Policy in Western democracies*, Ed. Francis G. Castles. Aldershot: Dartmouth Publishing Company.

Coate, Stephen. 1995. "Altruism, the Samaritan's dilemma, and government transfer policy." *The American Economic Review* 85:46-57.

Coulter, Fiona A. E. et al. 1992. "Equivalence scale relativities and the extent of inequality and poverty." *Economic Journal*

Coward, Laurence E. 1995. *Private pensions in OECD countries. Canada*, Ed. Elisabeth Duskin. Social Policy Studies(No. 15). Paris: OECD.

Cowell, Frank A. 1995. *Measuring inequality. Second Edition.* London: Prentice Hall. Harvester Wheatsheaf.

Cowell, Frank A. and Stephen P. Jenkins. 1994. *How much inequality can we explain? A methodology and an application to the USA.* Distributional Analysis Research programme(Discussion Paper No. DARP-7). London: Centre for Economics and Related Disciplines, London School of Economics.

Creedy, John. 1985. *Dynamics of Income Distribution.* Oxford: Basil Blackwell.

Crossman, Richard. 1981. *The backbench diaries of Richard Crossman.* London: Hamish Hamilton LTD.

Culyer, A. J. 1980. *The Political economy of social policy.* New York: St. Martins Press.

Dagum, Camilo. 1997. "A new approach to the decomposition of the Gini income inequality ratio." *Empirical Econonomics* 22:515-531.

Daly, Mary. 1996. *The gender division of welfare: The British and German welfare states compared.* PhD Thesis. Florence: European University Institute.

Davies, Hugh and Joshi Heather. 1995. *Social and family security in the redress of unequal opportunities.* European Forum 1994-95: Gender and the use of time. Florence: European University Institute.

Davies, Hugh and Heather Joshi. 1994. "Sex, sharing and the distribution of income." *Journal of social policy* 23:301-340.

Day, Lincoln A. 1978. "Government pensions for the aged in 19 industrial countries: Demonstration of a method for crossnational evaluation." *Comparative Studies in Sociology* 1:217-233.

Daykin, Christopher D. 1996. "Occupational pension provision in the United Kingdom." *Securing employer-based pensions. An international perspective*, Eds. Zvi Bodie, Olivia S. Mitchell and John A. Turner. Philadelphia: Pension Research Council.

Delhausse, Bernhard, Sergio Perelman and Pierre Pestieau. 1994. *Retirement and growing old: Which model of protection?* Luxembourg Income Study Working Paper Series(No. 107). Luxembourg: CEPS/INSTEAD.

DeViney, Stanley. 1984. "The political economy of public pensions: A cross-national analysis." *Journal of Political and Military Sociology* 12:295-310.

Diamond, P. A. 1977. "A framework for social security analysis." *Journal of public economics* 8:275-98.

Diamond, P. A. and J. A. Hausman. 1984. "Individual retirement and savings behavior." *Journal of Public Economics* 23:81-114.

Dich, Jørgen. 1973. *Den herskende klasse*. Copenhagen: Borgen.

Dilnot, Andrew. 1992. "Taxation and private pensions: Costs and consequences." *Private pensions and public policy*, Elizabeth Duskin. Social Policy Studies, No.9, Paris: OECD.

Döring, Dieter et al. 1994. "Old-Age security for women in the twelve EC countries." *Journal of European Social Policy* 4:1-18.

Duncan, Otis D. 1975. "Does money buy satisfaction?" *Social Indicators Research* 2:267-274.

Easterlin, R. A. 1974. "Does economic growth improve the human lot? Some empirical evidence." *Nations and households in economic growth. Essays in the hounour of Moses Abramowitz*, Eds. P. A. David and M. W. Reder. New York: Academic Press.

______. 1973. "Does money buy happiness?" *The Public Interest* 30:3-10.

Edebalk, Per Gunnar and Eskil Wadensjö. 1989. "Contractually determined insurance schemes for manual workers." Pp. 195-210 in *The political economy of social security*, Eds. B. A. Gustafsson and N.A. Klevmarken. Amsterdam: Elsevier Science Publishers.

Efron, Bradley. 1982. *The jackknife, the bootstrap, and other resampling plans*. Philadelphia: Society for Industrial and Applied Mathematics.

Ellwood, David T. and Thomas J. Kane. 1989. "The American way of ageing: An event history analysis." Working Paper No. 2892. Cambridge: NBER.

Elmer, Åke. 1986. *Svensk socialpolitik*. Stockholm: Liber.

Elster, Jon. 1989. *Nuts and bolts for the social sciences*. Cambridge: Cambridge University Press.

Erskine, Angus. 1997. "The withering of social insurance in Britain." *Social insurance in Europe*, Ed. Jochen Clasen. Bristol: The Policy Press.

Esping-Andersen, Gøsta. 1985. "Power and distributional regimes." *Politics and Society* 14:223-256.

______. 1987. *State and market in the formation of social security regimes. A political economy approach.* Working paper. Florence: European University Institute.

______. 1990. *Three worlds of welfare capitalism*. Cambridge: Polity Press.

Esping-Andersen, Gøsta and Walter Korpi. 1987. "From poor relief to institutional welfare state: The development of Scandinavian social policy." *The scandinavian model*, Robert Eriksson et al. Aarmonk, N.Y.: M.E. Sharpe.

Everitt, Brian. 1974. *Cluster analysis*. London: Heinemann Educational Books.

Falkingham, Jane and Christina Victor. 1991. "The myth of the woopie? Incomes, the elderly, and targetting welfare." Discussion Paper WSP/55. The Welfare State Programme. London: Suntory-Toyota International Centre for Econoics and Related Disciplines, London School of Economics.

Falkingham, Jane and Chris Gordon. 1988. "Fifty years on: The income and household composition of the elderly in Britain." Discussion Paper WSP/35. The Welfare State Programme. London: Suntory-Toyota Centre for Economics and Related Disciplines, London School of Economics.

Feldman, Allan and Alan Kirman. 1974. "Fairness and envy." *The American Economic Review* 64:995-1005.

Feldstein, Martin. 1987. "Should social security benefits increase with age?" Cambridge: NBER.

______. 1974. "Social security, induced retirement, and aggregate capital accumulation." *Journal of Political Economy* 82:905-26.

Fløtten, Tone, Axel West Pedersen. 1996. *Sikkerhetsordninger i det norske arbeidsmarkedet.* Oslo: Fafo.

Fölster, Stefan. 1998. "Innkomstfördelning i välfärdsstaten." *Ekonomisk Debatt* 26:283-294.

Frank, Robert H. 1985. *Choosing the right pond. Human behavior and the quest for status.* Oxford: Oxford University Press.

Freeman, Richard B. 1981. "The effect of unionism on fringe benefits." *Industrial and Labor Relations Review* 34:489-509.

______. 1985. "Unions, pensions, and union pension funds." *Pensions, labor, and individual choice*, Ed. D. A. Wise. Chicago: University of Chicago Press.

Freeman, Richard B. (ed.). 1994. *Working under different rules.* New York: Russel Sage.

Freeman, Richard B., James L. Medoff. 1984. *What do unions do?* New York: Basic Books.

Fritzell, Johan. 1991. "Icke av marknaden allena: Inkomstfördelingen i Sverige." Doctoral Dissertation. Stockholm: Swedish Institute of Social Research.

______. 1993. "Income inequality trends in the 1980s: A five-country comparison." *Acta Sociologica* 36:47-62.

Gambetta, Diego. 1987. *Were they pushed or did they jump? Individual decision mechanisms in education.* Cambridge: Cambridge University Press.

Goedhart, Theo et al. 1977. "The poverty line: Concept and measurement." *The Journal of Human Resources* 12:503-520.

Goldthorpe, John. 1995. *Class analysis and the reorientation of class theory: The case of persisting differentials in educational attainment.* (Mimeo). Oxford: Nuffield College, University of Oxford.

______. 1997. "Current issues in comparative macrosociology." *Comparative Social Research. Methodological issues in comparative social science*, Eds. Lars Mjøset et al. London: JAI Press.

Goodin, Robert E. 1990. "Stabilizing expectations: The role of earnings-related benefits in social welfare policy." *Ethics* 100:530-553.

Goodin, Robert E., Julian Le Grand. 1987. *Not only the poor: The middle classes and the welfare state.* London: Allen & Unwin.

Gottschalk, Peter and M. Joyce. 1997. *Cross-national differences in the rise of earnings inequality - market and institutional factors.* Luxembourg Income Study Working Paper No. 160. Luxembourg: LIS/CEPS.

______. 1992. *Is earnings inequality also increasing in other industrialized countries?* Luxembourg Income Study Working Paper No. 66. Luxembourg: LIS/CEPS.

Gough, Ian. 1979. *The political economy of the welfare state.* London: Macmillan.

Graebner, William. 1980. *A history of retirement.* New Haven: Yale University Press.

Gravingsmyhr, Hanne A. 1995. "Pensjonister, pensjon og skattlegging. Fremskrivning av antallet pensjonister og pensjonsinntekt frem til 2030. Økonomiske analyser 3/95. Oslo: Statistics Norway.

Guillemard, Anne-Marie. 1991. "International perspectives on early withdrawal from the labor force." *States, labor markets, and the future of old age policy*, Eds. John Myles and Jill Quadagno. Philadelphia: Temple University Press.

Gustafsson, Björn and Mats Lindblom. 1993. "Poverty lines and poverty in seven european countries." *Journal of European Social Policy* 3:21-38.

Hannah, Leslie. 1986. *Inventing retirement.* Cambridge: Cambridge University Press.

______. 1992. "Similarities and differences in the growth and structure of private pensions in the OECD countries." *Private pensions and public policy*, Elizabeth Duskin. Social Policy Studies, No.9, Paris: OECD.

Hansen, Hans. 1997. *Housing benefits and incentives.* CWR Working Paper Series. Copenhagen: Centre for Welfare State Research, The Danish National Institute of Social Research.

Hatland, Aksel. 1984. *The future of Norwegian social insurance.* Oslo: INAS.

______. 1992. *Til dem som trenger det mest? Økonomisk behovsprøving i norsk sosialpolitikk.* Oslo: Universitetsforlaget.

Hatland, Aksel, Einar Øverbye and Å. Vigran. 1993. *Minimum income protection during old age in member states of the Council of Europe.* Report to the Council of Europe. Strasbourg: Council of Europe.

Hauser, Richard. 1997. *Adequacy and poverty among the retired.* Paper presented at the Joint ILO-OECD Workshop: Development and reform of pension schemes. Paris 15.-17. December 1997.

______. 1993. "Problems of comparative social policy analysis. The case of pension systems and income security for the elderly." *Research on income inequality, vol. 3*, Ed. Daniel J. Slottje. London: JAI Press.

Håkansson, Sune. 1989. "Problemen med ATP - en kommentar." *Ekonomisk debatt* 17:662-666.

Heclo, Hugh. 1974. *Modern social policies in Britain and Sweden.* New Haven: Yale University Press.

Hedström, Peter and Stein Ringen. 1990. "Age and Income in Contemporary Society." *Poverty, inequality and income distribution in comparative perspective*, Eds. Timothy Smeeding et al. Hertfordshire: Harvester Wheatsheaf.

Heidenheimer, Arnold J. 1990. "Taxation policy." *Comparative public policy. The politics of social choice in Europe and America*, Eds. Arnold J. Heidenheimer, Hugh Heclo and Adams Carolyn Teich. Third ed. London: St. Martin's Press.

Hicks, Alexander and Duane Swank. 1985. "The determinants and redistributive impacts of state welfare spending in the advanced capitalist democracies, 1960-1980." *Political economy of Western democracies*, Eds. Norman J. Vig and Steven E. Schier. New York: Holmes & Meier.

Hinrichs, Karl. 1993. *Public pensions and demographic change: Generational equity in the United States and Germany.* ZeS-Arbeitspapier(No. 16/93). Bremen: Centre for Social Policy Research, Universität Bremen.

Hippe, Jon and Axel West Pedersen. 1996. "The Labor movement, social policy and occupational welfare in Norway." *The privatization of social policy? Occupational welfare and the welfare state in America, Scandinavia and Japan*, Ed. Michael Shalev. London: Macmillan.

Hippe, Jon, Axel West Pedersen. 1992. *Når jobben betaler. En analyse av velferdsordinger i arbeidsmarkedet.* Oslo: FAFO.

Hirsch, Fred. 1977. *Social limits to growth.* London: Routledge & Kegan Paul.

Hirschman, Albert O. 1991. *The rhetoric of reaction.* Cambridge: The Belknap Press.

Holden, Karen C., Richard V. Burkhauser and Daniel A. Myers. 1986. "Income transitions at older stages of life: The dynamics of poverty." *The Gerontologist* 26:292-297.

Holden, Karen C., Richard V. Burkhauser and Daniel J. Feaster. 1988. "The timing of falls into poverty after retirement and widowhood." *Demography* 25:405-414.

Holland, Paul W. 1986. "Statistics and causal inference." *Journal of American Statistical Association* 81:945-70.

Holland, Paul W. and D. B. Rubin. 1983. "On Lord's paradox." *Principals of modern psychological measurement*, Eds. H. Wainer and S. Messick. Hillsdale, N.J.: Lawrence Erlbaum.

Hopkins, T. K. 1987. "World-System Analysis: Methodological issues." *Change in the capitalist world economy*, Ed. K. B. Kaplan. Beverly Hills: Sage.

Hout, Michael. 1983. *Mobility tables.* Beverly Hills: Sage.

Hox, J. J. 1994. *Applied multilevel analysis.* Amsterdam: TT-Publikaties.

Huber, Evelyne, Charles Ragin and Stephens John D. 1993. "Democracy, Constitutional Structure, and the Welfare State." *American Journal of Sociology* 99:711-749.

Huber, Evelyne and John D. Stephens. 1993. "Political parties and public pensions. A quantitative analysis." *Acta Sociologica* 36:309-325.

Hurd, Michael D. 1990. "Research on the elderly: Economic status, retirement, and consumption and saving." *Journal of Economic Literature* 28:565-637.

Hurd, Michael D. and David A. Wise. 1987. "The wealth and poverty of widows: Assets before and after the husband's death." Working Paper No.2325. Cambridge: NBER.

Hutton, Sandra and Peter Whiteford. 1994. "Gender and retirement incomes: A comparative analysis." *Social security and social change: New challenges to the Beveridge Model*, Eds. Sally Baldwin and Jane Falkingham. New York: Harvester Wheatsheaf.

Hyman, Jeffrey and Tom Schuller. "Occupational pension schemes and collective bargaining." *British Journal of Industrial Relations*

Immergut, Ellen M. 1992. *Health policy: Interests and institutions in Western Europe.* Cambridge: Cambridge University Press.

Iverson, G. R. 1991. *Contextual analysis.* Newbury Park: CA: Sage.

Janoski, Thomas and Alexander M. Hicks. 1994. "Methodological innovations in comparative political economy: An introduction." *The comparative political economy of the welfare state*, Thomas Janoski and Alexander M. Hicks. Cambridge MA: Cambridge University Press.

Jäntti, Markus, Olli Kangas and Veli-Matti Ritakallio. 1996. "From marginalism to institutionalism: Distributional consequences of the transformation of the Finnish pension regime." *Review of Income and Wealth* 42:473-491.

Jenkins, Stephen P. 1995. "Accounting for inequality trends: Decomposition analyses for the UK, 1971-86." *Economica* 62:29-63.

______. 1988. "Calculating income distribution indices from micro-data." *National Tax Journal* 41:139-142.

______. 1995. "Easy estimation methods for discrete-time duration models." *Oxford Bulletin of Economics and Statistics* 57:129-137.

Johnson, Paul. 1992. *The future of pensions in the European Community*, Ed. Jørgen Mortensen. Brussels: Brassey's, CEPS.

Johnson, Paul et al. 1989. *Workers versus pensioners. Intergenerational justice in an ageing world.* Manchester: Manchester University Press.

Johnson, Paul, Jane Falkingham. 1992. *Ageing and economic welfare.* London: Sage.

Johnston, J. 1991. *Econometric methods.* New York: McGraw-Hill International Editions.

Kakwani, Nanak. 1986. *Analyzing redistribution policies. A study of Australian data.* Cambridge: Cambridge University Press.

Kangas, Olli. 1994. "The merging of welfare state models? Past and present trends in finnish and swedish social policy." *Journal of European Social Policy* 4:79-94.

______. 1991. *The politics of social rights: Studies on the dimensions of sickness insurance in 18 OECD countries.* Stockholm: Swedish Institute for Social Research, University of Stockholm.

______. 1994. "The politics of social security: On regressions, qualitative comparisons, and cluster analysis." *The comparative political economy of the welfare state*, Thomas Janoski and Alexander M. Hicks. Cambridge MA: Cambridge University Press.

Kangas, Olli and Joakim Palme. 1996. "The development of occupational pensions in Finland and Sweden: Class politics and institutional feedbacks." *The Privatization of social policy? Occupational welfare and the welfare state in America, Scandinavia and Japan*, Ed. Michael Shalev. London: Macmillan.

______. 1992. "The private-public mix in pension policy." *The study of welfare state regimes*, Ed. Jon E. Kolberg. New York: M.E. Sharpe.

______. 1993. "Statism eroded? Labor-market benefits and challenges to the Scandinavian welfare states." *Welfare trends in the Scandinavian countries*, Eds. Erik Jørgen Hansen et al. Armonk NY: M.E. Sharpe.

Kapteyn, Arie et al. 1980. "The dynamics of preference formation." *Journal of Economic Behavior and Organization* 1:123-157.

Kapteyn, Arie and Bertrand Melenberg. 1993. "Measuring the well-being of the elderly." Pp. 161-188 in *Age, work and social security*, Eds. A. B. Atkinson and Martin Rein. London: The Macmillan Press LTD.

Kapteyn, Arie and Tom J. Wansbeek. 1982. "Empirical evidence on preference formation." *Journal of Economic Psychology* 2:137-154.

Katzenstein, P. 1985. *Small states in world markets.* Ithaca, NY: Cornell University Press.

King, Gary, Robert O. Keohane, Sidney Verba. 1994. *Designing social inquiry: Scientific inference in qualitative research.* Princeton: Princeton University Press.

Klein, Rudolph and Michael O'Higgins. 1983. *Concepts, criteria and conflicts in analysing the mixed economy of welfare.* Paper presented at the Annual Conference of the Social Administration Association, Rutherford College, University of Kent at Canterbury, 13-15 July, 1983.

Knox, David M. 1987. *Taxation support of superannuation in Australia: Its costs, equity and efficacy.* Research Study(No. 7). Sydney: Australian Tax Research Foundation.

Kohl, Jürgen. 1993. "Minimum standards in old age security and the problem of poverty in old age." Eds. Anthony B. Atkinson and Martin Rein. New York: St. Martin's Press.

______. 1988. *Public/private mixes in pension policies: Some examples from Western Europe.* Luxembourg Income Studies Working Paper. Luxembourg: CEPS/INSTEAD.

______. 1992. *The public/private mix in the income packages of the elderly: A comparative study.* LIS Working Paper series No. 78. Walferdange: Luxembourg Income Study CEPS/INSTEAD.

Kohli, Martin et al. 1991. *Time for retirement. Comparative studies of early exit from the labor force.* Cambridge: Cambridge University Press.

Kolm, S. C. 1976. "Unequal inequalities I." *Journal of Economic Theory* 12:416-42.

______. 1976. "Unequal inequalities II." *Journal of Economic Theory* 13:82-111.

Korpi, Walter. 1989. "Power, politics, and state autonomy in the development of social citizenship: Social rights during sickness in eighteen OECD countries since 1930." *American Sociological Review* 309-328.

______. 1981. "Social policy and distributional conflict in the capitalist democracies. A preliminary comparative framework." *West European Politics* 297-316.

Korpi, Walter and Joakim Palme. 1994. *The strategy of equality and the paradox of redistribution.* Paper delivered at the XIIIth World Congress of Sociology, Bielefeld, July 13-18, 1994. Bielefeld.

Kotlikoff, Laurance J. 1987. "Intergenerational transfers and savings." Working Paper No. 2237. Cambridge: NBER.

Kotlikoff, Laurance J. and David A. Wise. 1987. "Employee retirement and a firm's pension plan." Working Paper No.2323. Cambridge: NBER.

Kotlikoff, Lawrence. 1992. *Generational accounting.* New York: Free Press.

Kuznets, Simon. 1955. "Economic growth and income inequality." *American Economic Review* 45:1-28.

Kvist, Jon. 1992. *Taxation of pensions in the EC - A national overview.* Deventer: Kluwer Law and Taxations Publishers.

Lambert, Peter J. 1993. *The distribution and redistribution of income. A mathematical analysis.* London: Basil Blackwell.

Lambert, Peter J. and Shlomo Yitzhaki. 1995. "Equity, equality and welfare." *European Economic Review* 39:674-682.

Layard, Richard. 1980. "Human satisfaction and public policy." *The Economic Journal* 90:737-750.

______. 1977. "On measuring the redistribution of lifetime income." *The economics of public services*, Eds. M. S. Feldstein and R. P. Inman. London: Macmillan Press.

Lazear, E. 1983. "Pensions as severance pay." *Financial aspects of the United States pension system*, Eds. Zvi Bodie and J. B. Shoven. Chicago: University of Chicago Press.

Le Grand, Julian. 1987. "Measuring the distributional impact of the welfare state: Methodological issues." *Not only the poor: The middle classes and the welfare state*, Robert E. Goodin and Julian Le Grand. London: Allen & Unwin.

______. 1982. *The strategy of equality: Redistribution and the social services.* London: Allen & Unwin.

Lerman, Robert I. and Shlomo Yitzhaki. 1989. "Improving the accuracy of estimates of Gini Coefficients." *Journal of Econometrics* 42:43-47.

______. 1985. "Income inequality effects by income source: A new approach and applications to the United States." *The Review of Economics and Statistics* 67:151-156.

______. 1984. "A note on the calculation and interpretation of the Gini index." *Economic Letters* 15:363-368.

Lieberson, Stanley. 1985. *Making it count: The improvement of social research and theory.* Berkley: University of California Press.

______. 1994. "More on the uneasy case for using Mill-type methods in small-N comparative studies." *Social Forces* 72:1225-1237.

______. 1992. "Small N's and big conclusions: An examination of the reasoning in comparative studies based on a small number of cases." *What is a case? Exploring the foundations of social inquiry*, Eds. Charles C. Ragin and Howard S. Becker. Cambridge Mass.: Cambridge University Press.

Lumsdaine, Robin L. et al. 1995. *Why are retirement rates so high at age 65?* NBER Working Paper Series(No. 5190). Cambridge MA: National Bureau of Economic Research.

Lutjens, Erik. 1996. "Supplementary pensions in the Netherlands." *International perspectives on supplementary pensions. Actors and issues*, Ed. Emmanuel Reynaud et al. London: Quorum Books.

Magnussen, Knut A. 1994. *Old-age pensions, retirement behaviour and personal saving. A discussioon of the literature.* Social and Economic Studies 87. Oslo: Statistics Norway.

Marshall, T. H. 1950. *Citizenship and Social Class.* Cambridge: Cambridge University Press.

Mayer, Thomas. 1972. *Permanent income, wealth and consumption.* Berkeley: University of California Press.

McIsaac, Sandra and Richard Wilkinson. 1995. *Cause of death, income distribution, and problems of response rates.* Luxembourg Income Studies Working Paper Series(No. 136). Luxembourg: CEPS/INSTEAD.

Misra, Joya and Alexander Hicks. 1994. "Catholisism and unionization in affluent postwar democracies: Catholisism, culture, party, and unionization." *American Sociological Review* 59:304-326.

Mitchell, Deborah. 1991. "Comparing income transfer systems: Is Australia the poor relation?" *Australia compared. People, policies and politics*, Ed. Francis Castles. North Sydney: Allen & Unwin.

______. 1991. *Income transfers in ten welfare states.* Aldershot: Avebury.

______. 1995. "International comparisons of income inequality." *As the rich get richer: Changes in Income Distribution in Australia*, Ed. J. Nevile. Sydney: Committee for Economic Development of Australia.

Mitchell, Deborah, Ann Harding and Fred Gruen. 1994. "Targeting welfare." *The Economic Record* 70:315-340.

Mjøset, Lars (ed.). 1986. *Norden dagen derpå.* Oslo: Universitetsforlaget.

Molin, Björn. 1965. *Tjänstepensionsfrågan: En studie i Svensk partipolitik.* Göteborg: Akademiförlaget.

Mueller, Dennis C. 1979. *Public Choice.* Cambridge: Cambridge University Press.

______. 1989. *Public choice II.* Cambridge: Cambridge University Press.

Muller, Edwar N. 1989. "Distribution of income en advances capitalist states: Political parties, labour unions, and the international economy." *European Journal of Political Research* 17:367-400.

Munnell, Alicia H. 1982. *The economics of private pensions.* Washington D.C.: The Brookings institution.

Murrey, Charles. 1984. *Losing ground.* New York: Basic Books.

Myles, John. 1989. *Old age in the welfare state. The political economy of public pensions.* Lawrence: University Press of Kansas.

Myles, John and Jill Quadagno. 1997. "Recent trends in public pension reform: A comparative review." *Reform of retirement income policy. International and Canadian perspectives*, Eds. Keith G. Banting and Robin Boadway. Kingston, Ontario: School of Policy Studies, Queen's University.

Myles, John and Les Teichroew. 1991. "The politics of dualism: Pension policy in Canada." *States, labor markets, and the future of old age policy*, Eds. John Myles and Jill Quadagno. Philadelphia: Temple University Press.

Newbery, David. 1970. "A theorem on the measurement of inequality." *Journal of Economic Theory* 2:264-266.

Neyens, Pierre, Edmond Koob. 1992. *Pension schemes in the european public sector.* Maastricht: European Institute of Public Administration.

Nordic Social-Statistical Committee. 1990. *Social Security in the Nordic Countries. Scope, expenditure and financing 1987.* Copenhagen: Nordic Statistical Secretariat.

North, Douglass C. 1990. *Institutions, institutional change and economic performance.* Cambridge: Cambridge University Press.

Nørregård, Carl et al. 1995. *Fagbevægelsens seniorer og pensionister.* Copenhagen: Socialforskningsinstituttet.

O'Connor, James. 1973. *The fiscal crisis of the state.* New York: St Martin's Press.

O'Higgins, Michael. 1980. "The distributive effects of public expenditure and taxation: An agnostic view of the CSO analysis." *Taxation and social policy*, Eds. C. Sandford et al. London: Heineman Educational Books.

O'Higgins, Michael et al. 1990. "Income distribution and redistribution: A microdata analysis of seven countries." *Poverty, inequality and income distribution in comparative perspective: The Luxembourg Income Study*, Eds. Timothy Smeeding et al. Hertfordshire: Harvester Wheatsheaf.

O'Higgins, Michael. 1986. "Public/Private interaction and pension provision." *Public/private interplay in social protection. A comparative study*, Eds. Lee Rainwater and Martin Rein. London: M.E. Sharpe.

Okun, Arthur. 1975. *Equality and efficiency: The big trade-off.* Washington D.C.: The Brookings Institute.

Olsberg, D. 1995. "Australia's retirement income revolution: A Finnish system "down under"." *Scandinavian Journal of Social Welfare* 4:8-18.

Paglin, Morton. 1975. "The measurement and trend of Inequality: A basic revision." *The American Economic Review* 65:598-609.

Palme, Joakim. 1989. *Models of pensions and income inequality: A comparative analysis.* Working paper. Stockholm: Swedish Institute for Social Research.

______. 1990. "Pension rights in welfare capitalism. The development of old-age pensions in 18 OECD countries 1930 to 1985." Doctoral Dissertation. Stockholm: Swedish Institute for Social Research.

Palme, Joakim and Ann-Charlotte Ståhlberg. 1993. "A view from Scandinavia: Reforms in Sweden." *Journal of European Social Policy* 3:53-59.

Palme, Mårten and Ingemar Svensson. 1997. *Social security, occupational pensions, and retirement in Sweden.* NBER Working Paper Series(No. 6137). Cambridge MA: National Bureau of Economic Research.

Pampel, Fred C., John B. Williamson. 1989. *Age, class, politics and the welfare state*. Cambridge: Cambridge University Press.

Pampel, Fred C. and John B. Williamson. 1985. "Age structure, politics, and cross-national patterns of public pension expenditures." *American Sociological Review* 50:782-98.

Pedersen, Axel West. 1997. *Do public pensions hamper the growth of private pensions? A comparative study of time series data for Denmark and Norway*. CWR Working Paper No.7/1997. Copenhagen: Centre for Welfare State Research, The Danish National Institute for Social Research.

______. 1990. *Fagbevegelsen og folketrygden. LO's målsetninger, strategi og innflytelse i pensjonspolitikken 1945-1966*. Fafo-rapport nr. 110. Oslo: Fafo.

______. 1998. *Inntektsfordelingen blant alderspensjonister i ni OECD-land*. Oslo: Fafo.

______. 1994. *The welfare state and inequality: Still no answer to the big questions*. Luxembourg Income Study Working Paper Series(No. 109). Luxembourg: CEPS/INSTEAD.

Persson, Mats. 1991. "Vad är det för fel på ATP-systemet?" *Ekonomisk Debatt* 19:205-218.

______. 1995. "Why are taxes so high in egalitarian societies?" *Scandinavian Journal of Economics* 97:101-112.

Pestieau, Pierre. 1992. "The distribution of private pension benefits: How fair is it?" *Private pensions and public policy*, Ed. Elizabeth Duskin. Social Policy Studies, No.9, Paris: OECD.

Petersen, Jørn Henrik. 1990. "The Danish 1891 act on old age relief: A response to agrarian demand and pressure." *Journal of Social Policy* 19:69-91.

______. 1984. "Three Danish predecessors to modern theories on old-age pensions. A contribution to the history of social policy doctrines." Occational Papers No. 13. Odense: Department of Public Finance and Policy, Odense University.

Pierson, Paul. 1995. *Dismantling the welfare state. Reagan, Thatcher and the politics of retrenchment*. Cambridge: Cambridge University Press.

Podder, Nripesh. 1993. "The disaggregation of the Gini coefficient by factor components and its application to Australia." *Review of Income and Wealth* 39:51-61.

Pontusson, Göran. 1984. *Public pension funds and the politics of capital formation in Sweden*. Stockholm: Arbeidslivscentrum.

Popper, Karl. 1959. *The logic of scientific discovery*. London': Routledge & Kegan Paul.

______. 1986. *The poverty of historicism*. London: Ark Paperbacks.

Przeworski, Adam. 1987. "Methods of cross-national research, 1970-83: An overview." *Comparative Policy Research*, M. Dierkes et al. Berlin: WZB-Publications.

Przeworski, Adam, Henry Teune. 1970. *The logic of comparative social inquiry*. New York: Wiley.

Pyatt, G. 1976. "The interpretation and disaggregation of Gini coefficients." *Economic Journal* 86:243-255.

Quadagno, Jill S. 1994. *The color of welfare. How racism undermined the war on poverty*. New York: Oxford University Press.

______. 1990. "Generational equity and the politics of the welfare state." *International Journal of Health Services* 20:631-649.

Quadagno, Jill and Melissa Hardy. 1996. "Private pensions, state regulation and income security for older workers: The US auto industry." *The privatization of social policy? Occupational welfare and the welfare state in America, Scandinavia and Japan*, Michael Shalev. London: Macmillan.

Quinn, Joseph F. 1987. "The economic status of the elderly: Beware of the mean." *Review of income and wealth* 33:63-82.

Ragin, Charles. 1987. *The comparative method.* Berkeley: University of California Press.

______. 1994. "Introduction to qualitative comparative analysis." *The comparative political economy of the welfare state*, Ed. Thomas Janoski and Alexander M. Hicks. Cambridge: Cambridge University Press.

______. 1994. "A qualitative comparative analysis of pension systems." *The comparative political economy of the welfare state*, Ed. Thomas Janoski and Alexander M. Hicks. Cambridge: Cambridge University Press.

Rainwater, Lee et al. 1986. *Income packaging in the welfare state. A comparative study of family income.* Oxford: Clarendon Press.

Rainwater, Lee. 1990. *Poverty and equivalence as social constructions.* Luxembourg Income Studies Working Paper Series(No. 55). Luxembourg: CEPS/INSTEAD.

______. 1993. *The social wage in the income package of working parents.* Luxembourg Income Studies Working Paper Series(No. 89). Luxembourg: CEPS/INSTEAD.

______. 1974. *What money buys: Inequality and the social meanings of income.* New York: Basic Books.

Rainwater, Lee and Martin Rein. 1993. "The economic well-being of older men in six countries." Pp. 115-131 in *Age, work and social security*, Eds. Atkinson A.B. and Martin Rein. London: Macmillan Press LTD.

Rawls, John. 1972. *A theory of justice.* Oxford: Oxford University Press.

Rein, Martin. 1983. *From policy to practice.* New York: M.E. Sharpe.

______. 1974. "Policy analysis and equality." *Social problems and public policy: Inequality and justice*, Ed. Lee Rainwater. Chicago: Aldine Pubishing Company.

Rein, Martin, Lee Rainwater. 1986. *Public/private interplay in social protection.* New York: M.E. Sharpe.

Reynaud, Emmanuel. 1997. *Private pensions in OECD countries - France.* Labour Market and Social Policy(Occational Papers No.30). Paris: OECD.

Rimlinger, Gaston. 1971. *Welfare Policy and Industrialization in Europe, America and Russia.* New York: John Wiley and Sons.

Ringdal, Kristen. 1991. "Multilevel analysis - the hierarchical linear model." *Tidsskrift for samfunnsforskning* 32:521-540.

Ringen, Stein. 1991. "Do welfare states come in models?" In *Social Policy in Australia: Options for the 1990s.* Proceedings of National Social Policy Conference. Sydney, 3-5 July 1991 Vol 1. Plenary Sessions. Kensington: Social Policy Research Centre. The University of New South Wales.

______. 1987. *The possibility of politics.* Oxford: Clarendon.

Ringen, Stein and Hannu Uusitalo. 1992. "Income distribution and redistribution in the Nordic welfare states." *Between work and social citizenship*, Ed. Jon E. Kolberg. New York: M.E. Sharpe.

Rose, Richard, Rei Shiratori. 1986. *The welfare state in East and West.* New York: Oxford University Press.

Rosenberry, S. A. 1982. "Social insurance, distributive criteria and the welfare backlash: A comparative analysis." *British Journal of Political Science* 12:421-427.

Ross, C. M., S. Danziger and E. Smolensky. 1987. "Interpreting changes in the economic status of the elderly, 1949-1979." *Contemporary Policy Issues* 5:98-112.

Rueschemeyer, Dietrich. 1991. "Different methods - contradictory results? Research on development and democracy." *Issues and alternatives in comparative social research*, Ed. Charles Ragin. Leiden: E.J. Brill.

Runciman, W. G. 1966. *Relative deprivation and social justice: A study of attitudes to social inequality in twentieth-century England.* London: Routledge & Kegan Paul.

Salminen, Kari. 1993. *Pension schemes in the making: A comparative study of the Scandinavian countries.* Helsinki: The Central Pension Security Institute.

Sastry, D. V. S. and Ujwala R. Kelkar. 1994. "Note on the decomposition of Gini inequality." *The Review of Economics and Statistics* 76:584-586.

Saunders, Peter et al. 1994. "Making ends meet in Australia and Sweden: A comparative analysis using the subjective poverty line methodology." *Acta Sociologica* 37:3-22.

Schechtman, E. and Shlomo Yitzhaki. 1987. "A measure of association based on Gini's mean difference." *Communications in statistics - Theory and Methods* 16:207-231.

Schmähl, Winfried. 1993. "The '1992 reform' of public pensions in Germany: Main elements and some effects." *Journal of European Social Policy* 3:39-51.

______. 1983. "Income analysis based on longitudinal data from social security earnings records: The relative earnings position (age-earnings profile) and the individual replacement rate of German workers." *Panel data on incomes*, Frank A. Cowell and A. B. Atkinson. STICERD Occational Papers, 2, London: London School of Economics.

______. 1992. *Mindestesicherung im Alter.* Frankfurt: Campus Verlag.

Schmähl, Winfried and Stefan Böhm. 1996. "Supplementary pensions in the Federal Republic of Germany." *International perspectives on supplementary pensions. Actors and issues*, Ed. Emmanuel Reynaud et al. London: Quorum Books.

Seidl, Christian. 1988. "Poverty measurement: A survey." *Welfare and efficience in public economics*, Eds. D. Bös, M. Rose and C. Seidl. Berlin: Springer Verlag.

Sen, Amartya. 1974. "Informational bases of alternative welfare approaches." *Journal of Public Economics* 3:387-403.

______. 1973. *On economic inequality.* Oxford: Oxford University Press.

______. 1983. "Poor relatively speaking." *Oxford Economic Papers* 35:153-67.

______. 1976. "Real national income." *Review of Economic Studies* 43:19-39.

Shalev, Michael. 1983. "The social democratic model and beyond: Two "generations" of comparative research on the welfare state." *Comparative Social Research* 6:315-351.

Shalit, Haim. 1985. "Calculating the gini index of inequality for individual data." *Oxford Bulletin of Economics and Statistics* 47:185-89.

Shanahan, Suzanne Elise and Nancy Brandon Tuma. 1994. "The sociology of distribution and redistribution." *The handbook of economic sociology*, Neil J. Smelser and Richard eds.). Swedberg. Princeton: Princeton University Press.

Shaver, Sheila. 1991. "'Considerations of mere logic'. The Australian age pension and the politics of means testing." *States, labor markets, and the future of old age policy*, Eds. John Myles and Jill Quadagno. Philadelphia: Temple University Press.

Shavit, Yossi, Hans-Peter Blossfeld. 1993. *Persisting inequality. Changing educational attainment in thirteen countries*. Boulder: Westwood Press.

Shorrocks, A. F. 1988. "Aggregation issues in inequality measures." *Measurement in economics: Theory and applications of economic indices*, Ed. W. Eichhorn. Heidelberg: Physica-Verlag.

______. 1978. "Income inequality and income mobility." *Journal of Economic Theory* 19:376-93.

______. 1981. "Income stability in the United States." *The statics and dynamics of income*, Eds. N. A. Klevmarken and J. A. Lybeck. Clevedon: Tieto.

______. 1982. "Inequality decomposition by factor components." *Econometrica* 50:193-211.

______. 1984. "Inequality decomposition by population subgroups." *Econometrica* 52:1369-1385.

______. 1978. "The measurement of income mobility." *Econometrica* 46:1013-1024.

Siegenthaler, Jürg K. 1996. "Poverty among single elderly women under different systems of old-age security: A comparative review." *Social Security Bulletin* 59:31-44.

Skocpol, Theda. 1984. "Emerging agendas and recurrent strategies in historical sociology." *Vision and method in historical sociology*, Ed. Theda Skocpol. New York: Cambridge University Press.

Smeeding, Timothy M. et al. 1993. *Noncash income, living standards, and inequality: Evidence from the Luxembourg Income Study*. LIS Working Paper Series(No. 79). Walferdange: CEPS/Luxembourg Income Study.

Smeeding, Timothy M. 1988. "Patterns of income and poverty: The economic status of children and the elderly in eight countries." *The Vulnerable*, Eds. Palmer et al. Washington D.C.: The Urban Institute Press.

Smeeding, Timothy M., Barbara B. Torrey and Lee Rainwater. 1993. *Going to extremes: An international perspective on the economic status of the United States Aged*. LIS Working Paper Series. Walferdange: CEPS/Luxembourg Income Study.

Smelser, Neil J. 1976. *Comparative methods in the social sciences*. Englewood Cliffs, N.J.: Prentice-Hall.

St John, Susan, Tony Ashton. 1993. *Private pensions in OECD countries. New Zealand*. Paris: OECD.

Stadt, Huib van der, Arie Kapteyn and Sara van der Geer. 1985. "The relativity of utility: Evidence from panel data." *The Review of Economics and Statistics* 67:179-187.

Ståhlberg, Ann-Charlotte. 1989a. "Problemen med ATP." *Ekonomisk Debatt* 351-362.

______. 1989b. "Redistribution effect of social policy in a lifetime analytical framework." *The political economy of social security*, Eds. B. A. Gustafsson and N. A. Klevmarken. Amsterdam: North-Holland Elsevier.

______. 1997. "Sweden: on the way from standard to basic security." *Social insurance in Europe*, Ed. Jochen Clasen. Bristol: The Policy Press.

______. 1995. "Women's pensions in Sweden." *Scandinavian Journal of social welfare* 4:267-273.

Steinmo, Sven and Caroline J. Tolbert. 1998. "Do institutions really matter? Taxation in industrialized democracies." *Comparative Political Studies* 31:165-188.

Stephens, John D. 1995. "Preserving the social democratic welfare state." *Nordic Journal of Political Economy* 22:143-162.

______. 1996. "The Scandinavian welfare states: Achievements, crisis, and prospects." *Welfare states in transition. National adaptions in global economies*, Ed. Gøsta Esping-Andersen. London: SAGE.

______. 1979. *The transition from capitalism to socialism*. London: Macmillan.

Stevens, Beth. 1984. *In the shadow of the welfare state*. PhD thesis. Cambridge MA: Harvard University.

______. 1996. "Labor Unions and the privatization of welfare: The turning point in the 1940s." *The privatization of social policy? Occupational welfare and the welfare state in America, Scandinavia and Japan*, Michael Shalev. London: Macmillan.

Stigler, George J. 1970. "Director's law of public income redistribution." *Journal of Law and Economics* 13:1-10.

Stigler, George J. and Gary S. Becker. 1977. "De gustibus non est disputandum." *The American Economic Review* 67:76-90.

Sutherland, Holly. 1996. *Households, individuals and the re-distribution of income*. Paper presented at the IARIW 24. General Conference held at Lillehammer, Norway, 18-24 August 1996. Session 4B. IARIW.

Temkin, Larry S. 1993. *Inequality*. Oxford: Oxford University Press.

Thompson, Lawrence H. and Melinda M. Upp. 1997. "The social insurance approach and social security." *Social security in the 21st century*, Eds. Eric R. Kingson and James H. Schulz. New York: Oxford University Press.

Thurow, Lester C. 1996. *The future of capitalism: How today's economic forces shape tomorrow's world*. London: Nicholas Brealey Publishing.

Tilly, Charles. 1984. *Big structures, large processes, huge comparisons*. New York: Russel Sage Foundation.

Titmuss, Richard M. 1958. *Essays on the welfare state*. London: George Allen & Unwinn.

______. 1955. "Pension systems and population change." *Political Quarterly* 26:152-66.

______. 1974. *Social Policy*. London: George Allen & Unwinn.

Townsend, Peter. 1979. *Poverty in the United Kingdom. A survey of household resources and standards of living*. London: Allen Lane.

Triplet, Jack E. 1983. "An assay on labor costs." *The measurement of labor costs*, Ed. Jack E. Triplet. Chicago: Chicago University Press.

Tullock, Gordon. 1983. *Economics of income redistribution*. Hingham Massachusets: Kluwer-Nijhoff Publishing.

Usui, Chikako. 1994. "Welfare state development in a world system context: Event history analysis of first social insurance legislation among 60 countries, 1880-1960." *The comparative political economy of the welfare state*, Ed. Thomas Janoski and Alexander M. Hicks. Cambridge: Cambridge University Press.

Uusitalo, Hannu. 1984. "Comparative research on the determinants of the welfare state: The state of the art." *European Journal of Political Research* 12:403-422.

______. 1985. "Redistribution and equality in the welfare state: An effort to interpret the major findings of research on the redistributive effects of the welfare state." *European Sociological Review* 1:163-176.

van Gunsteren, Herman and Martin Rein. 1985. "The dialectic of public and private pensions." *Journal of social policy* 14:129-149.

van Kersbergen, Kees. 1995. *Social capitalism*. London: Routledge.

van Praag, B. M. S. 1971. "The welfare functions of income in Belgium: An empirical investigation." *European Economic Review* 2:337-69.

van Praag, B. M. S. and Arie Kapteyn. 1971. "Further evidence on the individual welfare functions of income: An empirical investigation in the Netherlands." *European Economic Review* 4:33-62.

Venti, Steven F. and David A. Wise. 1987. "Aging, moving, and housing wealth." Working Paper No.2324. Cambridge: NBER.

Vesterø-Jensen, Carsten. 1984. *Det tvedelte pensionssystem*. Forskningsrapport nr. 1/84. Roskilde: Institut for samfundsøkonomi og planlægning, Roskilde Universitetscenter.

von Nordheim-Nielsen, Fritz. 1996. "Danish occupational pensions in the 1980s: From social security to political economy." *The privatization of social policy? Occupational welfare and the welfare state in America, Scandinavia and Japan*, Ed. Michael Shalev. London: Macmillan.

______. 1988. *Occupational pensions in Northern Europe*. Working paper(No. 1). Copenhagen: Department of Sociology, University of Copenhagen.

______. 1991. "The politics of aging in Scandinavian countries." *States, labor markets, and the future of old age policy*, Eds. John Myles and Jill Quadagno. Philadelphia: Temple University Press.

Walker, Alan. 1980. "The social creation of poverty and dependency in old age." *Journal of social policy* 9:49-75.

Weale, Albert. 1990. "Equality, social solidarity and the welfare state." *Ethics* 100:473-488.

Whiteford, Peter. 1995. "The use of replacement rates in international comparisons of benefit systems." *International Social Security Review* 48:3-30.

Wilensky, Harold. 1981. "Leftism, catholicism, and democratic corporatism: The role of political parties in recent welfare state development." *The development of welfare state in Europe and America*, Eds. Peter Flora and Arnold Heidenheimer. London: Transaction Books.

______. 1975. *The welfare state and equality*. Berkeley: University of California Press.

Winship, C. and R. D. Mare. 1992. "Models for sample selection bias." *Annual Review of Sociology* 18:327-350.

Yitzhaki, Shlomo. 1991. "Calculating jackknife variance estimators for parameters of the Gini method." *Journal of Business & Economic Statistics* 9:235-239.

______. 1994. "Economic distance and overlapping of distributions." *Journal of Econometrics* 61:147-159.

______. 1983. "On an extention of the Gini inequality index." *International Economic Review* 24:617-628.

______. 1979. "Relative deprivation and the Gini coefficient." *The Quarterly Journal of Economics* 93:321-324.

______. 1982. "Relative deprivation and economic welfare." *European Economic Review* 17:99-113.

Yitzhaki, Shlomo and Robert I. Lerman. 1991. "Income stratification and income inequality." *Review of Income and Wealth* 37:313-329.

Zabalza, A., C. Pissarides and M. Barton. 1980. "Social security and the choice between full-time work, part-time work, and retirement." *Journal of Public Economics* 14:245-76.

Zeuner, Lilli, Carl Nørregård. 1991. *Fortjent otium*. Copenhagen: Socialforskningsinstituttet.

Økonomiministeriet. 1996. *Familier og indkomster. Udviklingen for forskellige familietyper i årene 1986-96.* Copenhagen: Økonomiministeriet.

Østrup, Finn. 1996. "The development of supplementary pensions in Denmark." *International perspectives on supplementary pensions. Actors and issues*, Ed. Emmanuel Reynaud. London: Quorum Books.

Øverbye, Einar. 1995. "Explaining welfare spending." *Public Choice* 83:313-335.

______. 1996. "How do "organisational designs" influence welfare politics? A study of the Nordic pension systems." *Scandinavian Political Studies'* 19:227-255.

______. 1991. *Offentlige of private pensjoner i Norden. En analyse av dere framvekst og samfunnsøkonomiske konsekvenser.* INAS Rapport(91:10). Oslo: INAS.

______. 1996. "Public and occupational pensions in the Nordic countries." *The privatization of social policy? Occupational welfare and the welfare state in America, Scandinavia and Japan*, Ed. Michael Shalev. London: Macmillan.

______. 1998. *Risk and welfare: Examining stability and change in "welfare" policies*. NOVA report 1998:5. Oslo: NOVA.