Robert Schuman Centre

The Measurement of Social Security Convergence: The Case of European Public Pension Systems since 1950

PAUL JOHNSON

RSC No. 98/27

EUI WORKING PAPERS

EUROPEAN UNIVERSITY INSTITUTE

EUI Working Paper RSC No. 98/27

Johnson: *The Measurement of Social Security Convergence: The Case of European Public Pension Systems since 1950*

The Robert Schuman Centre was set up by the High Council of the EUI in 1993 to carry out disciplinary and interdisciplinary research in the areas of European integration and public policy in Europe. While developing its own research projects, the Centre works in close relation with the four departments of the Institute and supports the specialized working groups organized by the researchers.

EUROPEAN UNIVERSITY INSTITUTE, FLORENCE

ROBERT SCHUMAN CENTRE

together with

DEPARTMENT OF HISTORY AND CIVILIZATION

The Measurement of Social Security Convergence: The Case of European Public Pension Systems since 1950

PAUL JOHNSON*

*London School of Economics

EUI Working Paper **RSC** No. 98/27

BADIA FIESOLANA, SAN DOMENICO (FI)

Printed in Italy in June 1998
European University Institute
Badia Fiesolana
I – 50016 San Domenico (FI)
Italy

ABSTRACT

This paper proposes a novel way of measuring cross-national changes over time in the outputs of social security systems. Traditional approaches to the comparative analysis of social security systems use expenditure levels, regime types or poverty and inequality rates to rank countries and map change over time. All these approaches encounter the problem of determining how much of the observed change is due to internal developments within the social security system, and how much due to exogenous social and economic factors. Taking the example of public pensions in five European countries since 1950, this paper demonstrates how formal social security rules can be used in a simulation model to evaluate changes in public pension payments for a variety of hypothetical individuals characterised by different levels of lifetime income. This procedure produces direct measures of the impact of changes in social security systems which are entirely independent of exogenous developments in social and economic structures. This new method reveals the "pure" effect of internal social security system development over time.

INTRODUCTION[1]

The imperative for economic and administrative convergence that underlies European Union (EU) legislation has, as yet, had little impact on the social security systems of member states. Although the Treaty of Rome in 1957 gave the Commission the task of promoting close co-operation between member states in social affairs, including social security, the form of this co-operation was not specified. In practice neither the Treaty of Rome, nor the Single European Act, nor the Maastricht Treaty has given prominence to social issues, and co-operative action towards policy convergence has been limited to a narrow range of employment-related matters such as equal pay and maternity leave (Hantrais, 1995).

Social protection is potentially an important aspect of more general economic convergence within the EU. Non-wage labour costs (attributable largely to social security provision) are a significant, but highly variable, element of the total wage bill across EU countries; in 1984 compulsory non-wage labour costs varied between 5 per cent of wage costs in Denmark and 32 per cent in Italy (Eurostat, 1987). The receipt of public transfers and services similarly represents a non-trivial but internationally variable part of total income for most EU households. Any serious attempt to establish uniform economic conditions across member states would have ensure that individuals with similar social and economic characteristics are treated in similar ways by national social security systems. This implies that the outputs - in terms of individual social security entitlements - would need to converge towards some Europe-wide norm.

However, the European Commission (EC) has noted, in a somewhat defeatist tone, that systems of social protection within the member states "appear to be very different: indeed so different that it may seem impossible to identify common traits and pointless to speak of the European welfare model. Each nation has followed a distinct path in the development of its social policy which has greatly influenced the precise characteristics of the present system" (EC, 1995: 25). Much comparative social policy analysis reinforces this view of national difference; researchers have identified a large number of (often overlapping) categories into which the separate national social security schemes

[1] The pension simulation model used in this paper was developed in collaboration with Martin Evans, Jane Falkingham and Katherine Rake. Collection of historical data on pension system rules was undertaken by Angela Pearce and Iyiola Solanke, supported by a small grant from the 'Allegiance' project at the Robert Schuman Centre, European University Institute, Florence. I would like to thank all the above for their help in producing this paper; I am solely responsible for errors of fact or interpretation.

can be placed: Beveridgean vs. Bismarckian; universal vs. residual; insurance-based vs. citizenship-based; employment-centred vs. family-centred, and so on.

Despite this consensus that European social security systems are characterised as much by their differences as their similarities, a number of recent commentators have contended that systems of social protection have converged in the 1990s as a consequence of financial retrenchment (Chassard and Quintin, 1992; Rhodes, 1997) However, they present little empirical evidence apart from expenditure data to support this contention and, as will be shown below, measures of aggregate expenditure cannot resolve the question of whether the outputs of European social security systems are converging. As Daly (1997) has noted, any discussion of convergence or divergence is practically meaningless in the absence of a clearly identified basis for comparison and a clear set of convergence criteria.

This paper develops both a clear basis for comparison of social security outputs, and a clear set of convergence criteria. It proposes a hitherto unexplored method for comparing the outputs of a number of European national social security systems across the five decades from the 1950s to the 1990s. The specific policy focus is on public pension systems because they represent the largest single item of social expenditure in every EU country and because different national pension systems appear to be governed by fundamentally different principles, although the methodology is applicable to a wide range of policy areas. The paper proceeds in four stages. The first section discusses conceptual and empirical difficulties in measuring social security outputs. Section two proposes a method, based on simulation modelling, for evaluating welfare system outputs while excluding the effect of exogenous social and economic factors. Section three applies this method to data on public pensions in five European countries for the period from the 1950s to the 1990s. The final section relates the results of the simulation modelling exercise to the issue of social security convergence.

1. MEASURING SOCIAL SECURITY SYSTEM OUTPUTS

Comparative quantitative studies of social security systems can be thought of as falling into three distinct types, which we can stylise as those produced by "accountants", "sociologists" and "economists". The accountants' approach is based on the use of expenditure data as a metric of comparison. Both historical (Wilensky, 1975; Flora, 1986; Lindert, 1994, 1996) and contemporary (OECD, 1985, 1988; EC, 1995; ILO, 1984, 1992) analyses of social security systems adopt common accounting frameworks in an attempt to eliminate or finesse national institutional difference. Since the 1960s the Organisation for Economic Co-operation and Development (OECD) has produced comparative data on social expenditure in the major industrialised countries. The International Labour Office (ILO) has produced similar data for a slightly longer period, although it groups expenditure under different categories. The statistical office of the EC broadly follows the OECD definition in its collection of data on social protection, but excludes education spending.

A number of problems arise in the analysis of these social expenditure data. As well as obvious differences in the accounting procedures adopted by the international agencies over what is included or excluded, there are other variations which emerge because national governments adopt different procedures in, for instance, determining whether a poor retired person receives financial assistance from a contributory insurance programme or a non-contributory social assistance programme. However, even when there is a great degree of institutional similarity between countries in some particular part of their systems of social protection, it does not necessarily follow that differences in expenditure levels will reflect significant differences in the degree of social protection provided by the state. The most obvious example comes in the case of support for the unemployed. Luxembourg has consistently devoted a very small proportion of total social expenditure to unemployment benefit; in 1993 only 0.8 per cent of total social expenditure in Luxembourg was spent on unemployment benefit, compared to 6 per cent in France and 12 per cent in Denmark. However, the unemployment rate in Luxembourg was a trivial 1.7 per cent, compared with over 12 per cent in both France and Denmark (EC, 1995). Clearly the variation in expenditure by type of benefit cannot, on its own, provide a good measure of the level of public social protection or the efficiency with which this expenditure is targeted.

Similarly, the share of total social expenditure in GDP - one of the most commonly used indicators to identify similarity or difference between national welfare states - is not an adequate performance indicator of the extent to which a welfare system responds to "social need". Different national social or economic

structures, or the differential impact of short-term factors such as the trade cycle, can mean that similar aggregate expenditure levels are catering for different underlying levels of demand for public welfare provision. For example, in 1990 Denmark and France had similar aggregate levels of social expenditure (30 per cent and 28 per cent of GDP respectively), yet the recorded poverty rate in France, at 15.7 per cent, was almost double the 8 per cent in Denmark (EC, 1995). Expenditure data, which measure aggregate financial inputs, at best present an indirect and imperfect measure of social security outputs, and cannot, therefore, be used to identify convergence over time in the performance of national welfare systems.

The problems and biases associated with the expenditure approach to welfare state performance have led many sociologists to search for a more encompassing comparator of welfare states. The most sophisticated approach to date is that developed by Esping-Andersen. He explicitly rejects expenditure data as a valid basis for comparing welfare state performance, stating that "the convention of conceptualizing welfare states in terms of their expenditures will no longer do" (Esping-Andersen, 1990: 3). One reason for this rejection of expenditure data is that, even if they are disaggregated by narrow welfare function, they may fail to give an appropriate indication of overall welfare outcomes because they provide only a partial measure of the supply of welfare services. Social risks may be ameliorated not only by direct public provision of services or via public mutual insurance schemes, but also through regulation of the private market (for instance by requiring employers to provide maternity leave) or by providing incentives for particular sorts of market-sector activity (for instance, giving employers tax relief on pension fund contributions). Public social expenditure is just one element of a "mixed economy" of welfare in which protection for the individual against social risks arises from a combination of public and private sector activity. In consequence, a purely accounting-based assessment of public sector social expenditure may misrepresent the underlying level of social security or insecurity faced by the individual.

Esping-Andersen recognises the importance of this public-private mix in welfare provision, particularly in the field of pensions (1990: 81-8), and in order to develop a taxonomy of welfare systems he attempts to rank countries both according to the relative size of their public and private pension expenditures, and by the source of pensioner income. However, his ultimate objective is not to present a detailed analysis of the performance - in terms of either inputs or outputs - of different national welfare systems. He argues that "expenditures are epiphenomenal to the theoretical substance of welfare states" (Esping-Andersen, 1990: 19), and instead he uses empirical data to support a three-way categorisation of national welfare regimes based on the concept of

"decommodification" - the degree to which social policies make individuals (and families) independent of the market for income and consumption.

There are a number of problems in attempting to use the concept of distinct welfare state regimes to study the issue of convergence over time. First, there has been considerable debate about which countries should be allocated to Esping-Andersen's three welfare regimes, and about whether there should be four (or more) different regimes (Leibfried, 1992; Castles and Mitchell, 1993; Kloosterman, 1995; Ferrera, 1996). The association of countries with any particular regime type is contestable and may depend on the positioning of thresholds between regime types or on the criteria chosen to determine national rankings. Secondly, a number of authors have noted that Esping-Andersen's regime theory is more appropriate to the analysis of welfare state stability than to dynamic change. In particular, it is rooted in a 1970s classification of welfare regimes and fails to take account of fundamental changes that have occurred in the past two decades in the nature of citizenship rights (Taylor-Gooby, 1996; Cox, 1998). Taken together, these two problems render it impossible to use the concept of welfare regimes to identify or measure convergence or divergence over time. Convergence might imply a reallocation of countries between regime types, but since this allocation is itself a matter of dispute, reallocation may be the result of different judgements made by different authors, rather than a reflection of genuine changes in welfare state performance. Furthermore, even if both the criteria used to determine national rankings and the thresholds between different regimes could be determined in a completely unambiguous and incontestable way, it might still be impossible to develop a clear measure of convergence or divergence of welfare state performance. This is a common problem in the measurement of the characteristics of groups; it is quite possible for between-group difference to widen and within-group difference to narrow, and vice-versa.

Whereas the regime approach favoured by many sociologists emphasises the importance of origins and welfare ideology in categorising welfare systems, economists have taken a resolutely empirical route to the analysis of welfare state outcomes. Starting from the rather narrow principle that a primary function of a welfare state is to prevent poverty, and recognising that this can be done redistributing some resources from richer to poorer members of society, economists have developed a number of "output" measures; the two most frequently used are the proportion of the population living below some poverty line, and the degree of income inequality in any society.

Measuring either poverty or income inequality in Europe is no easy task. Data are typically not strictly comparable between countries, and technical

decisions about what income to include, how to define poverty, and whether to study families, households, or individuals, can all affect the conclusions. Atkinson (1995) has drawn together much of the evidence on income inequality in a comparative analysis for the 1980s and has concluded that the Scandinavian countries, Benelux and West Germany have apparently distinctly less inequality in disposable income; Southern Europe and Ireland have distinctly higher inequality, with France and, to some degree, the UK and Italy occupying an intermediate position.

This geographical pattern to income inequality reflects a general gradient in social expenditure, with Scandinavia, Benelux and Germany devoting considerably higher shares of GDP to welfare spending than Mediterranean countries and Ireland. This appears to indicate that a higher level of social protection, and the redistributive system of income taxation with which this is associated, is effective in reducing inequality. However, a longer-run analysis demonstrates that the relationship between income inequality and the level of social expenditure is not this straightforward. In the 1970s, when social expenditure was rising rapidly in most European countries, income inequality was falling fairly consistently. In the 1980s, as the rate of growth of social expenditure fell, income inequality began to increase in most countries, but not in all. According to Atkinson, income inequality and the proportionate level of social expenditure were both virtually constant in Germany between 1980 and the early 1990s, whereas in the Netherlands and in the UK inequality rose over this period despite an expansion of the social sector.

Data on poverty show a similar pattern to that for income inequality. The EC defines people as living in poverty if they have an income of less than 50 per cent of the average income for their country. According to this definition, the proportion of the EC population living in poverty has grown from 12.6 per cent in 1975 to 13.7 per cent in 1988 and 14.7 per cent in 1992. This increase in poverty coincides with the general growth of income inequality in the 1980s, and in the slow-down in the rate of growth of social expenditure. Taking data for a range of eight EC countries for 1991 reveals a correlation of -0.91 between the poverty rate and the proportion of GDP devoted to social expenditure (EC, 1995). However, these data on poverty rates and income inequality are, at best, very weak indicators of welfare state convergence or divergence over time. The reason for this is that many influences on both poverty rates and income inequality are entirely exogenous to the public welfare system. Welfare states might all be converging in terms of expenditure shares, and might all be shifting in structure and ideology towards a Bismarckian or a Scandinavian model, yet poverty rates and income inequality could be diverging because of different national trends in labour market conditions, demographic profiles, household

structure, marriage and divorce rates, and so on. Conversely, cross-national indicators of poverty and income inequality might become more similar because of common patterns of social and economic change, even though systems of welfare provision remain unchanged.

None of the three stylised approaches to comparative welfare state analysis - the accountants' evaluation of expenditure shares, the sociologists' construction of welfare regimes, and the economists' comparison of inequality and poverty rates - produces the precise measure of social security outputs that would be needed to assess whether or not there has been convergence across European countries over time. Any attempt to conduct comparative analyses of welfare state outputs faces the problem that many factors which are unrelated to the design and operation of the public welfare system will have an effect on the outcomes of that system. Unless the impact of these exogenous factors can be accurately assessed or held constant, it is not possible to make valid comparisons across countries or over time. The next section outlines a method for measuring the "pure" impact of social security provision, independent of all exogenous social and economic influences.

2. SIMULATION MODELLING WITH HYPOTHETICAL INDIVIDUALS

Social security systems are sets of rules which impose (direct or indirect) contributions on people on account of their income, wealth, or labour market status, and which grant benefits according to entitlements which arise either because of past behaviour (such as contribution into the system) or because of current status (being widowed, poor, disabled, etc.). If we wish to address the specific question "Have social security systems become more similar over time?" then we are really asking whether these sets of rules have become more alike. We can investigate this possibility by examining how different sets of national social security rules affect the benefit outcomes that are received by individuals who are identical in all respects except for the social security regime under which they live their lives.

This type of comparison is difficult to achieve even in an approximate manner with representative survey data derived from a range of countries. The only major source of comparable European household data is that assembled by the Luxembourg Income Study (LIS). This allows for a fairly close matching across countries of households by size and structure, income, wealth and labour force participation, and so provides considerable scope for assessing the relative impact of national social security systems in, for example, ameliorating poverty. However, it is never possible with this data fully to isolate the impact of national

social security systems from other unique national attributes such as labour market or demographic structures. For example, LIS data may indicate that public pension income is significantly higher in one country than another for a matched group of retirees. This might reflect differences in the rules of the two public pension systems, but alternatively it may be compatible with identical rules, and instead reflect different working life histories in the two countries, brought about by long-run differences in the pattern of economic growth and structural change. Income data alone cannot distinguish between these possibilities, and no comparative European longitudinal data set exists that could resolve this issue of causation.

There are two further limitations to the use of LIS (or similar) data sets in addressing the question of whether social security systems have become more similar over time. First, the geographical coverage tends to be patchy; there is, for instance, no LIS data on France for the 1990s. Secondly, and more important for the study of policy convergence over time, the majority of household income datasets relate to the period since the mid-1980s. There is no LIS data for any country for the period before 1967, and that for years prior to 1979 is confined to a historical database which does not attempt to provide the same degree of standardisation of income measures that has been achieved for more recent studies.[2] This is a major obstacle to the use of LIS data for the analysis of long-run trends in social security convergence or divergence, since the more general availability of data from the early/mid 1980s coincides with a general retrenchment in welfare state expenditure. In order to separate the effects of retrenchment from any more general process of convergence, a longer run of observations is needed which includes the period of welfare state expansion up to the mid-1970s.

Given the limitations of using survey data to address the question of whether social security systems have become more similar over time, this paper adopts a different and novel approach. It examines social security outcomes (specifically pension system outcomes) in a stylised world in which all other economic and social interactions are held constant. In order to isolate one or more public social security systems from the economic environment(s) in which they operate, the rules of contribution, benefit and entitlement are programmed into a simulation model of life-time contribution and benefit. Once these parameters have been established, a hypothetical individual, with any chosen set of characteristics of labour force participation, earnings, and retirement is allowed to "live" through an entire contribution/benefit life-cycle in each stylised

[2] Details of the coverage of LIS datasets are most readily obtained from the Luxembourg Income Study website at http://lissy.ceps.lu/index.htm

social security system, and the pension benefit entitlements accumulated in the different systems at the point of retirement are then compared. This allows us to assess the "pure" impact of different pension systems, unaffected by other economic factors.

This type of simulation modelling does not, of course, produce a representation of real social security outcomes; it instead shows how the social security systems of different countries would treat identical individuals, in the absence of any other economic, social or demographic effects. In practice national social security rules interact with national conditions to produce the "real" outcomes. But it must be stressed that the purpose of the simulation is not to derive international comparisons of actual pensioner welfare; instead the objective is to evaluate the pure effect of different sets of public pension rules. Many assertions about the outputs of different European public pension systems - for instance that the German system is much more generous than the British, or that the Swedish system is the most egalitarian - have never been directly tested. Such claims are commonly supported by reference to data on pensioner poverty or pensioner incomes, but as we have already noted, these data do not allow us to distinguish between the autonomous workings of the public pension system and its interaction with a variety of exogenous economic and social factors. We can only determine the *direct* impact of different public pension systems by examining on an exactly comparable basis how their rules generate pension entitlements.

It should be noted that a further attribute of this type of simulation model, when applied to pension rules, is that it directly compares the impact of national public pension rules current at one moment in time, whereas any empirical analysis of the sources of pensioner income inevitably conflates the influence of current pension rules and past sets of pension rules. A crucial distinction between public pension systems and most other elements of the welfare state is that pensions involve long-term (implicit or explicit) contracts, whereas unemployment or sickness or maternity benefit is a short-term payment made in response to immediate circumstances. Because social security systems and rules have changed in all European countries a great deal since the Second World War, people entering retirement today have lived through a number of different public pension regimes, and their actual public pension entitlement is a function of both their personal career history and the institutional history of their national pension system. Household survey data on the sources of pensioner income is not sufficiently rich to allow for the separation of the relative impact of these two parallel histories for any individual pensioner. In the simulation approach adopted here any pensioner is assumed to have lived their entire working life under the specific set of pension rules that are in force at the date of their

retirement. This means that, in making cross-national comparisons of public pension benefits, we can be sure that any differences are a direct function of the detailed pension rules in operation at any point in time.

This paper uses a variant of a comparative pension simulation model PHYLIS (**P**ension and **Hy**pothetical **L**ifetime **I**ncome **S**imulation), which was designed to allow a direct comparison of the impact of contemporary public pension rules on pension outcomes in a number of European and other countries (Evans and Falkingham, 1997; Johnson and Rake, 1997). Here the model is extended to examine change over time as well as national variation. The public pension systems for five European countries - France, Germany, Spain, Sweden and the UK - have been have modelled for each of the five decades from the 1950s to the 1990s; the objective is to determine whether pension outcomes have converged over that period.

Convergence of pension outcomes is not, however, an unambiguous concept. Schmähl (1993) has noted that concepts of convergence or harmonisation of pensions can be applied loosely and inconsistently to the legal structure, the public/private mix, the method of financing, the level of expenditure and the level of pension income. Most of these ambiguities are avoided in this paper by a clear focus on the level of public pension income as the sole criterion for evaluation. However, this criterion is less simple than it first appears once we take into account both the multiple functions of a public pension system and the diverse circumstances of pension scheme members.

Public pension schemes are commonly required to meet two distinct objectives - the prevention of pensioner poverty and the replacement in old age of the worker's former level of income. Since the first objective can only be achieved by transfers towards poorer elderly people, and since these transfers must come from higher-income individuals, the degree of internal redistribution within a pension scheme can be taken as an indicator of the balance between these two objectives, though as will be shown below, it does not always provide an unambiguous measure. Convergence of pension systems towards providing more similar levels of income replacement in old age need not imply convergence in achieving poverty prevention, and vice versa. This is particularly apparent if instead of just examining the pension outcomes for a "typical" individual, we also look at outcomes for high and low earners. Pension systems may, for instance, converge in their treatment of people with low lifetime earnings and diverge in their treatment of high income individuals.

In order to explore these possibilities, pension outcomes are simulated for five hypothetical individuals, h1 to h5, who earn, respectively, 25, 50, 100, 200,

and 400 per cent of the average earnings in each country in each time period. These individuals are assumed to work full time from the age of 18 to the "normal" age of retirement when they can claim a full public pension (this age varies by decade and country between 60 and 67). The earnings profile is assumed to be flat throughout working life, and public pension entitlements are based upon the rules current in the year of retirement. The simulation model estimates the value of the monthly (or in the case of the UK, weekly) pension in current prices.

3. SIMULATION MODEL RESULTS

The PHYLIS model has been parameterised with the contribution, entitlement and benefit rules of the public pension systems of all five countries at approximately ten year intervals from 1954.[3] For each hypothetical individual for each year the model produces three separate indicators of public pension performance:

i) the pension as a proportion of average economy-wide wage
ii) the pension as a proportion of own final wage
iii) the pension as a proportion of average pension

The first of these provides information about poverty prevention, the second about income replacement, the third about the degree of cross-sectional redistribution that occurs within the pension system. Before examining this data for evidence of convergence over time, we can first see whether the model reveals a clear differentiation in the outputs of public pension systems in the 1980s which is in conformity with the different welfare state regimes proposed by Esping-Andersen and others. Here we take Sweden to be representative of the social democratic model, France and Germany to be representative of the conservative/corporatist welfare state, and the UK to be a (weak) example the liberal welfare state. Since other scholars have suggested that Esping-Andersen's tripartite division is inappropriate to much of the world beyond North and West Europe (Ferrera, 1996), we also examine pension outputs for Spain which we take to be representative of a Southern European welfare model.

[3] The absence of appropriate information on pension rules in certain years has necessitated some minor variation of the decadal intervals. Data is derived from: Callund 1975; Foster, 1988; ILO 1956 *et seq.*; ISSA, 1958; MISSOC, 1995; Noble Lowndes, 1970; OECD 1970, 1988; US, 1964; Wilson, 1974. The Swedish pension rules for the 1990s are based on the reform proposals introduced to parliament in 1996.

Figures 1-3 shows how the five public pension systems modelled in PHYLIS treated individuals with different levels of average earnings in the 1980s. Figure 1 plots the pension as a proportion of average earnings. Here the key issue is the extent to which the public pension system prevents people with low life-time income from falling into poverty in old age. Whilst the German and UK systems produced particularly low pensions for those with low life-time incomes, none of the pensions systems at the time generated a pension of more than 50 per cent of average income (a standard EU poverty line) for individuals h1 and h2. The UK system had least success in preventing poverty since it failed to give people on average earnings (h3) a pension income above this poverty line. There is little indication in Figure 1 that the social democratic Swedish public pension system in the 1980s was markedly more successful than the conservative/corporatist French pension system in generating adequate pensions for people with low life-time incomes. The UK public pension, however, does have the minimalist properties characteristic of a residual liberal welfare regime.

Figure 1: Pension as % of average earnings in 1980s

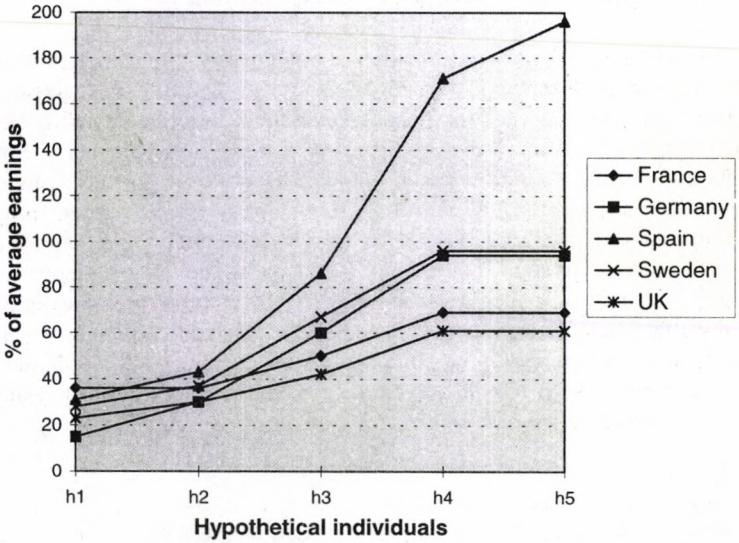


Figure 2 illustrates the effectiveness of the pension systems in replacing earnings (this is essentially the same data as in Figure 1, but rescaled by the income shares of the hypothetical individuals). Not surprisingly, replacement rates were higher for low income individuals. Only the Spanish system generated a replacement rate greater than 50 per cent for individuals with earnings more than twice the national average, and in common with the German system, it provided constant replacement rates across a wide earnings band. This lends support to Esping-Andersen's claims that there is a close correspondence between conservative/corporatist welfare regimes and those identified by Ferrera as distinctly Southern European.

Figure 2: Pension as % of own earnings in 1980s

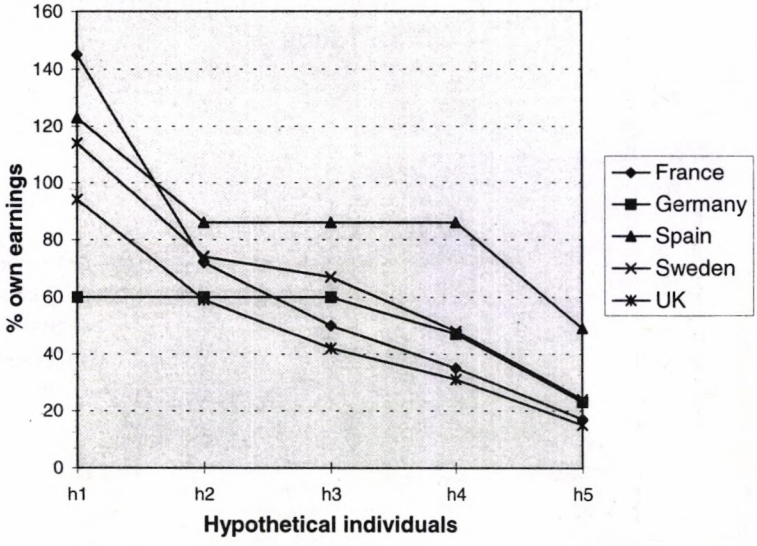
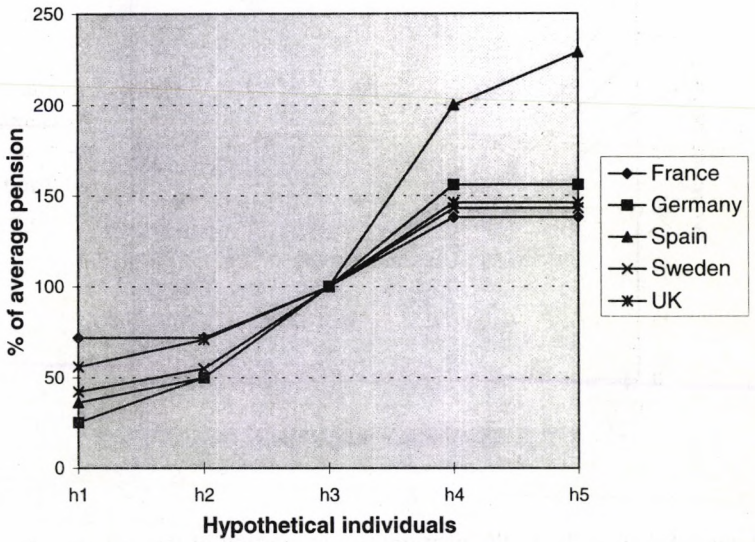


Figure 3, which shows the pension as a proportion of the average pension, can be interpreted as displaying the degree of internal redistribution within each national pension system. A horizontal line at the 100 per cent level would indicate extensive redistribution, with all pensioners receiving the same pension, regardless of their former level of earnings and contribution. As this line pivots towards a diagonal from bottom left to top right, so the degree of redistribution falls, and the pension increasingly comes to reflect the pattern of distribution of

pre-retirement income. Here, somewhat surprisingly, it is the French and British pensions, rather than the Swedish, that appear to be the most redistributive. Looking across all three figures, it can be seen that the UK pension system in the 1980s had the worst record for poverty prevention for people earning up to 100 per cent of average earnings, produced the lowest replacement rates for individuals earning at least half the national average, yet it had one of the highest levels of internal redistribution of any of the national pension systems. Once we allow for pension outcomes to vary with the distribution of life-time income, we can see that there is no necessary connection, or trade-off, between having a pension system that prevents poverty, that replaces former earnings, and that redistributes internally between high and low earners. It is, therefore, rather difficult to map these public pension outcomes onto a 2-way or 3-way or 4-way categorisation of welfare states.

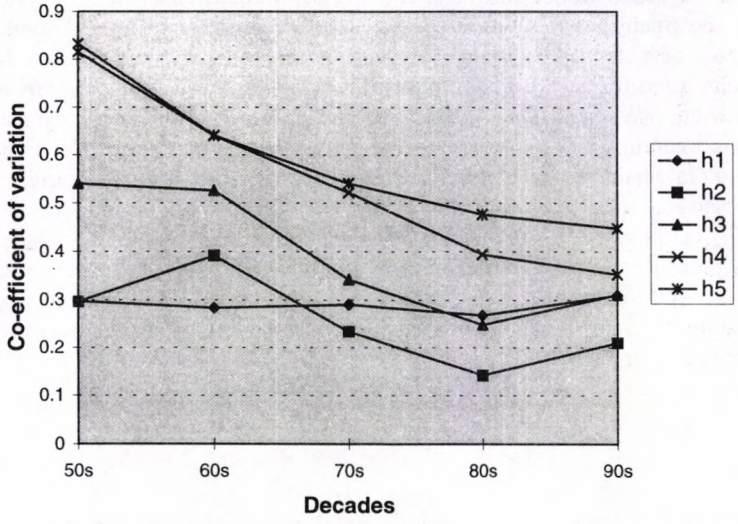
Figure 3: Pension as % average pension in 1980s



Bearing in mind this potential ambiguity of pension outcomes, we can turn to the major concern of this paper - the degree of convergence or divergence of pension outcomes over time. In order to generate comparable indicators of convergence or divergence, we have calculated the coefficient of variation of the pension in relation to earnings across all five countries for each hypothetical

individual in each decade.[4] Thus, starting with 1950s data on the pension as a percentage of average earnings, we find that for hypothetical individual h1 the percentages for France, Germany, Spain, Sweden and the UK are 25, 15, 27, 11 and 20 per cent respectively, and the coefficient of variation is 0.30. Figure 4 shows the extent to which the variance across countries in the pension outcomes for each of the hypothetical individuals rises or falls from decade to decade. It can be seen that there has been a consistent process of harmonisation of pension outcomes across these five countries for individuals with above average earnings (h4 and h5). Between the 1960s and the 1980s there has also been harmonisation of outcomes for people earning 50 per cent and 100 per cent of average income (h2 and h3), although the last decade has seen a clear reversal of this trend. For those with consistently very low incomes (h1) there has been no significant change over time - the inter-country variation in pension outcomes has been fairly low and stable.

Figure 4: Variation of pension outcomes between countries

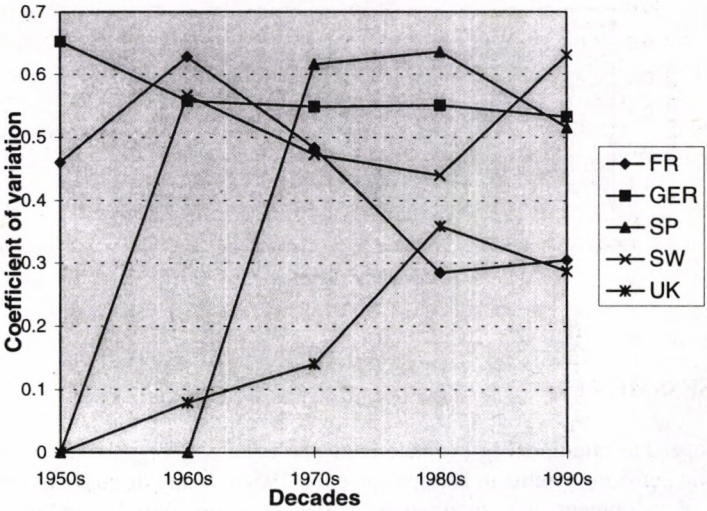


[4] Note that the coefficient of variation will be identical for the poverty prevention measure (pension as a proportion of average earnings) and the income replacement measure (pension as a proportion of own earnings), as the latter is simply a rescaled version of the former.

Clearly the answer to the question "has there been convergence of public pension outcomes?" depends on which group in the population is the subject of enquiry. For very low earners stylised as h1 the answer is no, for very high earners, the answer is yes, whereas for average or slightly below average earners the answer depends on the specific time period chosen. However, a response to a question about convergence also depends upon which aspect of pension system performance is being examined. Figure 4 shows the extent of convergence of outcomes *across* countries *within* each hypothetical earning category. This reveals the extent to which the public pensions of individuals who all earn an identical percentage of average income become more or less similar across countries over time.

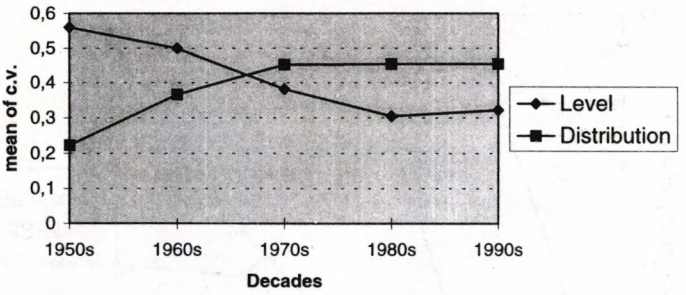
An alternative concept of convergence might relate to the spread of pension incomes, and whether public pension systems have become more or less redistributive over time. This issue can be addressed by examining the variance of pension outcomes *across* each hypothetical earning category *within* each country. The procedure can be illustrated by looking at Figure 3, which shows the value of the pension for each of the hypothetical individuals as a proportion of the average pension in each country in the 1980s. From these data we can calculate the coefficient of variation of pension outcomes across the earnings range; for the 1980s France has the lowest spread, with a coefficient of variation of 0.28, and Spain has the widest spread, with a coefficient of 0.63. Figure 5 plots these coefficients of variation of pension outcomes within countries, for each country and for each decade. In the 1950s, Spain, Sweden and the UK all had a flat-rate pension system, so they had zero variance of pension outcomes. There was an abrupt shift to an earnings-related pension system in Sweden in the 1950s and in Spain in the 1960s. The French system became less earnings-related between the 1960s and the 1980s; the UK pension system became marginally earnings-related in the late 1950s with the introduction of a graduated pension, more so with the introduction of the State Earnings Related Pension Scheme in 1975, and then less so after the scaling back of this scheme from 1986. Figure 5 reveals a much less straightforward picture of change over time than is the case for Figure 4.

Figure 5: Variation of pension outcomes within countries



In order to present a clearer picture of aggregate trends over time, Figure 6 plots the mean decadal values of the coefficients of variation of the *level* of pension income within hypothetical income ranges (from Figure 4) and of the *distribution* of pension income across pension income ranges (from Figure 5). This shows that whereas the variation of pension outcomes within specific income ranges has converged over time across the five countries, the variation of pension outcomes across the income ranges within countries has grown over time, especially between the 1950s and the 1970s.

Figure 6: Alternative measures of convergence of pension outcomes



4. ASSESSMENT

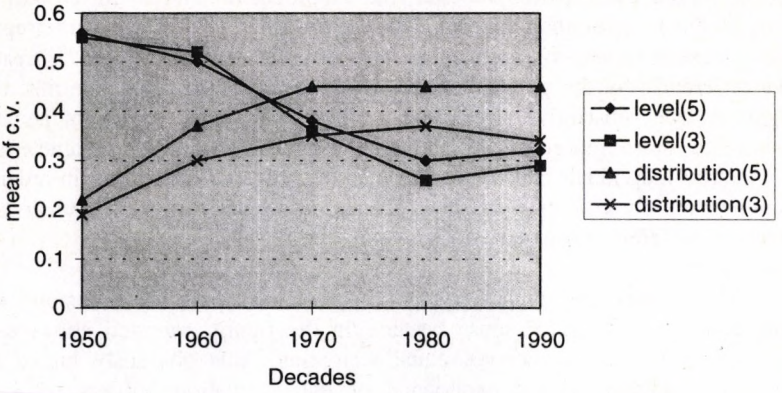
This paper has attempted to evaluate evidence for a convergence in the outputs of public pension systems in Europe since the 1950s. Many discussions of social policy development use qualitative evidence about initial conditions and underlying philosophies to establish distinctions between alternative social policy regimes. Quantitative assessments of social policy convergence use expenditure data or indirect outcome measures such as poverty rates or income distribution. None of these can produce a direct assessment of policy convergence, since they cannot isolate the impact of the social security system itself from exogenous economic and social factors. This paper has proposed a method for using detailed public pension system rules to simulate pension outcomes for a limited range of hypothetical individuals. This procedure ensures that reported changes in pension outcomes from one decade to the next are solely a consequence of the evolution of pension rules, rather than the results of an interaction between the pension system and the labour market, social structure, etc.

A number of strong "health warnings" must be attached to the results presented here, which are offered by way of an example of how this method might be applied, rather than as a fully developed test of the convergence hypothesis. First, the five countries used in the analysis are not in any sense "representative" of a European norm. They were selected because they have been identified in the literature on regime theory as being characteristic of distinct welfare regimes. A different, or larger, panel of countries might produce different results. If it did, this would raise questions about the validity of regime typologies.

Secondly, the results presented above will be sensitive to the characteristics of the hypothetical individuals used in the analysis. This sensitivity is both substantive and statistical. Personal attributes have a major impact on the way in which public pension rights are accumulated. In the example above the hypothetical individuals were assumed to have identical lifetime labour participation records (full employment) and to differ only in terms of the level of their income. Other characteristics - such as interrupted employment histories, or significant periods of part-time work, might be treated very differently by the public pension systems across the five countries, and might produce substantively different patterns in the time profile of pension benefits to those reported here. A wide range of differently characterised hypothetical individuals can be programmed into a model of this sort in order to examine how the evolution of public pension systems may have had diverse effects on different sub-groups of the population.

The results are sensitive to the characteristics of the hypothetical individuals in a statistical sense because in the figures reported above each hypothetical individual receives equal weighting. This obviously biases the findings in favour of the experience of the population outliers who are exceptionally low or high earners, receiving respectively 25 and 400 per cent of average earnings. A larger number of hypothetical individuals, or a greater weight given to those towards the middle of the income distribution, might change the findings. In fact the results turn out to be relatively robust to changes in composition. Figure 7 shows that the measures of convergence generated by taking only those three hypothetical individuals with income in the range 50-200 per cent of the average are very similar to the measures generated by including all five hypothetical individuals. Of course this finding that the results are insensitive to major compositional changes may not hold for other sets of hypothetical individuals, or other groups of countries, or other elements of the welfare state.

Figure 7: Effect on measures of convergence of a narrowing of the income range of hypothetical individuals



Bearing in mind these health warnings, what can this exercise in the quantitative evaluation of the impact of public pension system rules tell us? First, the outputs of the simulation model demonstrate that "convergence" is a slippery and ill-defined concept. In general, for individuals receiving identical percentages of average earnings, the pension outcomes across the five countries included in the model have become more similar over time. This is probably the relevant measure of convergence from an economic perspective; labour market integration will be encouraged by ensuring that an individual who earns some given level of income will not suffer a large change in their public pension entitlement by moving to another EU country. On the other hand, the simulation results also show that the variation of pension outcomes between high and low earners within countries has widened over time, at least up to the 1980s. This may be the more significant measure for those seeking to determine whether the public pension systems of these five countries have become more or less similar in their degree of redistribution over time. A further concern might be with the extent to which the national pension systems differ in their treatment of the very low paid. The data for the lowest paid hypothetical individual (h1) presented in Figure 4 shows that the cross-country variation in public pension provision for the very low paid has always been low, but has not changed over half a century of welfare state development. Depending on the question asked and the sub-group investigated, it is possible to argue that public pension provision across a number of European countries has either converged, diverged, or remained

unchanged over the past half-century. This indicates that future discussion of social policy convergence (and of international differences in social policy regimes) needs to be much more clearly specified. Commentators need to be explicit about the criteria they wish to use to assess convergence (for instance income replacement, or redistribution, or poverty prevention) and the sub-groups of the population with which they are primarily concerned.

Second, the model identifies the key structural changes to national pension systems as occurring in the 1960s and 70s. The data in Figure 4 (summarised as the "level" indicator in Figures 6 and 7) show that it was in these decades that the five national public pension systems became much more similar in terms of the pension benefits they granted to people with a full employment history and with income at or around the average. This was a consequence of a general shift towards incorporating an earnings-related element in the pension systems. This substitution of earnings-related for flat-rate pensions is the primary reason for the widening of within-country public pension inequality (Figure 5, and the "distribution" indicator in Figures 6 and 7). It should be noted that these common trends occurred despite the absence of explicit policy harmonisation, and despite the maintenance of long-established Beveridgean and Bismarckian traditions in the different social security systems. It would appear, therefore, that it is possible to achieve similar trends in policy outcomes in different countries without convergence of the administrative, legal or financial bases of the different national social security systems. This should be good news for those who wish to see a move to more standardised social protection in Europe, and who have been dismayed by the slow legislative progress towards a common EU social policy.

Third, the model confirms that long-established trends in social security development have been reversed since the mid-1980s. However, in this cross-national analysis of public pension outcomes, this reversal appears to be the opposite of that which has commonly been identified (Daly, 1997; Rhodes, 1997). It is not that financial retrenchment since the 1980s has made public pension outcomes more similar, but rather that retrenchment has reversed a trend towards harmonisation and has increased the variance across countries in the level of income provided for similar individuals through the public pension system. Pension systems may have converged along other dimensions - for instance through a general encouragement of private pension provision, or an increase in the normal retirement age - but by the specific criterion measured in figure 4, there has been a general divergence since the mid 1980s.

The use of a simulation model to apply precise national social security benefit entitlement rules to the circumstances of a number of identical hypothetical individuals is not intended to substitute for the analysis of income, inequality and poverty through the use of large-scale household datasets. The simulation approach presented here cannot produce a representation of real social security outcomes. On the other hand, nor can the traditional empirical approaches, because they cannot isolate the impact of the social security system from all other social and economic factors that may influence final income. The simulation approach is a useful supplement to more traditional approaches, and has three particular advantages. First, it is very economical - it requires only the formal rules of a social security system, rather than extensive information on household income and expenditure. Second, and as a consequence of this first advantage, it can be used to examine some of the details of social security outputs in the 1950s, 60s and 70s, decades for which we have little or no appropriate household data. Third, it produces comparative data on the "pure" impact of different national social security systems, something that cannot be directly achieved by any other means.

Paul Johnson
Department of Economic History
London School of Economics
Houghton Street
London WC2A 2AE
England
e-mail: P.A.Johnson@lse.ac.uk

REFERENCES

Atkinson, A.B. (1995) *Incomes and the Welfare State,* Cambridge, Cambridge University Press.

Callund, D. (1975) *Employee Benefits in Europe,* Epping, Gower Press.

Castles, F. and Mitchell, D. (1993) "Worlds of welfare and families of nations" in F. Castles (ed.) *Families of Nations,* Aldershot, Dartmouth.

Chassard, Y. and Quintin, O. (1992) "Social protection in the European Community: towards a convergence of policies", *International Social Security Review,* 45, 91-108.

Cox, R. (1998) "The consequences of welfare reform: how conceptions of social rights are changing", *Journal of Social Policy,* 27, 1-16.

Daly, M. (1997) "Welfare states under pressure: cash benefits in European welfare states over the last ten years", *Journal of European Social Policy,* 7, 129-46.

EC (1995) *Social Protection in Europe,* Luxembourg, European Commission.

Esping-Andersen, G. (1990) *The Three Worlds of Welfare Capitalism,* Cambridge, Polity.

Eurostat (1987) *Labour Costs,* Theme 3, series C, vol I. Luxembourg, European Commission.

Evans, M. and Falkingham, J. (1997) "Minimum pension and safety nets in old age: a comparative analysis", Welfare State Programme Discussion Paper 131. London, London School of Economics.

Ferrera, M. (1996) "The "Southern Model" of Welfare in Social Europe", *Journal of European Social Policy,* 6, 17-37.

Flora, P. (1986) *Growth to Limits,* New York, Walter de Gruyter.

Foster, H. (1988) *Employee Benefits in Europe,* London, Longman.

Hantrais, L. (1995) *Social Policy in the European Union,* Basingstoke, Macmillan.

ILO (1984) *Into the Twenty-first Century: the development of social security,* Geneva, ILO.

ILO (1992) *The cost of social security,* Geneva, ILO.

ILO (1956) *Yearbook of labour statistics, 16th edition,* Geneva, ILO (and subsequent editions to 55th edition, 1996).

International Social Security Association (1958) *Old age insurance,* Geneva, ISSA.

Johnson, P. and Rake, K. (1997) "The comparative analysis of pension system outcomes: a simulation modelling approach" in *Pension Systems and Reforms - Britain, Hungary, Italy, Poland, Sweden,* Final Report, ACE programme P95-2139-R, Budapest, 171-90.

Kloosterman, R. (1995) "Three worlds of welfare capitalism? The welfare state and the post-industrial trajectory in the Netherlands after 1980", *West European Politics,* 17, 166-80.

Leibfried, S. (1992) "Towards a European welfare state?" in Z. Ferge and J. Kolberg (eds), *Social Policy in a Changing Europe,* Frankfurt, Campus Verlag, 245-79.

Lindert, P (1994) "The rise of social spending, 1880-1930", *Explorations in Economic History,* 31, 1-36.

Lindert, P (1996) "What limits social spending?", *Explorations in Economic History,* 33, 1-34.

MISSOC (1995) *Social Protection in the Member States of the European Union,* Brussels, European Commission.

Noble Lowndes International (1970) *A Guide to Social Security in Western Europe,* London, Noble Lowndes.

OECD (1970) *Flexibility of Retirement Age,* Paris, OECD.

OECD (1985) *Social Expenditure, 1960-1990,* Paris, OECD.

OECD (1988) *Financing Public Pensions,* Paris, OECD.

Rhodes, M. (1997) "The welfare state: internal challenges, external constraints" in M. Rhodes, P. Heywood and V. Wright (eds), *Developments in West European Politics,* Basingstoke, Macmillan, 57-74.

Schmähl, W. (1993) "Harmonization of pension schemes in Europe? A controversial issue in the light of economics", in A.B. Atkinson and M. Rein (eds.), *Age, Work and Society,* Basingstoke, Macmillan, 308-40.

Taylor-Gooby, P. (1996) "Eurosclerosis in European welfare states: regime theory and the dynamics of change", *Policy and Politics,* 24, 109-23.

U.S., Department of Health, Education and Welfare (1964) *Social Security Programs throughout the World,* Washington, DC.

Wilensky, H (1975) *The Welfare State and Equality,* Berkeley, University of California Press.

Wilson, T. (1974) *Pensions, Inflation and Growth,* London, Heinemann.

EUI WORKING PAPERS

EUI Working Papers are published and distributed by the
European University Institute, Florence

Copies can be obtained free of charge
– depending on the availability of stocks – from:

The Publications Officer
European University Institute
Badia Fiesolana
I-50016 San Domenico di Fiesole (FI)
Italy

Please use order form overleaf

Publications of the European University Institute

To

The Publications Officer
European University Institute
Badia Fiesolana
I-50016 San Domenico di Fiesole (FI) – Italy
Telefax No: +39/55/4685 636
e-mail: publish@datacomm.iue.it
http://www.iue.it

From

Name .....
Address.....
.....
.....
.....
.....

❒ Please send me a complete list of EUI Working Papers
❒ Please send me a complete list of EUI book publications
❒ Please send me the EUI brochure Academic Year 1998/99

Please send me the following EUI Working Paper(s):

No, Author .....
Title: .....
No, Author .....
Title: .....
No, Author .....
Title: .....
No, Author .....
Title: .....

Date .....

Signature .....

Working Papers of the Robert Schuman Centre

Published since 1998

RSC No. 98/1
Jonathan GOLUB
Global Competition and EU Environmental Policy. *Global Competition and EU Environmental Policy: An Overview*

RSC No. 98/2
Ian H. ROWLANDS
Global Competition and EU Environmental Policy. *EU Policy for Ozone Layer Protection*

RSC No. 98/3
Marc PALLEMAERTS
Global Competition and EU Environmental Policy. *Regulating Exports of Hazardous Chemicals: The EU's External Chemical Safety Policy*

RSC No. 98/4
André NOLLKAEMPER
Global Competition and EU Environmental Policy. *Improving Compliance with the International Law of Marine Environmental Protection: The Role of the European Union*

RSC No. 98/5
Thomas HELLER
Global Competition and EU Environmental Policy. *The Path to EU Climate Change Policy*

RSC No. 98/6
David VOGEL
Global Competition and EU Environmental Policy. *EU Environmental Policy and the GATT/WTO*

RSC No. 98/7
Andrea LENSCHOW
Global Competition and EU Environmental Policy. *The World Trade Dimension of "Greening" the EC's Common Agricultural Policy*

RSC No. 98/8
Nick ROBINS
Global Competition and EU Environmental Policy. *Competitiveness, Environmental Sustainability and the Future of European Community Development Cooperation*

RSC No. 98/9
Thomas RISSE (with Daniela ENGELMANN-MARTIN/Hans-Joachim KNOPF/Klaus ROSCHER)
To Euro or Not to Euro? The EMU and Identity Politics in the European Union

RSC No. 98/10
Véronique PUJAS/Martin RHODES
Party Finance and Political Scandal in Latin Europe

RSC No. 98/11
Renaud DEHOUSSE
European Institutional Architecture after Amsterdam: Parliamentary System or Regulatory Structure?

RSC No. 98/12
Jonathan GOLUB
New Instruments for Environmental Policy in the EU. *New Instruments for Environmental Policy in the EU:An Overview*

RSC No. 98/13
Stephen TINDALE/Chris HEWETT
New Instruments for Environmental Policy in the EU. *New Environmental Policy Instruments in the UK*

RSC No. 98/14
Wolfram CREMER/Andreas FISAHN
New Instruments for Environmental Policy in the EU. *New Environmental Policy Instruments in Germany*

RSC No. 98/15
Duncan LIEFFERINK
New Instruments for Environmental Policy in the EU. *New Environmental Policy Instruments in the Netherlands*

RSC No. 98/16
Kurt DEKETELAERE
New Instruments for Environmental Policy in the EU. *New Environmental Policy Instruments in Belgium*

*out of print

RSC No. 98/17
Susana AGULAR FERNÁNDEZ
New Instruments for Environmental Policy in the EU. *New Environmental Policy Instruments in Spain*

RSC No. 98/18
Alberto MAJOCCHI
New Instruments for Environmental Policy in the EU. *New Environmental Policy Instruments in Italy*

RSC No. 98/19
Jan Willem BIEKART
New Instruments for Environmental Policy in the EU. *Negotiated Agreements in EU Environmental Policy*

RSC No. 98/20
Eva EIDERSTRÖM
New Instruments for Environmental Policy in the EU. *Ecolabels in EU Environmental Policy*

RSC No. 98/21
Karola TASCHNER
New Instruments for Environmental Policy in the EU. *Environmental Management Systems: The European Regulation*

RSC No. 98/22
Jos DELBEKE/Hans BERGMAN
New Instruments for Environmental Policy in the EU. *Environmental Taxes and Charges in the EU*

RSC No. 98/23
Carol HARLOW
European Administrative Law and the Global Challenge

RSC No. 98/24
Jørgen ELMESKOV
The Unemployment Problem in Europe: Lessons from Implementing the OECD Jobs Strategy

RSC No. 98/25
Paul ORMEROD
A Business Cycle Model with Keynesian Micro-Foundations: The Policy Implications for Unemployment

RSC No. 98/26
Richard CLAYTON/Jonas PONTUSSON
The New Politics of the Welfare State Revisited: Welfare Reforms, Public-Sector Restructuring and Inegalitarian Trends in Advanced Capitalist Societies

RSC No. 98/27
Paul JOHNSON
The Measurement of Social Security Convergence: The Case of European Public Pension Systems since 1950

***out of print**