Vosso

JUTTA KRAUSE

THE IMPACT OF UNEMPLOYMENT INSURANCE ON UNEMPLOYMENT

A Comparison of the Federal Republic of Germany, Italy and the United Kingdom

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

Florence, May 1982

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This dissertation was written for the major part during my stay at the European University Institute, Firenze, where the beautiful hills of Tuscany gave me inspiration for my research. The thesis was completed in the tranquility of the island of Barbados, which provided the atmosphere for revising and editing the final manuscript.

My generic thanks for assistance to my research go to the administrative and teaching staff, as well as to many of my fellow-research students of the European University Institute. Professor Ezio Tarantelli, my thesis supervisor, has been particularly of constant help in many aspects of this work. Furthermore, I should like to thank Professor Malcolm Sawyer and Professor Jean-Paul Fitoussi who have patiently read through various drafts of the work. In preparing the revised version, I have benefitted greatly from discussions with the members of the Economics Department and from detailed comments by Professor Herschel Grossman, Professor Orley Ashenfelter and Jürgen Kühl.

As it stands, the dissertation probably still suffers from many weaknesses and shortcomings which are, of course, the responsibility of the author alone.

Last but not least, I owe thanks to Miss Linda Cordeaux who spent much time on typing carefully these pages and who assisted in the final embellishments.

Jutta Krause

1. Introduction

Western European countries have been hit to different extents by the recent economic downswing, but now unemployment is considered as one of the most serious problems in industrial societies. Governments and other institutions had realized that unemployment was, in most cases, not the fault of the individual affected, but rather was due to market imperfections. In order to maintain a subsistence income level, various strategies were gradually introduced to minimize financial hardship arising from joblessness. But the persistently high and growing levels of unemployment which we are currently experiencing have resulted in growing expenditures on income maintenance programmes for the unemployed. Table I gives an impression of the magnitude of unemployment and expenditures by the Unemployment Insurance (UI) for the Federal Republic of Germany, Italy and the United Kingdom.

The secular rise in the relative level of unemployment benefits, coupled with the parallel rise in the number of individuals claiming them, have led to such benefits becoming an ever important part of public expenditure. In the Federal Republic of Germany, expenditures on unemployment compensation grew from 721 million DM in 1970 to 9.3 billion DM in 1979. Although small in relation to the gross national product, unemployment insurance has clearly become a major issue among the countries' employment and welfare activities. Not surprisingly, disincentive effects of unemployment compensation and the existence of unemployed 'shirkers' have become a topic of passionate discussion among economists, and still more in the general public. Policy makers and academics have begun to reassess the impact of UI on the labour market. Increasing attention has been drawn to the question of whether unemployment compensation may not only be a remedy for unemployment but also part of the problem itself.

In countries with comprehensive and elaborate systems of UI, such as the United Kingdom and the Federal Republic of Germany, discussion has been taking place for some time, but empirical research on the topic is limited.

TABLE I: UNEMPLOYMENT, UNEMPLOYMENT COMPENSATION AND GDP

		REGISTERED UNEMPLOYED IN MILLION	UNEMPL. 1970=100	COMPENSATION (NAT. CURRENCY) PER UNEMPL.	1970=100	GDP BILLION	1970=100	UNEMPL. COMPENS. IN P.C. OF GDP
FRG.	1970	149	0.721	100	4839	100	676.75	100	0.11
	1971	185	0.921	128	4978	103	754.88	111	0.12
	1972	246	1.368	190	5561	115	827.99	122	0.17
	1973	273	1.303	208	5505	114	918.60	135	0.16
	1974	582	3.045	533	6607	137	987.13	143	0.31
	1975	1874	8.804	1221	8197	169	1034.03	152	0.85
	1976	1060	8.473	1175	7993	165	1122.82	165	0.75
	1977	1030	7.892	1095	7662	158	1200.49	177	0.66
	1978	993	7.886	1094	7941	164	1289.28	190	0.61
	1979	876	9.324	1293	10643	220	1400.16	206	0.67
ITALY	1970	888	113	100	127300	100	62883	100	0.18
	1971	1038	251	222	241800	190	68510	109	0.37
	1972	1048	226	200	215600	169	73124	119	0.30
	1973	1005	288	255	286600	225	89746	143	0.32
	1974	997	387	342	388200	305	110719	176	0.35
	1975	1107	652	577	589000	463	125378	199	0.52
	1976	1182	732	648	619300	486	156657	249	0.47
	1977	1380	939	831	680400	535	190083	302	0.49
	1978	1529	1161	1027	759300	596	222369	354	0.52
	1979	1642	1259	1114	766700	602	268868	428	0.47
U.K.	1970	612	0.152	100	248	100	50.888	100	0.30
	1971	792	0.218	143	275	111	57.112	112	0.38
	1972	876	0.246	161	281	113	63.196	124	0.39
	1973	619	0.160	105	258	104	72.750	143	0.22
	1974	615	0.229	151	372	150	82.727	163	0.28
	1975	978	0.396	261	405	163	104.143	205	0.38
	1976	1359	0.568	374	418	169	124.027	244	0.46
	1977	1484	0.635	418	428	173	142.693	280	0.44
	1978	1475	0.668	439	453	183	163.609	322	0.41
	1979	1391	0.637	419	458	185	198.280	372	0.34

SOURCES : EUROSTAT, ANBA, INPS, CENTRAL STATISTICAL OFFICE

The aim of the present thesis is to answer the question of whether and to what extent unemployment is induced by unemployment insurance. The three countries, the Federal Republic of Germany, Italy and the United Kingdom, were chosen for the analysis in view of the diverging and often opposing ways their unemployment has developed and their systemsof UI have functioned. Empirical analysis in this thesis has been concentrated on the Federal Republic of Germany as reference for comparisons with both the United Kingdom and Italy. The various studies made in Great Britain provide standards for comparison, while deficiencies in the data on unemployment and particular features of the social security system do not allow similar calculations for Italy. A period with extremely low and high levels of unemployment between 1960 and 1979, is covered in the research.

The thesis is organized into three major sections, the first being a description of unemployment and social security systems for the unemployed, the second the theoretical context in which unemployment and unemployment benefits can be placed, and the third consists of a review of empirical studies and their application to the West German case.

In Chapter 2, definitions and structural characteristics of unemployment are described. International comparisons of different systems of unemployment insurance and their effects on the labour market require a fair understanding of the methods of counting unemployment. There exists no clear notion of full employment which can be considered as a reference for calculating 'real' unemployment as the difference between full employment and the existing level of employment. But comparisons of the three countries under examination cannot be restricted to figures of officially registered unemployment. Amount and structure of registered versus 'hidden' unemployment vary among countries as well as with the level of employment. The extent to which unemployment is registered is not significantly determined by the existing type of unemployment insurance. Thus various forms of 'hidden'

unemployment and under-employment should be taken into account when overall levels of employment and unemployment are analysed.

Chapter 3 deals with social insurance schemes for the unemployed in the three countries. A historical review of British unemployment and insurance schemes is included because in the inter-war period discussions have already started on disincentive effects of the British unemployment insurance. The different features of the three unemployment insurance schemes are summarized again in Appendix E in order to facilitate understanding of the empirical analysis. A comparison of social security schemes for the unemployed in the three countries concludes the descriptive part.

Chapter 4 analyses unemployment insurance and its impact on unemployment in the context of labour market theories. These are especially the basic neo-classical model of marginal utility and its extension to Job Search Theory, and a model of non-clearing markets in a disequilibrium approach. The latter theoretical model is then transformed into an empirically testable model. In an appendix to Chapter 4 the concept of contract theories is outlined. While the other theoretical models intend to explain unemployment arising from the availability of unemployment benefits, contract theory claims to give interpretations of the variations in employment levels. Theoretical and empirical analyses are concentrated on the supply side of labour markets. The effects of unemployment insurance on aggregate demand are only briefly described. An analysis of the stabilizing effects of unemployment insurance would require a different approach in the context of an econometric model of the entire economy which goes beyond the scope of the present study.

In Chapter 5 empirical studies dealing with the effects of unemployment insurance on the labour market in different countries are discussed and their general findings are summarized. Research on the impact of unemployment insurance has been conducted mainly in the United States where many recent labour market theories have also originated. However, many approaches are not directly applicable to

Western European economies, as labour market legislation and functioning show considerable differences. In the United Kingdom the debate on unemployment inducing effects of unemployment insurance dates back to the early 1930s and has been revived more recently. The validity of time series data and the viability of the neo-classical approach have been discussed. In the Federal Republic of Germany only one study on unemployment insurance and aggregate unemployment has followed the approach most American and British analyses have applied.

In Chapter 6 the focus is on definitions and calculations of unemployment insurance components and the different methods used for measuring their impact on unemployment. The empirical analysis on unemployment in the Federal Republic of Germany is described in Chapter 7. Multiple regression analysis is based on time series data for the period 1960 to. 1979 . In general, the results do not indicate that unemployment insurance benefits have contributed to variations in unemployment. Regression coefficients for unemployment benefits are found to be insignificant in most of the estimated equations. The empirical analysis of unemployment insurance has been confined to time series data. This approach is disputable and its short-comings are indicated in several stages of the thesis. But in the Federal Republic of Germany, time series are the only data available to estimate the effects of employment insurance and aggregate unemployment.

Ideally, one would wish to find a situation in which one group of individuals drawing benefits can be compared with another group of unemployed persons ineligible for unemployment payments. A similar situation does not prevail in reality. However , comparisons between the three countries with very divergent social security schemes can improve the understanding of effects of unemployment benefits on unemployment and labour market participation. Chapter 8 provides evidence from the comparative analysis. The final conclusions indicate some political considerations concerning discussions on unemployment insurance.

The discussion on disincentive effects of unemployment insurance has provided arguments for reductions in benefits and for more restrictive handling of the rules governing eligibility, especially since financial means of the insurance bodies are becoming scarce. But empirical evidence on the effects of unemployment insurance on overall employment is not without ambiguity. This thesis presents an empirical contribution to the debate on unemployment and unemployment insurance, but further research on this topic is still required.

2. Statistics on Unemployment in Context

2.1 Federal Republic of Germany

2.1.1 Definition and Calculation

The main source of data on employment and unemployment in the Federal Republic of Germany and West Berlin are the statistics provided by the Bundesanstalt für Arbeit (Federal Labour Office). The activities of the labour administration were regulated in the Arbeitsförderungsgesetz (AFG) (Employment Promotion Act) from 1969, stating that the Bundesanstalt für Arbeit is the main administrative body responsible for dealing with labour market problems. 1/ Paragraph 6/3 AFG, prescribes that the Bundesanstalt für Arbeit has to prepare statistical reports concerning labour force, employment and unemployment. Placement agents, as well as staff at a lower level, collect the relevant data during several days each month. Twice a year structural analyses of unemployment are conducted by the labour office. Generally, these statistics are considered to provide reliable data on unemployment. They are also subdivided according to social structures.

Other series of unemployment statistics are based on surveys published by the Federal Statistical Office in the "Mikrozensus" and "Volks-und Berufszählungen" with samples on a quarterly or yearly basis. They have different concepts and definitions of unemployment (Erwerbslosigkeit) according to which those who are jobless but not registered at the Labour Office, as well as some employed persons with very low incomes, are counted. The numbers of unemployed (Erwerbslose) recorded through micro-census have always been slightly above those registered with the labour administration (Arbeitslose). 2/

1/ For a description of the structure and organization of the administration of German labour markets see Krautkrämer, U. (1978)

2/ See Lippe, P. v. d. (1977), p.46 and Autoren-Kollektiv des IMSF (1974), pp.55 and 161.

Traditionally, the German labour administration is the institution responsible for the registration of the unemployed and allocation of unemployment benefits. These tasks of the Federal Labour Office have their impact on the definition of unemployment. The people considered as unemployed are those looking for jobs as employees, are available to the employment agency and are under 65 years of age. Available for placement are those persons who are able to work under the general conditions of the labour market and who are willing to accept any adequate occupation they can fulfill. [1/] The employment aimed at must not be neglegible, must not be only in a certain plant, and must not be for less than three months. Statistically registered are flows and stocks of job seekers (able and willing to take up employment during the next three months) and among them the unemployed. This is done by counting the registration cards on a monthly, quarterly and yearly basis.

The unemployment rate is normally defined as the number of unemployed in relation to the working population or to employment. Because of the official definition of unemployment and the procedure for counting the number of unemployed followed by the Labour Office, one has to take into consideration that certain social groups among the actually employed are omitted from the official statistics.

Table 2 and Figure I show the development of employment and unemployment from 1955 to 1979.

In the German labour market, part of the considerable reduction in employment is not identified in the official employment statistics.

[1/] See paragraphs 101, 102, 103 AFG. Changes in the definition of availability have occurred during the last years. See Goldberg/Güther/Jung (1977), p.47.

In the FRG employment has decreased considerably during the last two years. Between 1973 and 1977 the total labour force declined by about 900,000 persons. Only recently do employment figures again show an upward trend. The decrease in the active labour force did not increase unemployment to the same extent. The most significant group in this context is the migrant workers leaving the FRG as there are hardly any job opportunities there. The situation on the labour market, the economic recession and the policy of an end to recruitment, which has been applied since November 1973 have led to a decline of more than 600,000 by 1977 in foreign employment form a peak of 2.5 million in 1973. 1/

The decline in employment was only in part a result of the re-migration of foreign workers. A substantial number of people out of work did not register as unemployed but withdrew from the labour market.

The classic group in this respect consists of married women who have no claim on unemployment benefits either because they do not fulfill the qualifying conditions or because their husbands earn too much. They do not see any advantage in registering with the Labour Office. In 1976 the year of the lowest female employment, 200,000 women were estimated to be in this group. 2/

People at the beginning of their active working life, as far as they are not in need, and those who leave the educational system without employment or training contracts often do not register as unemployed. In general, they cannot claim unemployment aid.

Former self-employed persons who have become jobless will not receive unemployment benefits as long as they are not in need, and therefore see no need to register.

1/ See Bundesanstalt für Arbeit (1978) p.2 41.

2/ See IAB (1977)

Adult members of the family of foreign workers who did not receive, or have lost their work permits, are not counted in the work force. (estimates for 1976 were about 180,000 persons).[1/] Foreigners who have lost their jobs and no longer have or never had work permits and are living illegally in the FRG are, of course, not registered in the official unemployment statistics.

Delayed entry into working life for university students as well as for students attending vocational schools, reduces participation rates in the labour market. High unemployment levels also lead to earlier retirement. Persons over 59 years of age who have been unemployed for more than one year can receive anticipated retirement pay. Persons who register as unemployed but attend vocational retraining, figure in separate statistics and during that period are not counted as unemployed.

Between 1973 and 1978 the number of the active working population (Erwerbstätige) decreased from 26,985,000 to 26,074,000 while the number of registered unemployed in the same period went up from 273,000 to about one million, which is certainly less than the reduction of the working population. According to estimates made in the Federal Labour Office in 1978, there existed a so-called 'Silent Reserve' (Stille Reserve) of more than 600,000 'discouraged workers'. This has to be seen as an involuntary joblessness caused by the recession which exists, together with the openly registered unemployment. [2/]

2.1.2 The Structure of Unemployment

In the absence of reliable data on hidden unemployment we have to concentrate on unemployed persons registered with the Labour Office. Figure 2 shows the development of the numbers of unemployed persons and vacancies. Apart from the short recession in 1967 and 1968, unemployment

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1/ See IAB (1977)

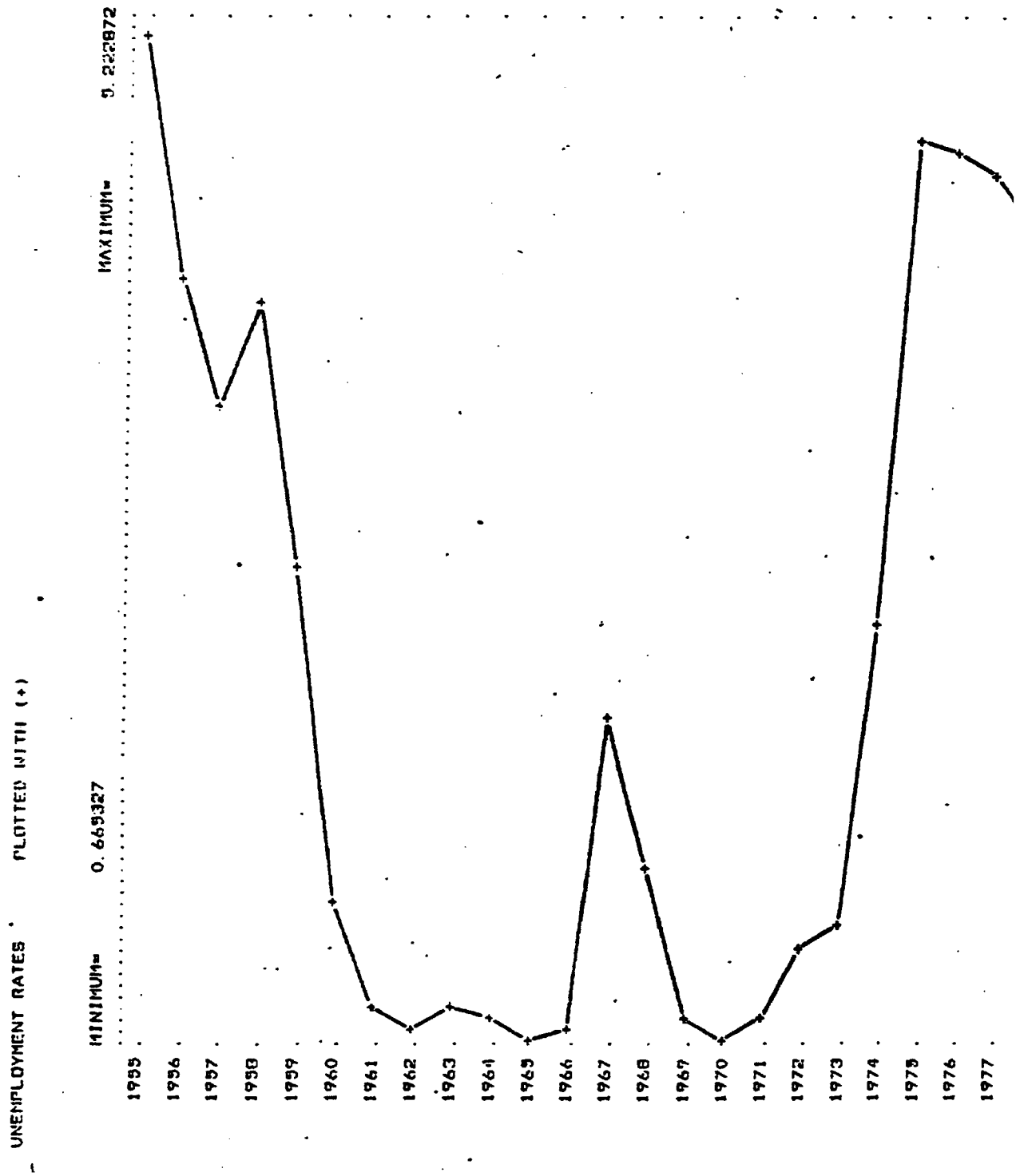
2/ See Autorengemeinschaft (1978) p.54

TABLE 2: LABOUR FORCE AND UNEMPLOYMENT IN THE FRG 1960-1979

	TOTLA	MTOTLA	FTOTLA	UNEMP	MUNEMP	FUNEMP	FOREI
1960	26518	16620	9898	271	178	92	279
1961	26772	16879	9893	181	118	63	507
1962	26845	16968	9877	155	102	52	629
1963	26930	17035	9895	186	130	55	773
1964	26922	17083	9839	169	115	54	902
1965	27034	17190	9844	147	106	42	1119
1966	26962	17217	9745	161	117	45	1244
1967	26409	16901	9508	459	335	124	1014
1968	26291	16791	9500	323	235	88	1019
1969	26535	16958	9577	179	125	54	1366
1970	26817	17179	9638	149	93	56	1807
1971	26910	17233	9677	185	101	84	2128
1972	26901	17182	9719	246	141	106	2285
1973	26985	17127	9858	273	150	124	2425
1974	26797	16912	9885	582	325	258	2323
1975	26397	16579	9818	1074	623	452	2061
1976	26148	16378	9770	1060	567	494	1965
1977	26074	16268	9806	1030	518	512	1872
1978	26223	16342	9881	993	489	504	1857
1979	26424	16441	9983	876	417	459	1877

Source: ANBA, various issues

FIGURE 1: THE RATE OF UNEMPLOYMENT IN THE FRG



was decreasing continually until 1974. The excess supply of labour in the 1950s was partially caused by the inflow of refugees from Eastern Europe and Eastern Germany, which, in total, amounted to a net immigration of over three million persons. After that, until the recent recession, the West German labour market was characterized by an excess demand for labour, which, to some extent, has been reduced by the immigration of foreign workers. Since the beginning of the economic crisis in 1974, unemployment has been constantly growing and seems to remain at a high level. At the same time, the number of vacancies has shown an inverse development. In the year of highest unemployment during the period under consideration, there was on average only one vacancy for more than four unemployed persons.

Table 3 shows that the increase of unemployment was caused mainly by an increased duration of unemployment spells while the flow of unemployment showed much smaller variations over time.

Unemployment is unevenly distributed over different groups and sectors in the labour force. What is of interest in this research is an analysis of unemployment in respect to its social and demographic structure (especially in respect to sex and age) rather than a regional distribution or the incidence of workers with different skill levels.

Female Unemployment

In all the countries of the European Community, men and women are hit differently by unemployment. Recently in the FRG, as in most other Western European countries, female unemployment was increasing at a faster rate than that of males. While in May 1975 41.7 percent of the registered unemployed were women, in 1979 female unemployment amounted to 55.5 percent of overall unemployment. [1/] In May 1979 the rate of unemployment for females was 4.9 percent, for males it was only 2.4 percent. Assuming a higher proportion of

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1/ See ANBA (1980)

FIGURE 2: REGISTERED UNEMPLOYMENT AND VACANCIES IN THE FRG

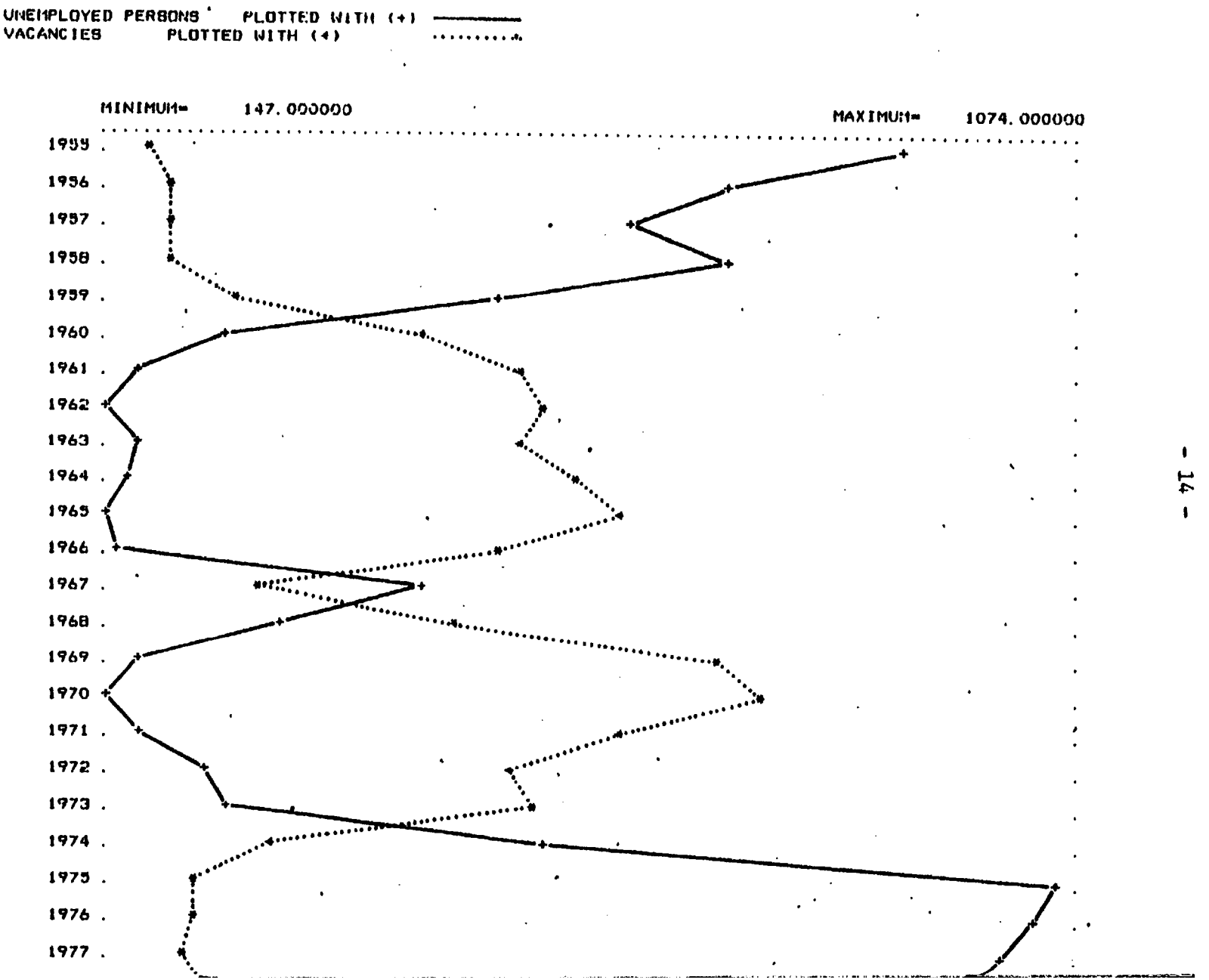

TABLE 3: SPELLS AND DURATION OF UNEMPLOYMENT

	UNEMP	UNF	ADUR	CDUR
1962	155	1894	0.000	0.000
1963	186	2002	0.000	0.000
1964	169	1578	0.000	0.000
1965	147	1422	0.000	0.000
1966	161	1694	3.91	0.000
1967	459	2545	4.64	1.66
1968	323	1790	7.58	2.17
1969	179	1369	6.61	1.99
1970	149	1296	4.92	1.52
1971	185	1563	4.25	1.32
1972	246	1662	4.55	1.59
1973	273	1877	4.95	1.71
1974	582	2795	4.46	1.96
1975	1074	3450	5.96	2.79
1976	1060	3256	7.44	3.66
1977	1030	3315	7.94	3.54
1978	993	3081	8.55	3.73
1979	876	2844	8.29	4.01

Source: ANBA, various issues, LAB

Notes to Table 3:
- UNEMP - registered unemployed
- UNF - flows into unemployment
- ADUR - average duration of unemployment
- CDUR - duration of completed spells of unemployment

women in the 'Silent Reserve', the female compared to the male unemployment is, in reality, even higher than is shown in the official statistics.

In May 1979 23.5 percent of the male unemployed were without jobs for more than one year. The same percentage for women was 19.1 percent. It can hardly be assumed that it is easier and takes less time for a woman to find a job, but the figures reveal that women are pushed out of the labour market more quickly. Although the integration of women into active working life is mentioned in the Employment Promotion Act as a goal of labour market policy, the working activity of women is still regarded as only secondary to that of men. In layoffs, when 'social' points of view are taken into consideration, preference is given to the dismissal of a woman rather than a man. 1/ Many unemployed women are looking for part-time jobs which are very scarce. Housewives who are interested in earning money in addition to the male income are often not considered as 'real' unemployed. 2/

Youth Unemployment

In comparison to other Western European countries, the FRG does not seem to have been hit severely by youth unemployment. Talking about youth unemployment, one refers in general to young people under 20 years of age. The unemployment rate of this age group does not differ much from the overall unemployment rate.. In 1979 it was 3.1 percent compared to 3.2 percent for all unemployed persons. This age limit is, however, less meaningful since the raising of the school-leaving age has meant that those in the group of 15 and 16 year olds rarely seek employment. In most of the Länder of the FRG the tenth compulsory year of school was introduced during recent years, partly as a policy measure against youth unemployment. Especially in the 20-24 years age group, unemployment appears soon after the education phase.

1/ See Offe, C. (1977) p.41.

2/ See Engelen-Kefer, U. (1978)

The rate of youth unemployment calculated in the micro-census (also including young people out of work but not officially registered as unemployed) is one to two percentage points higher than the one published by the Labour Office for the group of 15 to 19 year olds. 1/ This again shows that the young unemployed often do not register and thus form part of the 'Silent Reserve'.

The duration of unemployment for young people is shorter than the average. Nevertheless, youth unemployment is of great importance for the FRG, because a high number of young people are affected by it.

Due to flexible anticipated retirement possibilities, seniority rights, and special protection against dismissals, older workers in the FRG are less affected by unemployment. But once unemployed, they have the longest duration. In May 1979, 37 percent of the unemployed above 55 years of age were out of work for more than one year (against 21 percent in all age groups).

Foreign Workers

As Table 2 shows, the number of foreign workers has decreased since 1973. Their unemployment was exported and, therefore, it is not recorded in the statistics. Only very recently has the outflow of migrant workers come to a standstill. The stopping of recruitment could only have a long-term impact on citizens from countries outside the community. Reduction of actual foreign employment required some time. It was impossible to dismiss and deport foreign workers directly, but laws for foreigners were applied more strictly and often other discriminatory measures were used. The Government of the FRG tries to enforce the willingness and ability of migrant workers and their families to return to their mother countries. In practice, there are often

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1/ See Bundesanstalt für Arbeit (1978) p.217. A high percentage of young job seekers who applied for apprenticeship programmes was found not to be registered as unemployed. See Bäcker, G./Engelen-Kefer, U./ Seifert, H. (1977)

manifold restrictions in the material and social living conditions for foreign workers, such as closures of the whole quarters to the entry of new foreigners (Zuzugssperre), refusal of working permits, or not allowing residence permits for family members arriving later. Apart from these facts, there exists a so-called assisted return in the form of severence pay, especially for those foreign workers who have earned the right to stay as they have been living for a longer time in the FRG. 1/ Furthermore, these measures were accentuated by ruling on precedence for natives (Inländerprimat), stating that for the grant or prolongation of the permission to work, domestic job-seekers have to be considered first. 2/ Practically the decision is left to the enterprises which can dismiss or keep foreign workers according to their needs. The crucial points of layoffs in sectors where foreign workers are concentrated, as well as the selection of dismissals resulted in a proportionately higher amount of unemployment of foreign workers. Data on unemployment rates among foreign workers are scarce. In some publications, foreign unemployment is completely excluded, the argument being that it would bias the overall picture of unemployment in the FRG. 3/ The reduction of foreign employment is only to a small extent, reflected in registered unemployment. Since the beginning of the recession, the unemployment rate of foreigners has been above that for Germans (in September 1979 it was 3.9 percent, compared to 3.4 percent of all unemployed persons).

The average duration of unemployment for foreigners, however, has been lower than for Germans. 4/ One may assume that many foreign

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1/ On the legal situation for foreign workers see Gehmacher/Kubat/Mehrländer (1978) pp.116. Foreign workers coming from other countries than the EEC are granted permits only for stay and also for work for one year which ordinarily will be extended always for one year. Foreigners already staying in the FRG for ten years are conceded unlimited working permission.

2/ See Hildebrandt, E. (1978) p.111.

3/ An example is the Infratest Sozialforschung, working on a sample without foreigners in describing the situation of unemployed persons.

4/ See Kühl, J. (1981).

TABLE 4: UNEMPLOYMENT IN ITALY 1967 - 1979

	ISTAT			MINISTER OF LABOUR	
	IN SEARCH OF EMPLOYMENT			ALL	
	UNEMPLOYED	FIRST	ALL	UNEMPLOYED	CLASS II
1967	385	378	1106	1024.0	224.0
1968	358	423	1172	961.0	225.2
1969	304	459	1160	887.2	222.4
1970	269	449	1111	887.6	220.9
1971	279	435	1109	1038.1	259.4
1972	262	569	1297	1047.7	273.6
1973	248	596	1305	1004.8	286.9
1974	194	489	1113	997.3	308.8
1975	246	511	1230	1106.9	361.5
1976	255	603	1426	1181.7	414.9
1977	211	693	1545	1379.6	549.4
1978	212	792	1571	1528.6	646.3
1979	226	866	1698	1642.0	738.8

Source: See pages 20 and 21

unemployed leave the FRG after a relatively short search for new employment. This attitude has to be seen in connection with the restricted access of foreign workers to unemployment benefits and the delays in receiving work permits for family members.

2.2 Italy

2.2.1 Sources and Reliability of Data on Employment

The available statistical data on the Italian labour force and unemployment show more imperfections than statistics of other countries with similar levels of economic and administrative development. However, recently there has been a thorough revision of the statistical sources and methods, and a change in the sample coverage which led to a more reliable picture of Italian employment. The new figures are not directly comparable to previous series, but they should be closer now to those provided by the other EEC countries. 1/

Statistics with sub-divisions according to social categories of unemployed do not exist for Italy to the same degree as for other countries. Data on the registered unemployed by age groups published by the Statistical Office of the European Community are missing only in the case of Italy. Furthermore, statistics on vacancies are not collected by Italian authorities. Apart from general difficulties in collecting data on unemployment, such as psychological resentments in registering or insincerity in giving information to public agencies, the main confusion in Italy arises from the existence of two different official sources providing divergent results: statistics from the Central Institute of Statistics (Istituto Centrale di Statistica, ISTAT) and the Minister of Labour (Ministero del Lavoro e della Previdenza Sociale). They have fundamental differences in the method of collection, in the definition, as well as in the presentation of the data. In Table 4, the new adjusted series on unemployment published by ISTAT are con-

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1/ See OECD, Italy (1979) p.10. This fact also explains the difficulties in finding consistent time series on Italian unemployment.

trasted with the figures of the registered unemployed collected by the Minister of Labour. 1/

Since 1952 the Central Statistical Office has been conducting annual labour force sample surveys, and since 1957 on a quarterly basis. In 1979 the two-stage stratified sample included 90,000 families resident in 1,600 communes with at least 20,000 inhabitants. 2/ In the first stage, these communes are sub-divided into homogenous groups out of which a sample is drawn. Then the families to be interviewed are decided upon. The labour force (forze di lavoro) is defined by ISTAT as the sum of the employed (occupati) and persons in search of employment (persone in cerca di occupazione). The unemployed are counted separately in the labour force. In the category of 'in search of employment' a distinction is made between the unemployed (disoccupati) who have already had a job, but have lost it and unemployed persons searching for first employment (persone in cerca di 1ª occupazione). All persons above 14 years of age who in the relevant week of survey have declared themselves to be seeking work and are able to accept it (or will start to work in the week following the interview) are considered as unemployed.

Statistics on unemployment provided by the Ministry of Labour are based on the numbers of people registered in the lists of the placement offices. According to the law, everyone who is looking for employment has to register with the labour office. 3/

1/ Before the revision of ISTAT statistics there was quite a considerable difference between the two data sources. Figures on the unemployed registered in category I in the lists of the Minister of Labour, were on average far superior to the numbers of unemployed (who have been in employment before) published by ISTAT. See Büchi, W. (1969) p.24.

2/ See ISTAT Bollettino (1980) p.140.

3/ See Legge 29 Aprile 1949 n.264.

The unemployed are classified in four categories: Class I comprises those whose unemployment is due to the loss of a previous job. Class II the unemployed looking for their first job; normally young persons are counted. Contrary to figures on unemployment after employment, the figures on youth unemployment in category II have always been below those published by ISTAT. Young unemployed often do not see any advantage in registering with the Labour Offices. This did not change very much with the law on youth unemployment by which young people between the ages of 14 and 29 were called to register for employment. 1/ In Classes III and IV of the lists, housewives and pensioners who are looking for employment are included. 2/ Registration is not cancelled if a person declares that he is seeking employment but repeatedly refuses job offers.

In certain respects the statistics provided by ISTAT are now considered to be more reliable than those collected by the regional labour offices. 3/ Population census data would be more realistic measures of the stock of persons in search of employment than indications obtained from samples on the labour force. But they are made only every ten years, while sample surveys are now provided quarterly.

However, there are limits to the reliability of unemployment statistics provided by the two institutions, one being a by-product of an administrative activity, the other based on a rather restricted sample of the population.

2.2.2 Characteristics of Italian Employment

Compared to other countries with similar economic development and a corresponding demographic structure, Italy has a relatively low participation in employment. One may suspect that cases of registered inactivity often do not correspond to real inactivity, but rather to an economic activity which is not registered and thus illegal.

1/ See Legge 1° Giugno 1977 n. 285

2/ See Allessandrini, P. (1978) p.90

3/ The Banca d'Italia bases its economic analyses on data of employment provided by ISTAT

Surveys on single communes in Emilia-Romagna and Marche gave indications of 15 to 20 percent difference between the official and the effective activity rate. 1/ Research at the local level has up to now too sporadic a character to be able to extrapolate the results on to the national level. But one might assume that the official statistics on unemployment and employment give an incomplete picture of the Italian labour market. The presence of a rather relevant extent of 'black' labour is a widely discussed problem in the Italian economy and as an Italian economist said "Insomma, mentre siamo ultimi nel lavoro ufficialmente registrato saremmo primi in quello occulto, il che non costituisce necessariamente un conforto." 2/

However, the overall activity rate and the one on female employment is lower in Ireland and in the Netherlands. The Italian activity rates for males are still higher than in France, the Netherlands and Ireland. 3/

A random survey carried through by CENSIS - DOXA, covering 22,500 individual cases reveals an effective labour supply substantially larger than the official ISTAT data indicate. Calculations show a supply of 23,885 million in contrast to a figure of 19,337 million which would move the percentage of labour supply in the resident population from 35.5 to 44 percent. 4/ After the thorough revision of statistical methods and sources by ISTAT, the rate of working activity rose from 35.9 to 38.9 percent because of the change in the calculation of the labour force. 5/

For the group between the ages of 60 and 65, the low official participation rate in the labour market is due to the Italian retirement system. People can retire after 35 years of employment with contributions paid to the old age insurance. But retirement pensions are often too low to secure adequate continuity in the standard of living. There-

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1/ See Fuà, G. (1976) p.30

2/ Fuà, G. (1976) p.36. See also Bellacci, M. (1977)

3/ See Eurostat (1979)

4/ See Frey, L. (1977) and Bruno, S. (1978) p.42

5/ See Kommission der Europäischen Gemeinschaften (1978) p.61 and Pettenati, P. (1979)

fore, and in order not to lose retirement payments, pensioners often work under illegal conditions. In the case of women, the inadequacy of social infrastructure explains to some extent the low participation rate. 1/

Reasons for the considerable degree of 'non-institutional' work also lie in the labour market rigidities which make it almost impossible for an enterprise to dismiss workers once hired, and in the high labour costs in relation to productivity. Italian productive capacity is below average of the European Community, but salaries and other costs, especially contributions to social security,are similar or even higher than in more developed countries in Western Europe. 2/

In the context of this research it would go too far to examine more thoroughly the extension and reasons for black labour in Italy. But this phenomenon has to be kept in mind in the analysis of Italian unemployment.

Employment has increased steadily since 1966, although not as fast as the total labour force. The return of migrants, as well as demographic developments, have contributed to this increase. Unemployment did not rise as sharply as in many other countries in spite of the decline in employment in agriculture which had to be absorbed by the industrial sector. (See Table 5).

As in most Western European countries, the incidence of unemployment is particularly high among women. More than half of the unemployed in 1979 were female. 3/ The category of unemployed young people has shown the largest increase in unemployment. (See figure 3). To make it easier to place young people in jobs, the Law 285 was passed

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1/ See OECD, Italy (1979) p.16

2/ See Fuà, G. (1976) p.66 and Salkowsky, H. (1977) p.19

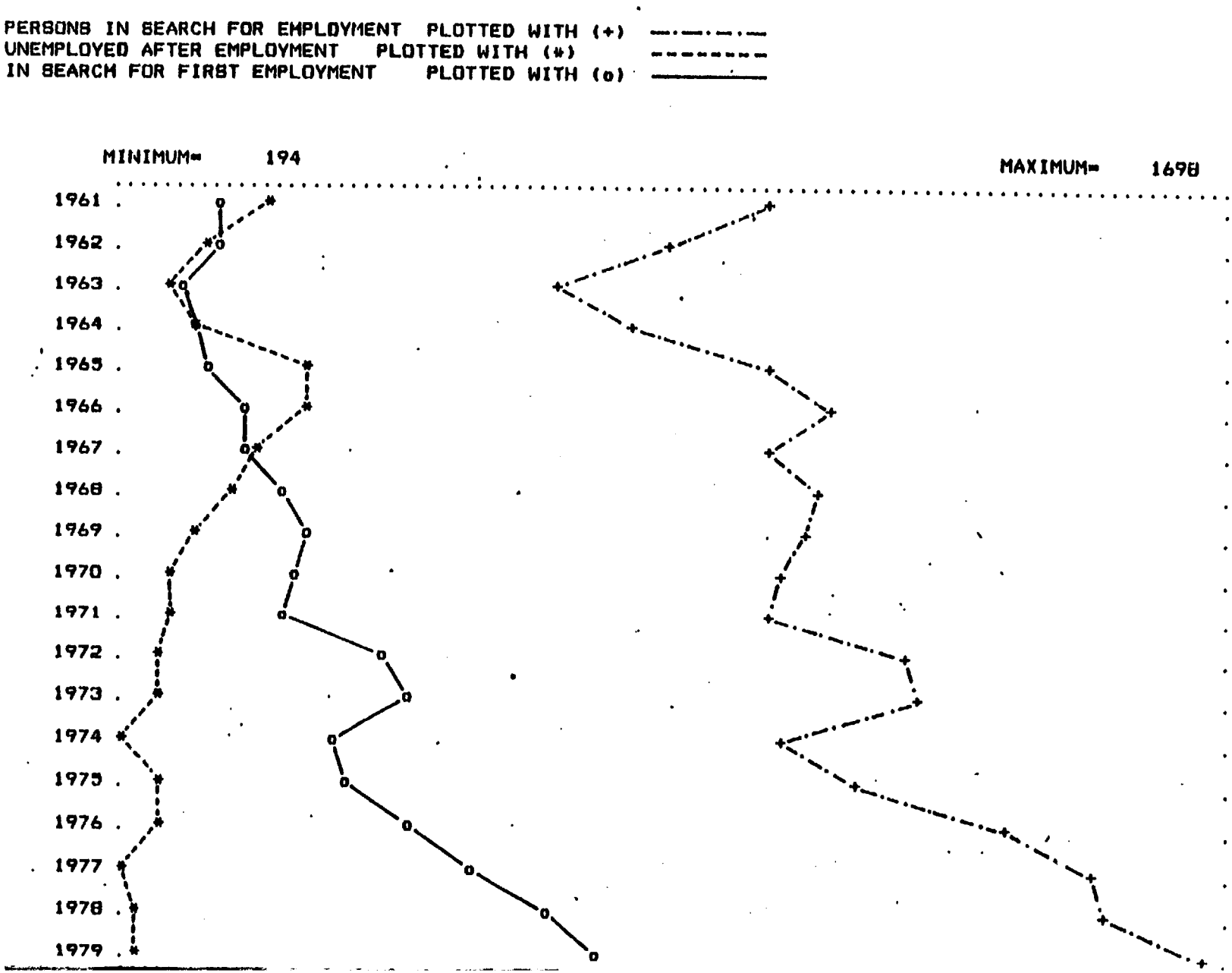
3/ See ISTAT, Bolletino (1980)

TABLE 5: LABOUR FORCE AND UNEMPLOYMENT IN ITALY

	TOTLA	MTOTLA	FTOTLA	UNEMP	MUNEMP	FUNEMP
1960	21404	14763	6641	1546.0	1101.0	445.0
1961	21373	14663	6710	1407.0	984.0	423.0
1962	21137	14580	6557	1162.0	791.0	371.0
1963	20690	14454	6236	1069.0	726.0	343.0
1964	20669	14585	6084	1087.0	749.0	338.0
1965	20415	14458	5957	1180.0	856.0	324.0
1966	20183	14407	5776	1115.0	812.0	303.0
1967	20313	14525	5788	1024.0	738.0	286.0
1968	20352	14470	5882	961.0	685.0	276.0
1969	20167	14283	5884	887.2	623.4	263.8
1970	20248	14359	5889	887.6	620.0	267.6
1971	20204	14307	5897	1038.1	705.5	332.6
1972	20092	14259	5833	1047.8	705.6	342.2
1973	20290	14243	6047	1004.8	663.0	341.8
1974	20522	14372	6150	997.2	638.6	358.6
1975	20759	14459	6300	1106.9	700.3	406.6
1976	21079	14492	6587	1181.7	741.0	440.7
1977	21392	14449	6943	1379.6	838.7	540.9
1978	21503	14507	6996	1528.6	894.6	634.0
1979	21985	14721	7264	1642.0	922.8	719.2

SOURCE : EUROSTAT

FIGURE 3: UNEMPLOYMENT IN ITALY



in 1977, whereby their names were entered in a special register. The number of young people registered in the labour offices increased and came closer to ISTAT data. But the Law appears to have had little effect because of a lack of convergence between demand and supply of labour. 1/ Between 1977 and 1979 unemployment of first job seekers has increased by almost 200,000. The number of unemployed who had previously held jobs showed little change during the recent period. This is explained by the drop in the rate of turnover in large firms, indicating the rigidity of the Italian labour market. The increasing resort to working shorter hours and the difficulty of laying off workers have secured jobs for those who are employed but makes new entry into the labour market almost impossible. 2/

Victims of the employment crisis in Italy are especially to be found in the economically backward regions, a result of the failure of the industrialization programme for the Mezzogiorno. More than in the Northern parts of Italy, young people are affected by unemployment. Here the educational system clearly fulfilled a waiting-room function, since the proportion of the population attending upper secondary schools, and in particular universities, is distinctly higher in the South than in the industrialized parts of the country. 3/

The Italian labour market is characterised by substantial inequalities among regions as well as among different groups of society, in respect to age, sex and economic sectors.

2.3 United Kingdom

2.3.1 The Collection of Statistics

From 1913 statistics on unemployment among persons insured in the National Inscurance Act of 1911 became available. But until the 1920 Unemployment Insurance Act was passed, no reasonably accurate figures

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1/ On the question of youth unemployment and the Law 285, see also DeMasi, D./Signorelli, A. (1978), pp.80-83

2/ See Mazzochi, G. (1981). The 'Statuto dei lavoratori' approved in 1970, led to fundamental changes in the labour market institutions. See Valli, V. (1981)

3/ See Birtig, G. (1976) p.18

on unemployment were available. From 1921 two main series of unemployment existed. The first showed the numbers of unemployed persons who signed the register of the Employment Exchanges and who were seeking employment and capable of work. The second series showed the extent of unemployment among insured persons. It was, in fact, a physical count of 'unemployment books' which the worker had to obtain from his employer and lodge in at the Employment Exchange in the case of unemployment. 1/

Presently in the United Knigdon, there exists a monthly series of official unemployment statistics published by the Department of Employment. Each month, on the 'reference day', the Department of Employment conducts a count of those persons registered in local employment offices or careers offices, who on that day have no job, and are capable of and available for full-time work. There exists no age limit above which people may not be included on the register, but persons who have retired may not be registered as unemployed. Unemployed persons who are seeking part-time jobs of less than 30 hours per week or a job of brief duration, as well as people who have stopped working temporarily, are excluded from the register. People who become unemployed and find a new job within the interval between two counts (four weeks) and therefore are not unemployed on any reference day are not counted.

The chance of being placed in a job is one incentive to register, but more importantly is the fact that 'signing on' is the precondition for the receipt of UI benefits and supplementary benefits. The UK statistics of registered unemployment are not really a measure of the numbers of people out of work and looking for jobs. They are, in fact, a by-product of two administrative processes which are the payment of unemployment benefits and the placement function of the employment offices..

The lack of alternative information on unemployment makes the official register of the unemployed the main source for employment analysis. The Population Census provides comprehensive information, but takes place only every ten years. The General Household Survey of

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1/ See Buxton, N.K. (1977) p.55

12,000 households is too small to give an accurate picture of unemployment because it has a high degree of sampling variation. 1/ The General Household Survey defines as unemployed, persons who said that during the reference week they were not in paid employment, but were looking for work or waiting to start a job or intended looking for work but were prevented from doing so by temporary sickness. 2/ The EEC Labour Force Sample Survey is larger but it is undertaken only every other year and for the UK since 1975.

In recent years there has been considerable discussion of the usefulness of the official monthly unemployment statistics as an indicator of labour supply and a measure of unemployment. The level of unemployment can be over-estimated by the statistics because no distinction is made between different categories of unemployed such as those who are not genuinely seeking work, disabled persons, and fraudently unemployed. On the other hand, data on unemployment are not sufficently comprehensive as they include only those unemployed who are registered and, consequently, underestimate the numbers of unemployed. 3/

Married women especially often do not register when unemployed. There are a number of reasons why they might not join the unemployment register. The flat-rate benefit they would receive is lower than for men, they may not claim supplementary benefits and cannot get any increase for dependants. Until 1977 married women had the choice of paying contributions at a reduced rate, and would not then be entitled to unemployment benefits. Thus the number of unemployed women is misleading because of their low propensity to register when unemployed, which in 1977, was assumed to be 56 percent. 4/

1/ See Nickell,S.J. (1979c)

2/ See Office of Population Census and Surveys (1980)

3/ See OECD (1979 a) p.229

4/ See Amranand, P. (1979) and Donaldson, A. (1978)

Since 1972 the presentation of the unemployment statistics has frequently been reviewed, and since March 1976 adult students registering for vacation employment are excluded.

The unemployment statistics do not specify reasons for being unemployed. However, the concept of redundancy is an important one in Britain because the 1965 Redundancy Payments Act provided for a lump sum compensation related to weekly pay and length of service.

The officially published unemployment rate is defined as the number of registered unemployed as a percentage of total employees (employed plus unemployed).

2.3.2 A Picture of Employment and Unemployment

Unemployment was the most serious problem of the British economy between the wars. Following a short sharp boom in 1919-20, between 1921 and 1929 on average 14 percent of the insured work force was unemployed. Once the depression began there were never less than one million workers out of a job. There were over two million insured workers registered as unemployed in December 1921 and in January 1933, the worst month of all, there were 2,979,000. 1/ Present unemployment figures are now (September 1981) exceeding those of the inter-war period. But, of course, the labour force is much larger now, as pre-war figures did not cover all of the unemployed. From 1946 to 1966 the level of unemployment was broadly stable at around 400,000, but in the years since then, registered unemployment in the United Kingdom has increased dramatically, from 615,000 in 1974 to 1.39 million in 1979 (and to 2.85 million in July 1971). (See Table 6 and Figure 4.)

The response of employment to the down swing in the economy however, is only evident since the latter part of 1979. Employment fell from 1974 to 1976 but has increased slightly then until the end of 1979, Despite an unfavourable labour market situation the total labour force grew by 863,000 between 1974 and 1979. A part of this

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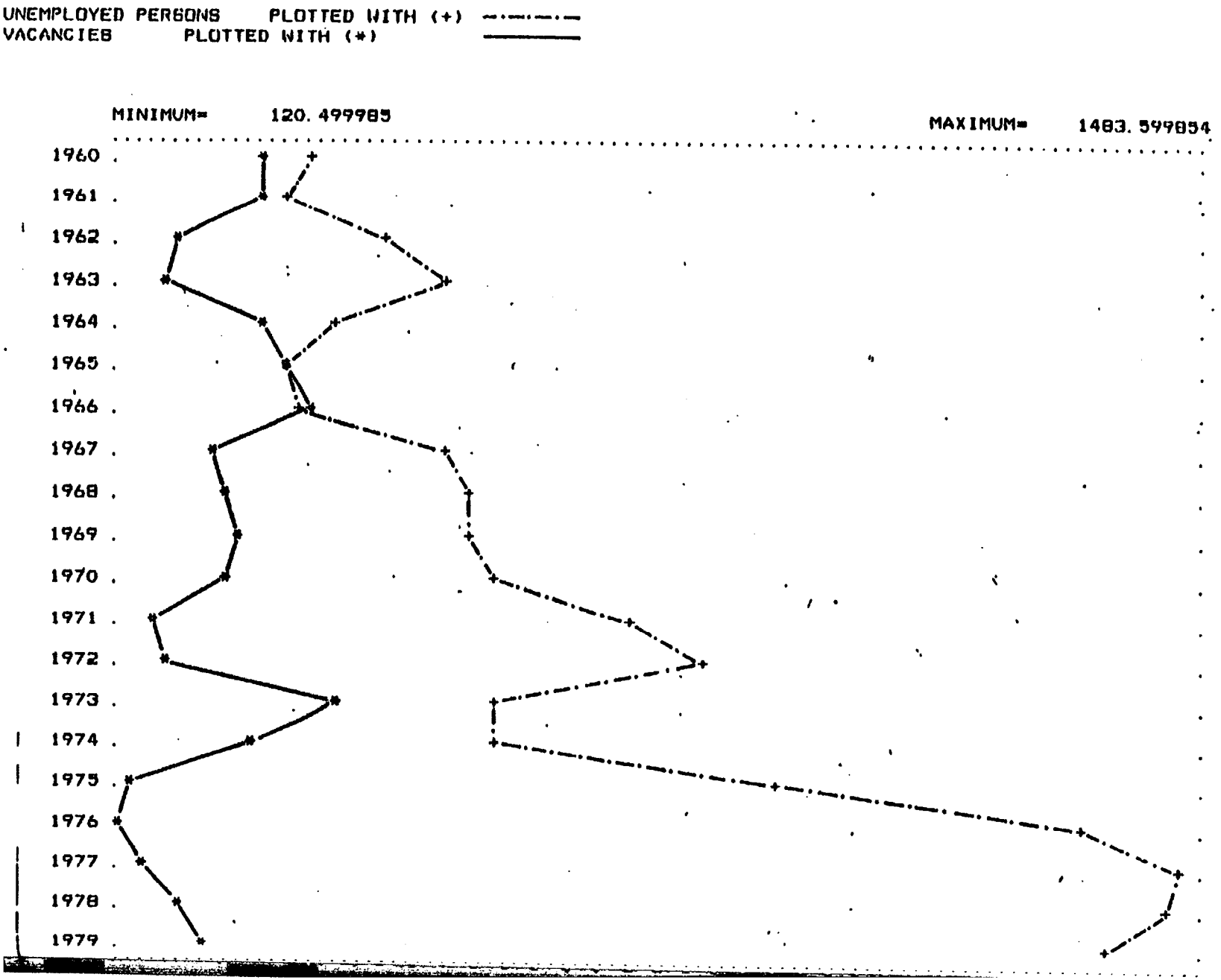
1/ See Constantine, S. (1980) p.3

TABLE 6: LABOUR FORCE AND UNEMPLOYMENT IN THE UNITED KINGDOM

	TOTLA	MTOTLA	FTOTLA	UNEMP	MUNEMP	FUNEMP
1960	23980	15851	8129	377.2	271.9	105.3
1961	24265	16110	8155	346.5	251.5	950.0
1962	24591	16290	8301	467.4	346.9	120.5
1963	24726	16364	8362	558.0	421.1	136.9
1964	24871	16368	8503	404.0	302.9	101.1
1965	25075	16423	8652	347.1	262.4	84.7
1966	25215	16379	8836	361.0	281.8	79.2
1967	25073	16304	8769	556.6	445.8	110.8
1968	24978	16179	8799	583.3	486.0	97.3
1969	24990	16107	8883	576.3	487.1	89.2
1970	24926	16005	8923	612.0	518.5	93.5
1971	24755	15866	8889	792.1	665.9	126.2
1972	24823	15807	9016	875.6	728.7	146.9
1973	25184	15826	9358	618.8	515.2	103.6
1974	25257	15670	9587	615.1	513.8	101.3
1975	25459	15754	9705	977.6	777.1	200.5
1976	25757	15912	9845	1358.8	1023.5	335.3
1977	26000	15948	10052	1483.6	1069.2	414.4
1978	25998	15869	10129	1475.0	1040.2	434.8
1979	26146	15820	10326	1391.0	964.0	427.0

SOURCES : EUROSTAT AND OECD, LABOUR FORCE STATISTICS

FIGURE 4: REGISTERED UNEMPLOYMENT AND VACANCIES IN THE UK



growth can be explained by the increase in the population of working age (about 520,000), reflecting demographic factors and, to a lesser extent, a fall in net emigration. Another part is attributable to the increase in the total activity rate, which was 72.7 percent in 1974 and 73.5 percent in 1979. 1/ Within the overall activity rate there have also been considerable shifts between males and females which have influenced not only the levels of unemployment but also the longer-run trends in employment and unemployment. The female activity rate has risen steadily. Equal pay, the decline in real average earnings between 1974 and 1979 which increased the desire to supplement family income, and rising demand for part time work all contributed to the acceleration of female entrants to the labour force.

The official statistics understate the rise in unemployment, as certain people (especially school leavers and young people) who are attending special employment and training programmes are excluded from the unemployment register. 2/

The information obtained from the General Household Surveys makes it possible to estimate approximately the extent of unregistered unemployment. The unregistered unemployed are those who describe themselves as out of work but are not registered for work at an Employment Office. This 'hidden unemployment' amounted to 24 percent in 1978. 3/ Those unemployed men who fail to register are likely to be between jobs. They either do not bother to claim UI for a short period or are ineligible for benefits because of quitting their jobs voluntarily. In fact, a large proportion of the unregistered unemployed in the General Household Survey had been unemployed for less than six months. 4/

With all their weaknessess, the official figures still provide information about the changing structure of unemployment and throw some light on the nature of the British unemployment problem. Firstly, they suggest that long-term unemployment is increasing particularly among

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1/ See OECD United Kingdom (1981) and Donaldson, A. (1979)

2/ See OECD United Kingdon (1978)

3/ See Office of Population Census and Surveys (1980)

4/ See Donaldson A. (1979)

men.[1] Secondly, they show that the rate of unemployment among young people has been rising, so that the young are now disproportionately represented among the unemployed. Youth unemployment shows a high sensitivity to cyclical movements, which suggests that many young workers are regarded as a marginal source of labour, but it may also reflect changes in the propensity of young people to register as unemployed. [2] The increase of the absolute number of school leavers against a background of falling opportunities resulted in a rise in the rate of youth unemployment in relation to the average rate. The redistribution of unemployment to the detriment of the younger age group up to 25 years appears to have already set in during the late 1960s, and to have become more acute in the 1970s recession. The probability of entering unemployment drops with age reaching its lowest level in the 40-to-54 age group before rising again in old age.

The duration of unemployment is becoming longer with age reflecting the increasing difficulty of finding suitable employment as individuals age. [3] The 60 to 64 age group has a high unemployment rate. However, some economically inactive men of this age receive pensions from previous employers and register as unemployed for the purpose of drawing benefits.

3. Social Security Schemes for the Unemployed

3.1 Federal Republic of Germany

3.1.1 Legal Basis and General Features

In the Federal Republic of Germany the system of social security for the unemployed is quite elaborate and has undergone a number of extensions and modifications since its introduction. In 1927 a compulsory contributory national UI programme was established by legislation for all wage earners and for lower-paid salaried employees. A new

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1/ See Showler, B./Sinfield, A. (1981) pp.12

2/ See Hawkins, K. (1979) p.48

3/ See Nickell,S.J. (1979c)

basis for labour market and employment policies was created in 1969 by the Employment Promotion Act (Arbeitsförderungsgesetz AFG). As its name indicates, its main aims lie rather in social and political measures that secure the highest possible standard of employment than in granting benefits for the unemployed. The executive body for social security in unemployment is the Federal Labour Office (Bundesanstalt für Arbeit).[1/]

The prevailing system of social security for the unemployed is based on the principle of contributions and provisions according to income. Only persons who have paid contributions to the UI scheme for a certain period can claim unemployment benefits. Unemployed persons who have no employment records and who are ineligible for UI payments either have to be supported by their family or can apply for social aid (Sozialhilfe). Social aid is granted without regard to reasons of need but taking into account property as well as income and wealth of close relatives. [2/]

More than in any other system of social security in UI the level of expenditures depends on the economic situation. High unemployment rates lead to a higher number of payments of UI benefits and vice versa. On the income side the contributions as a percentage of income can be lowered during boom periods. If the insurance fund had accumulated a certain sum, the imposition of contributions could have ceased for some time. Given the anti-cyclical movements of UI and assuming that UI recipients have high propensity to consume, the social security system for the unemployed in the FRG is a stabilizing instrument according to the Keynesian theory. The general aim of performing an

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1/ See Bundesminister für Arbeit (1977) p.246

2/ See Bundesminister für Arbeit (1977) p.347

active labour market policy, as expressed in the AFG, however, faces problems when the number of unemployed workers rises too high. Employment promotion and special programmes for the unemployed are offered to people out of work in prosperous time while they have to be reduced when the economic down-swing is persisting. Programmes to secure full employment, training and retraining of the unemployed and rehabilitation programmes have been cut considerably during recent years.[1/] The increasing numbers of the unemployed requires that an ever growing part of the financial means of the labour office is spent on salary compensation instead of on active labour market policies. (See Table 7).

Compared to income compensation, the practical importance of active labour market policy is, and will probably be in future, very low because of the lack of means for this purpose.

The means at the disposal of the Labour Office are raised by contributions paid by the employers and the employees. Currently (September 1981) the employers' and the employees' rate of contributions each amount to 1.5 percent of the monthly net income. The base of assessment of contributions (Beitragsbemessungsgrenze) is subject to an earnings ceiling. In 1979 it was the monthly income of 4,000 DM. The ceiling is adjusted annually to equal twice the national average of monthly earnings over the previous three years. Civil servants, students and pensioners are exempt from contributions. For employees with an income lower than one tenth of the ceiling amount, the contributions have to be fully paid by the employer.

According to paragraph 187, AFG, the Federal Government is obliged to subsidize the Federal Labour Office in case of a deficit. In the 1979 budget there was a deficit of 2,237 million DM.

1/ See Bundesanstalt für Arbeit (1978) p.124

TABLE 7: EXPENDITURES OF THE BUNDESANSTALT FÜR ARBEIT

Expenditures for	In million DM					Structure %				
	1973	1976	1977	1978	1979	1973	1976	1977	1978	1979
a) Active labour market policy	3,791	5,326	4,869	5,657	7,613	71.6	38.6	38.2	37.4	44.6
with vocational training	1,819	2,178	1,491	1,623	2,220	34.4	15.8	11.7	10.7	13.1
rehabilitation	315	453	479	554	1,049	6.0	3.3	3.8	3.7	6.1
job creation measures	20	170	581	796	1,032	0.4	1.2	4.5	5.3	6.0
short-time money	74	990	594	596	334	1.4	7.7	4.7	3.9	2.0
b) Income compensation	1,503	8,473	7,891	7,663	9,112	28.4	61.4	61.8	62.6	55.4
with unemployment benefit	1,395	6,906	6,283	6,270	7,468					
unemployment aid	108	1,299	1,332	1,393	1,644					

Source: Bundasanstalt für Arbeit

With the increasing levels of unemployment the base of assessment and/or the percentage of contributions are modified. Up to 1973 the number of persons covered by the UI scheme was continually growing (except in 1967). In 1974, 1975 and 1976 the number of contributors decreased, mainly because of the return of foreign workers and the lower female working activity. Recent years again show increasing tendencies in the numbers of contributors. In spite of a general decrease in the labour force, the proportion of employees, i.e. the active population that is obliged to contribute to UI, is growing.

3.1.2 Provisions and Eligibility

This research primarily analyses the impact of UI on unemployment, thus the accent is on income compensation from the UI scheme. The Federal Labour Office also provides means for promotion of vocational training (basic training, further education, and retraining), encouraging regional mobility of workers, the rehabilitation of handicapped persons and the maintenance of work places (short-time working compensation promotion of winter production in the building industry). 1/ The practical relevance of active labour market policy is presently quite limited in respect to the amount of money spent on it. The three main compensatory payments for unemployed workers are unemployment benefits (Arbeitslosenunterstützung, Arbeitslosengeld) unemployment aid (Arbeitslosenhilfe), and short-time worker compensation (Kurzarbeitergeld). In addition, the Labour Office also pays outstanding earnings for the last three months in case of a firm going bankrupt (Konkursausfallgeld). In 1974 when this regulation was enacted the expenditures were 70.9 million DM (in 1979 they were 212.9 million). 2/

1/ See Bundesminister für Arbeit (1977) p.249.

2/ See ANBA, Jahreszahlen (1980)

(a) Unemployment Benefits

Persons are entitled to unemployment benefits if they:

- are out of work;
- are able and willing to work under the usual conditions of the labour market and also willing to accept a 'reasonable' type of job;
- have completed the qualifying period of contributions;
- are under 65 years of age;
- have registered with the unemployment agency;
- have made a claim on UI benefits. 1/

The qualifying period is fulfilled when a person was employed (with compulsory contributions to UI) for at least six months within the three years previous to unemployment. The maximum period for which unemployment benefits are paid is determined by the length of time a person was employed and has paid contributions - at most one year. Unemployment benefits amount to 68 percent of the last 'normal' net income before unemployment. Since 1976 the UI benefits in practice have been set by five earnings class schedules. They are determined annually by ministerial decree in accordance with classes of income taxes. 2/ UI benefits are 68 percent of previous income up to a maximum monthly compensation. In 1979 the ceiling for income replacement was 68 percent of 4,000 DM. The ceiling for the maximum reference income is equal to the ceiling for the calculation of contributions to UI, and is adjusted yearly. UI benefits can last for up to one year and then are replaced by unemployment aid.

1/ See AFG paragraph 100/1

2/ See AFG paragraph 111

(b) Unemployment Aid

Persons eligible for unemployment aid are those who:

- have not completed the qualifying period;
- are in financial need;
- have either received unemployment benefits the year before applying for aid or were at least ten weeks in paid employment;
- are at the disposal of the Labour Office. 1/

The definition of need is given in paragraphs 137 and 138 AFG. The property of the unemployed as well as the property of the spouse, the children and the parents, and the income of relatives living in the same household are taken into account in judging the need for financial aid. Unemployment aid, which is granted for an unlimited period, replaces the working income if there is no claim on unemployment benefits. It is at most 58% of the last net income. But since the income and wealth of the family members are taken into account the full amount is often not paid to the unemployed person.

Table 8 shows the unemployment benefits and aid paid by the Labour Office in the past. In addition to UI benefits contributions to social insurance (health and pension) are paid by the Labour Office.

The placement agents at the Labour Office can decide on the question of whether a person seeking employment is 'at its disposal'. Paragraph 103 AFG defines being at the disposal of the Labour Office as willingness to accept any suitable employment (zumutbare Beschäftigung). This flexible legal term has recently undergone some modifications

1/ See AFG, paragraph 134

TABLE 8 : NUMBER OF RECIPIENTS AND EXPENDITURES ON UNEMPLOYMENT BENFITS AND UNEMPLOYMENT AID

	UNEMP.	REBEN	READ	EXBEN	EXAID
1955	928.	454.	436.	899.	538.
1956	761.	441.	276.	816.	387.
1957	662.	411.	199.	1056.	344.
1958	764.	466.	174.	1142.	306.
1959	540.	364.	116.	713.	181.
1960	271.	175.	51.	295.	103.
1961	181.	119.	24.	370.	49.
1962	155.	105.	17.	365.	35.
1963	186.	126.	16.	480.	36.
1964	169.	106.	15.	416.	36.
1965	147.	97.	12.	391.	31.
1966	161.	97.	10.	401.	47.
1967	459.	320.	36.	1642.	141.
1968	323.	192.	53.	1179.	218.
1969	179.	105.	28.	674.	114.
1970	149.	96.	17.	651.	71.
1971	185.	120.	15.	868.	75.
1972	246.	157.	20.	1284.	114.
1973	273.	154.	23.	1395.	144.
1974	582.	352.	40.	3557.	320.
1975	1074.	707.	110.	7766.	979.
1976	1060.	615.	164.	6906.	1542.
1977	1030.	557.	163.	6283.	1595.
1978	993.	516.	157.	6270.	1657.
1979	876.	448.	134.	5820.	1462.

SOURCE : ANBA, YEARLY VOLUMES

NOTES: REBEN - Recipients of unemployment benefits (in 1,000)
READ - Recipients of unemployment aid (in 1,000)
EXBEN - Yearly expenditures on unemployment benefits) in million DM
EXAID - Yearly expenditures on unemployment aid)

In 1976 new interpretations of the concept of suitable jobs have come into effect. Jobs offered by the Labour Office generally have to be considered as suitable. In several cases persons seeking employment have been forced to accept employment which was inconsistent with their personal conceptions. If an unemployed person does not accept a suitable job offer, unemployment benefits can be denied for four weeks (Sperrzeiten). In 1979 in 55,000 cases, benefits were denied because of job refusals. If an unemployed person refuses a second time his entitlement to UI compensations can be completely forfeited. 1/

If an unemployed person, without valid reason, voluntarily terminates his employment, or if by misconduct on the job he gives his employer cause to dismiss him, he is disqualified from receiving benefits during the first four weeks of his unemployment. 2/ In a case where the four-week disqualification would involve particular hardship, it may be reduced to two weeks.

(c) Short-time Worker Compensation (Kurzarbeitergeld)

Compensation for short-time workers is not considered as benefits for unemployment, but as a means to maintain working places. It is paid to employees in the case of reduction of working time due to economic developments. Payment for short-time workers are only granted for a transitional period of under-employment and only under the condition that by this measure the working places can be kept. 3/

1/ See Krautkrämer, U. (1978) p.56

2/ See also Table 15. The development of the denial rates over time is discussed in Chapter 6.2

3/ See Bundeminister für Arbeit (1977) p.261 and Deeke, A. (1979)

Compensations are calculated according to previous regular incomes and are 68 percent of usual net incomes. The peak of short-time working compensation was in 1975 with 2,207 million DM and a yearly average of 773,334 workers. In 1979 on average 88,000 workers received short-time compensation.

3.2 Italy

3.2.1 General Features

The main insurance body of the Italian UI scheme is the Istituto Nazionale per la Previdenza Sociale (INPS).[1/] The INPS is a self-governing body under the supervision of the Minister of Labour's Department of Social Security. Three schemes with separate funds and management are administered by INPS: the insurance for involuntary unemployment (Assicurazione contro la Disoccupazione Involontaria), the fund for wage integration in industry (Cassa Integrazione Guadagni per l'Industria) and the fund for wage integration for agricultural workers (Cassa per l'Integrazione dei Salari dei Dipendenti da Imprese Agricole). [2/]

In reaction to the unprecedent drop in output and the rise in unemployment, the Italian authorities took measures to expand the insurance system for unemployment. During the past ten years the coverage of social and occupational groups, as well as the amount of payments were constantly increased. During recent years laws on active labour market policies have been introduced, aiming at the improvement of labour mobility and the creation of employment possibilities, especially for young people searching first employment.[3/] However, the practical relevance of these legal regulations is quite limited so far.

1/ See OECD (1977a). For Journalists there exists a different 'ente sociale', the INPGI. See Fausto, D. (1978)

2/ See INPS (1978)

3/ See Legge 1.6.1977 n.285, according to which regional and local authorities are obliged to create programmes opening job opportunities for young unemployed, and Legge 12.8.1977 n.675, which established special funds and commissions for labour mobility.

Because of the low unemployment compensation as compared to UI in other Western European countries, short-time working benefits have been particularly important. Changes in 1968, 1972 and 1975 have extended considerably the number of hours of short-time working for which benefits can be obtained, and also the amount of payments.

The main elements of unemployment transfers and related payments are:

- ordinary allowance (indenità ordinaria) and special allowance (trattamento speciale) in the ordinary insurance scheme;

- special allowance in the special insurance scheme for the construction sector;

- compensation for short-time unemployment and work suspension (integrazione salariale).

Insurance against unemployment protects the case of total unemployment as well as the reduction of income due to partial or temporary unemployment.

Insofar as various groups have succeeded in their labour conflicts, their positions improved, but those with weaker bargaining power fell behind. As a consequence, inequalities were created among different socio-economic groups also in their rights to unemployment compensation. The weakness of bargaining power shows above all in the situation of the unemployed searching for first employment since they have no claim on any type of social security. The differences with respect to contributions and provisions that exist in the different sectors of the economy (industry, construction, and agriculture) make an analysis of the system of social security for the unemployed in Italy quite complicated.

3.2.2 Unemployment Insurance

UI is compulsory for all workers and employees, except for public sector employees, seasonal workers, domestics and certain categories of agricultural workers.

The financing of UI depends on the type of scheme. Up to 1975 the contributions were 2.3 percent of income. In general it is now 1.3 percent of the gross earnings always paid by the enterprise. The contributions are proportional to income, with no ceiling. In industry an additional contribution of 0.3 percent of earnings is required for the special allowance and a further 15 percent have to be paid on overtime pay. 1/ In 1977 there were about 10.3 million workers insured against unemployment which is about 50 percent of the total labour force.

The UI can be divided into the ordinary scheme and the special scheme for the construction sector. The first consists of the following:

- the ordinary allowance which provides a flat rate of 800 lire per day for a maximum time span of 180 days for non-agricultural workers;2/

- the special allowance for unemployed argicultural workers which pays 66 percent of earnings lost for up to 90 days (however, only if an employment contract for a determined time of more than 150 days exists);3/

- a special allowance for the unemployed in industry apart from the construction sector. In a case of mass dismissals when firms have to close down, workers become eligible for 80 percent of their previous income for a duration of up to 12 months,

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1/ See INPS (1978). The contributions for agricultural workers are 0.25 percent. For the 'trattamento speciale' in the construction sector, the additional contribution is 0.5 percent.

2/ See Legge 16.4.1975 n.114

3/ See Legge 16.2.1977 n.37

if they had been in paid employment before for at least 12 weeks or one trimester. 1/

Furthermore, there exists an extraordinary allowance for the unemployed in exceptional cases or as a result of natural catastrophies. The level of benefits is determined by ministerial decree.

Through the special scheme for construction workers, those unemployed are paid two-thirds of their last salary for the first 90 days of unemployment. Before the modifications introduced by the Law 425/1975, the benefits were only one-third of the last salary for 60 days of unemployment.

The unemployed workers must have been registered for at least two years with a UI scheme, must have paid contributions for at least one year during the two years preceding unemployment, and must register with the employment office, in order to qualify for the ordinary allowance. Extraordinary allowance can be received by unemployed persons who cannot claim ordinary allowance and who are working in certain areas or in professional or trade activities in certain categories laid down by ministerial decree. Five weekly contributions during the past two years must have been paid. During the period of unemployment, contributions to other social insurances are paid by the INPS, In addition, allowances for each other member of the family are paid through INPS.

Periods during which the unemployed person has worked and paid contributions in other countries of the European Community are taken into account, however, only if he had become unemployed after having started work in Italy. 2/

1/ See Legge 11.12.1979 n.624; according to Legge 5.11.1968 n.1115 the unemployment compensation amounted to 66 percent of previous income.

2/ See European Communities (1976) p.48

There is a considerable gap between incomes of the active working population and unemployment benefits. Changes in the system of social security for the unemployed that were introduced during recent years have not been sufficient to compensate for Italian inflation rates or to satisfy the needs of the growing numbers of the unemployed (especially youth unemployment which is in no way covered by social security). The financial situation of the unemployed is quite difficult considering the flat rate benefit of only 800 lire which has been unchanged since 1974 , in spite of the fast growing cost of living. 1/ (See Table 9). The contributions by employees to the UI schemes far from cover the expenditures. Subsidies for the State are growing continuously.

3.2.3 The 'Cassa Integrazione Guadagni'

Since the period after World War II, a system of income compensation to workers on short-time, the "wage integration" (Integrazione Salariale) has been in operation for workers employed in industry. The initial purpose of this insurance scheme was to cope with the reduction of labour caused by the war and the post-war restoration. With the institution of special administration (gestione speciale) in the construction industry in 1963 and of the extraordinary interventions (interventi straordinari) in 1968, the system of wage integration became a generalized system of social security. Since 1972 agricultural workers are also covered. Important qualitative modifications introduced in 1968 amplified the interventions of the Cassa Integrazione on cases of labour reduction following economic crises of sectors or restructuring and reorganization of a plant. In 1975 the income

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1/ Two factors which are to some extent a result of the inadequate UI benefits are the anomalous numbers of invalidity pensions, above all in Southern Italy, and the spread of the practice of drawing several pensions at the same time. See Gambale, S. (1979). Invalidity pensions have been growing out of proportion during the last decade, and in many cases, probably have been a form of disguised subsidy to social strata excluded from production or confined to black labour. See Palazzi, P./Poli, A. (1979), pp.77

TABLE 9 : AVERAGE AMOUNTS OF UNEMPLOYMENT BENEFITS PER DAY (IN LIRA)

	NON-AGRICULTURAL SECTORS				AGRICULTURE			TOTAL
	ORDINARY ALLOWANCE	SPECIAL ALLOWANCE	CONSTRUCTION SPECIAL ALLOWANCE	TOTAL	ORDINARY ALLOWANCE	SPECIAL ALLOWANCE	TOTAL	
1972	404	2,270	683	627	400	2,503	606	612
1973	406	2,391	763	643	800	2,726	1,011	918
1974	809	2,539	724	983	800	3,467	1,075	1,054
1975	806	3,343	1,725	1,179	800	4,544	1,165	1,169
1976	807	4,563	6,736	1,770	800	5,925	1,316	1,430
1977	807	5,792	8,339	2,079	800	8,526	1,728	1,816
1978	807	7,620	9,733	3,300	800	10,679	1,880	2,231
1979	807	9,265	11,660	3,845	800	12,408	2,089	2,549

SOURCE : INPS

compensation for wage reduction was extended to 80 percent of general earnings for up to a maximum of 40 hours per week. 1/ In 1980 the ceiling of income compensations for workers and employees was raised to 600,000 lire per month. Contributions to other social security schemes are paid by the Cassa Integrazione.

Until 1978 firms in industry which had less than 50 employees paid 0.75 percent of the wages, the others one percent. Now it is one percent and 1.3 percent. (In the construction sector the contributions are three percent for the 'edilizia industria' and two percent for the 'lapidei industria'.) Firms asking for compensation for short-time working have to bear eight percent of the salaries being compensated (four percent for firms with less than 50 workers, and five percent in construction). The sum which the State has to contribute as subsidy is fixed by law; initially, it was 20 billion lire and presently it is 80 billion. 2/

There is a distinction between the 'gestione ordinaria' and the 'gestione straordinaria'. The former applies to reductions or stops of activities of a plant because of transitional difficulties of the enterprise or a temporary state of the market. 3/ By the 'gestione straordinaria' additions to salaries are paid where firms reduce or cease working time because of economic crises, which cannot be overcome within a short time, restructuring (i.e. modernization and extension of the plant) or re-organization of the enterprise. 4/

Ordinary benefits are normally paid for up to three months. In exceptional cases, this period can be prolonged by three months up to a maximum of 12 months. Extraordinary wage compensation (from the

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1/ The actual difference between income and wage integration is, however, lower than 20 percent because no contributions to social security have to be paid.

2/ See Ministero del Bilancio (1981). The special benefits for short-time work caused by structural factors are entirely financed by public funds. . See Mittelstädt, A. (1975) p.16.

3/ See Legge 20. maggio 1975, n.164.

4/ See Legge 5. novembre 1968, n. 1115.

'gestione straordinaria') can, in some cases, be paid for virtually an unlimited period. By law, different maximum periods are determined according to reasons for wage integration. These are one year for cases of sectoral crises; for restructuring and reorganization there are no time limits other than the necessary duration of restructuring and for a crisis of a plant the Minister of Labour can establish by decree the duration of wage integration. In the case of a firm's bankruptcy, the workers who would otherwise have been dismissed, are compensated two years income losses. A special provision extends the wage integration for workers who have been involved in public work in Southern Italy. If their employment has ceased they can claim income compensation for up to 39 months.

In agriculture the wage integration is paid for up to 90 days per year and the contribution shares are three percent of the earnings.

The existence of wage integration has made unemployment less severe than it would otherwise have been. By this instrument, agreements between management and labour unions can be reached to reduce working hours rather than dismiss large numbers of workers. The deficiency of unemployment benefits in Italy made the earnings-protection function of wage integration schemes very important. The Cassa Integrazione Guadagni has, nowadays, very much the same character as a social insurance for involuntary unemployment. The laws of the Cassa Integrazione provide that benefits are denied to workers who refuse to participate in retraining courses. However, so far very few of these kinds of courses have been started.

When the extraordinary interventions for the short-time working were introduced in 1968, they were thought to provide a means of maintaining the employment level and thus facilitating the restructuring and reorganization of plants, which were required for adjustments to technological progress. But very rapidly this instrument was transformed into one for the defense of the workers' income. It emerged as a system where

the remunerations rather than the employment of the workers were protected. It is now admitted that the basic purpose of the Cassa Integrazione Guadagni is to secure stability of employment and guarantee an income for the workers. By this means social tensions inside and outside of the enterprise could have been avoided. 1/

The Cassa Integrazione Guadagni has meanwhile assumed the role of subsidizing the immobility of the Italian labour market and is adding to the existence of an 'economia pompeiana'.2/ In many cases, employees who are out of work receive short-time compensation for periods of longer than one year and can, in fact, be regarded as unemployed. But as they are still engaged with the enterprise and are getting wage compensation, they are completely immobile on the labour market.

The entire system of compensation for short-time working has degenerated since orginally it was meant to secure the workers' salaries only in cases of special difficulties of certain enterprises and only temporarily. There are examples of enterprises which are inefficient and survive only because of payments coming from the Cassa Integrazione. In a case of a crisis in the plant (crisi aziendale) there is in fact a possibility of extending the period of wage integration to up to 40 months, without taking into account the time before with benefits from other schemes of the Cassa Integrazione.

The concession and prolongation of the 'gestione straordinaria' of the Cassa Integrazione has very often become a political rather than an economic decision. Local politicians thinking of their re-election will try to avoid large-scale dismissals and support demands for wage integration in their districts.

1/ See Ministero del Bilancio (1981) and Palmerio, G./Valiani, R.

2/ This expression, relating to the bodies of the Romans who died under the lava in Pompei, has been used by Tarantelli, E. (1978) p.80

The Cassa Integrazione Guadagni indicates again the dualism of the Italian economy with the cleavage between North and South. The northern regions have experienced relatively more interventions of wage compensations because of modernization and restructuring of plants, while the Mezzogiorno more frequently relies on extraordinary interventions for enterprises in times of a crisis. More often than in Northern Italy, firms in the southern regions rely on the Cassa Integrazione as a permanent income subsidy without hopes of new employment. Wage integration in cases where the entire staff has been suspended, is a frequent phenomenon especially in the south. In most instances there is a small probability of a reappraisal of the productive activity by the means from the Cassa Integrazione.

In general, workers in larger establishments and with higher wages have benefitted more from wage integration than workers in smaller enterprises with lower earnings.1/

Problems associated with unemployment statistics make it difficult to assess the possible unemployment-reducing effect to the scheme of the Cassa Integrazione Guadagni. Data are published only on the hours of wage integration, but not on the number of persons. The Minister of Labour does not provide any data on categories of demographic and social groups affected by short-time working.

Table 10 and Figure 5 show the development of the two main types of wage integration. Changes in the two categories over time are due only in part to economic developments in Italy. They are rather, a result of modifications in the legislation and thus cannot be analysed on a purely economic base. The decrease in the number of ordinary interventions after 1975 has to be explained mainly by the limitation of concessions. But firms now apply more often for extraordinary interventions and these have actually surpassed the number of ordinary wage integration.

1/ See OECD (1977a)

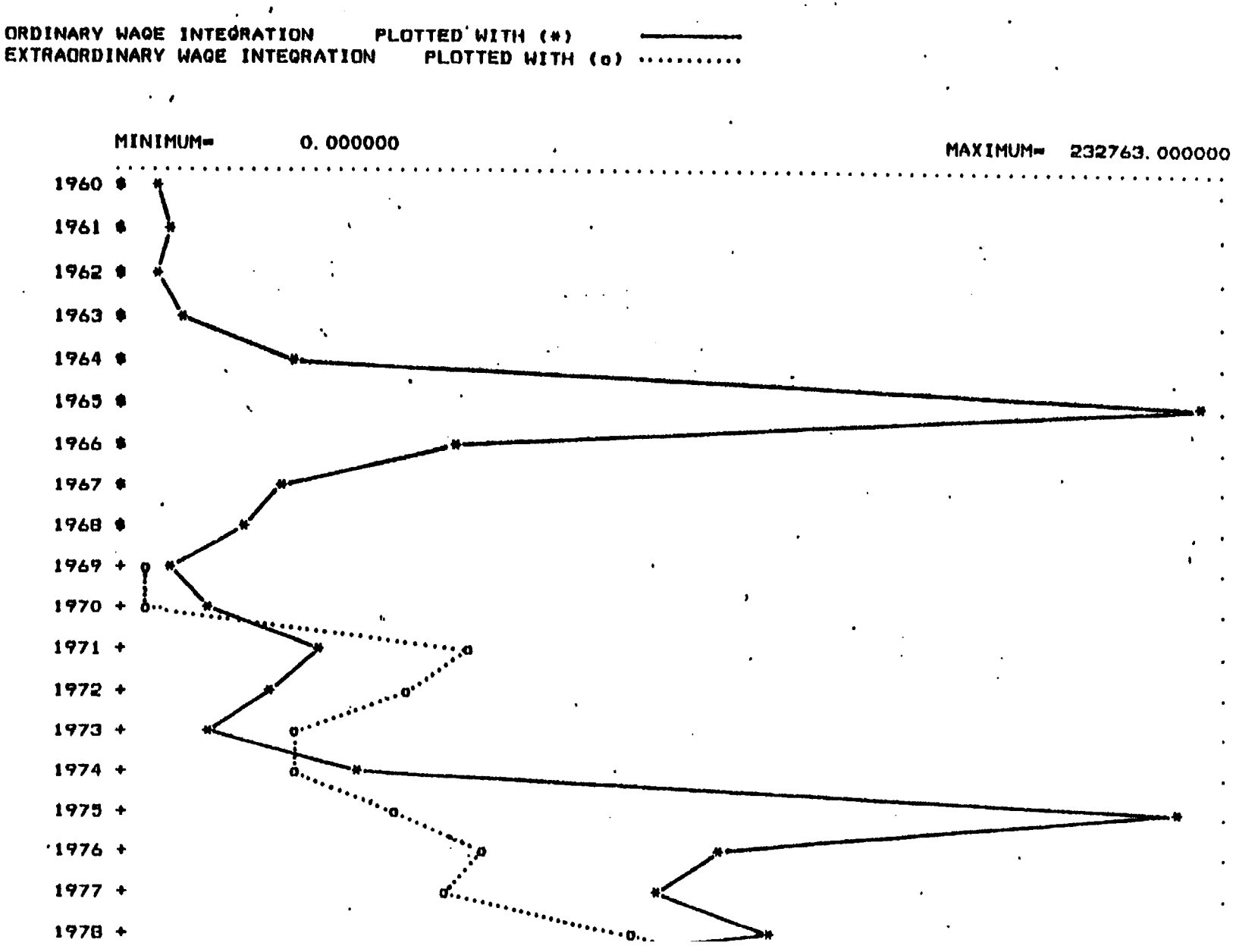
TABLE 10: HOURS OF WAGE INTEGRATION

(in 1000s)

	CASSA INTEGRAZIONE - GESTIONE ORDINARIA		
	ordinary interventions	extraordinary	total
1960	95300	0	9530
1961	10894	0	10894
1962	8866	0	8866
1963	14130	0	14130
1964	39536	0	39536
1965	232763	0	232763
1966	74051	0	74051
1967	35940	0	35940
1968	27876	2367	30243
1969	11898	7636	19534
1970	20543	7157	27700
1971	44836	75215	120051
1972	34095	63862	97957
1973	20915	38360	59275
1974	51945	39023	90968
1975	229625	59082	288707
1976	130610	77646	208256
1977	117246	70360	187606
1978	140905	110817	251722
1979	59005	146607	205612

SOURCE: Ministero del Bilancio (1981)

FIGURE 5: HOURS OF WAGE INTEGRATION



3.3 United Kingdom

3.3.1 The 'Dole' in Inter-war Britain

Some contemporary observers attributed the main causes of high unemployment in the inter-war period to the British system of social security. Recently this debate has been taken up again.[1/] In order to refer to this discussion at a later point, the British UI scheme will be described in historical perspective.

In 1911, Great Britain became the first country to institute a national compulsory UI programme for manual workers, adapting the social insurance concept which was first applied earlier in Germany to protect workers against wage loss caused by inability to work due to sickness or injuries. The expression 'dole' as used in colloquial English, is the name given to the UI scheme. It has its origins in the 'out-of-work donation', which came into existence after World War I. Initially intended for ex-soldiers it was, in fact, also made available to civilians. [2/]

The UI programme was linked to the national unemployment exchange system which had been introduced earlier, and was financed by contributions from workers, employers, and the Government. By 1920 all manual workers, with the exception of domestic and agricultural workers, were covered by UI. [3/] Between 60 and 70 percent of the work force was insured in the inter-war period. [4/]

The Unemployment Insurance Act of 1920 replaced the 'dole' and increased weekly benefits from 11 to 15 shillings per week, which was little more than 20 percent of an average industrial wage. In 1921 the maximum period for which benefits were paid was raised from 15 to 26 weeks per year and in 1928 this annual limit was abolished. Nominal

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1/ See Chapter 5.1

2/ See Metcalf, D./Nickell, S./Floros, N. (1980)

3/ See Blaustein, S.J./Craig, I.(1976), p.224

4/ See Metcalf, D./Nickell, S./Floros, N. (1980)

benefits were raised on several occasions, primarily through increases in family allowances. 1/

In order to qualify for benefits from the UI scheme, an unemployed individual had to have made at least 12 weekly contributions and had to be capable and available for work but unable to find suitable employment. From 1924 onwards, he also had to prove that he was 'genuinely seeking work'. The high and long-term unemployment during the 1920s and 1930s forced the Government to take remedial actions. The period of benefit support was extended and a supplementary UI with additional forms of unemployment assistance was introduced. This provided weekly payments identical in amount to those received by insurance beneficiaries.

By 1924 a worker who had made 30 weekly contributions at any time in his past employment could draw full UI benefits for an unlimited period. Because of the high deficits of the UI fund the generosity of the system was again curtailed in 1931; weekly benefits were cut, contribution requirements were raised and the maximum duration of UI compensation was limited again to 26 weeks.

Unemployed persons who had exhausted their unemployment benefits were still entitled to apply for supplementary benefits. These payments were means-tested and paid only in cases of financial need. By the Employment Act of 1934, then again in 1935 and 1938, UI benefits were increased, Workers who had exhausted their claims or were not eligible for UI benefits could apply for assistance from the newly established Unemployment Assistance Board. The administration of the needs-related component was particularly severe. Between 1932 and 1938 the proportion of the unemployed who received only means-tested benefits was always higher than 36 percent, and in 1933 it rose to 52 percent. 2/

1/ See Benjamin, D.K./Kochin, L.A. (1979)

2/ See Metcalf, D./Nickell, S./Floros, N. (1980)

UI benefits differed according to sex and age but were not calculated in relation to previous income.

Any three days of unemployment during any six consecutive working days were regarded as 'continuous unemployment'. A pair of such three-day periods, occuring within three to ten weeks could be connected to constitute a six-day waiting period, that had to be served in order to claim UI benefits. This definition of 'continuous' unemployment fostered the widespread practice of 'short-time' working. Workers formed groups of five or six members who arranged with their employer to have one or two in each group to be temporarily laid off in turn, thus enabling them to retain continuous eligibility for UI benefits.[1/]

In the early part of 1930, the condition that benefit claimants must show that they are 'genuinely seeking work' was dropped. In his analysis of unemployment, Beveridge argued that the considerable rise in the level of registered female unemployment in 1930 and 1931 to 80 and 90 percent of the rate for males (in most of the years between 1927 and 1937 it was about 50 percent), can find an explanation, not in economic conditions, but in the changes in the UI scheme. [2/]

Married women, particularly, were assumed to collect benefits even though they had no real intentions of returning to work. The Anomalies Regulations, instituted in October 1931, made the collection of benefits by married women more difficult. They had to satisfy substantially more demanding contributory requirements than those imposed on other claimants. [3/] It appears that the Anomalies Regulations reduced 'counted' unemployment rather than the 'true' unemployment.

1/ See Benjamin, D.K./Kochin, L.A. (1979)

2/ See Beveridge, W.H. (1936)

3/ See Benjamin, D.K./Kochin, L.A. (1979)

3.3.2 The Current System of Social Security for the Unemployed

After World War II, the United Kingdom adopted a comprehensive National Insurance and Industrial Injuries Scheme which also included UI. It came into operation in 1948. Studies of the existing programmes and recommendations for a unified system of Social Security that were put forward in the Beveridge Report laid the basis for the new system. 1/ The National Insurance system is administered by the Department of Health and Social Security.

The post-war benefit system, until 1966 called National Assistance, had the same structure as the pre-war system. Flat rate payments are related to family size. Supplementary Benefit is awarded to unemployed persons who exhaust their UI benefits or do not fulfill the qualifying conditions. It provides means-tested flat-rate benefits, a housing allowance and has more generous payments for the children of those out of work than does UI. Supplementary benefits define the subsistence level and if insurance benefits are lower, then supplementary benefits can be used to top-up the former.

In 1966 the UI scheme was substantially modified by the introduction of an Earnings Related Supplement ('ERS'). It is paid in addition to the normal flat rate benefit, if previous earnings of the unemployed individual are high enough (£500 in the tax year). The contributions in the relevant tax year on earnings have to amount to more than 50 times the weekly lower earnings limit for that year - £19.50 for 1979-1980. 2/ Benefits are a percentage of weekly earnings between a certain income range (in 1979: one-third of earnings between £19.50 and £30.00, plus 15 percent of any weekly earnings between £30.00 and the upper earnings limit - the maximum amount was £17.67 per week).

1/ See Beveridge, W.H. (1942)

2/ See Blaustein, S.J./Craig, I. (1976) p.229 and Social Trends (1981) p.234.

ERS is paid after an initial waiting period of 12 days and for up to 26 weeks of unemployment. 1/ To qualify for the flat rate unemployment benefit the claimant must:

- be unemployed and apply for benefits;
- be between 16 and 65 years of age (60 years for a woman);
- have paid during any past year (as an employee) contributions based on earnings equal to at least 50 times the minimum weekly earnings limit established for that year (£19.50 in 1979). (This contribution condition also applies to ERS);
- be capable and available for work. (This condition is generally accepted as being satisfied when the claimant maintains registration for work at an Employment Office.)

Conditions for receiving supplementary benefits are:

- the individual should not be in full-time work;
- his resources should be less than his requirements (considering the number of dependents and the level of rent);
- he should be fit for work and register at an Employment Office.

The flat rate amounts have been raised several times; they were 26 shillings in 1946 and £18.50 for a single person in 1979. The weekly supplement for dependents, as of 1979 was £11.45 for one adult dependent and £1.70 for each child. The total weekly benefits payable taking together flat rate, supplements and ERS, may not exceed 85 percent of the claimants average weekly earnings. Table 11 shows the average benefits in relation to average income (replacement rates) for certain types of families, the first gives the replacement rate for a single man, the second for a married man with two children and the third is an average value for different family types.

1/ See Holden, K./Peel, D.A. (1979)

TABLE 11: REPLACEMENT RATIOS FOR DIFFERENT FAMILY TYPES

Year	Replacement Rate 1 Imputed for a married man with 2 children		Replacement Rate 2 Imputed for a single man		Replacement Rate 3 An average of the imputed values for different family types	Replacement (Based on a benefits p
1922	0.37		0.25		0.32	0.28
1923	0.40		0.27		0.34	0.25
1924	0.42		0.29		0.36	0.24
1925	0.48		0.32		0.41	0.26
1926	0.48		0.32		0.41	0.23
1927	0.48		0.32		0.41	0.27
1928	0.50		0.31		0.41	0.22
1929	0.50		0.30		0.41	0.29
1930	0.53		0.31		0.44	0.17
1931	0.54		0.30		0.44	0.26
1932	0.50		0.28		0.41	0.30
1933	0.51		0.28		0.41	0.32
1934	0.53		0.30		0.43	0.32
1935	0.55		0.31		0.45	0.32
1936	0.57		0.30		0.45	0.37
1937	0.56		0.30		0.44	0.36
1938	0.56		0.29		0.42	0.29
	U.B.	S.B.	U.B.	S.B.	S.B.	
1951	0.36	0.36	0.19	0.19	0.29	0.21
1952	0.42	0.42	0.21	0.21	0.34	0.24
1953	0.39	0.39	0.20	0.20	0.31	0.23
1954	0.37	0.47	0.19	0.27	0.38	0.22
1955	0.39	0.46	0.21	0.27	0.37	0.24
1956	0.37	0.47	0.20	0.27	0.38	0.22
1957	0.36	0.45	0.19	0.27	0.37	0.22
1958	0.44	0.51	0.24	0.30	0.42	0.28
1959	0.42	0.54	0.22	0.31	0.44	0.27
1960	0.40	0.51	0.21	0.30	0.42	0.26
1961	0.44	0.53	0.24	0.31	0.43	0.28
1962	0.43	0.54	0.23	0.32	0.45	0.28
1963	0.47	0.53	0.26	0.34	0.47	0.31
1964	0.45	0.56	0.24	0.32	0.44	0.29
1965	0.49	0.59	0.27	0.36	0.49	0.33
1966	0.53	0.61	0.32	0.38	0.51	0.36
1967	0.57	0.63	0.34	0.39	0.53	0.40
1968	0.54	0.63	0.33	0.39	0.53	0.39
1969	0.54	0.62	0.31	0.38	0.52	0.36
1970	0.58	0.61	0.31	0.37	0.51	0.37
1971	0.56	0.62	0.33	0.38	0.51	0.39
1972	0.56	0.60	0.34	0.35	0.49	0.38
1973	0.56	0.59	0.31	0.36	0.48	0.38
1974	0.54	0.61	0.32	0.35	0.49	0.37
1975	0.54	0.61	0.31	0.36	0.50	0.35
1976	0.54	0.60	0.31	0.37	0.50	0.35

SOURCE: Metcalf, D./Nickell, S./Floros, N. (1980)

NOTES TO TABLE 11

1. 1922-38, Benjamin and Kochin.

   1951-76, Left-hand column: Standard rate of unemployment benefit + 25% of Earnings Related Supplement (ERS) + family allowances/child benefit ÷ Net weekly income of male manual workers after deducting tax and National Insurance contributions, but including family allowances/child benefit. Department of Health and Social Security Abstract of Statistics (Internal Document). 25% of ERS is added because this is the approximate proportion of the unemployed in receipt of it.

   Right-hand column: Standard rate of Supplementary Benefit plus rent addition ÷ Net weekly income of manual workers after deducting tax and National Insurance contributions but including family allowances/child benefit.

2. 1922-38, Numerator imputed, denominator as in Benjamin and Kochin.

   1951-76, Left-hand column: As in 3.

   Right-hand column: As in 3.

3. This series is weighted average of the series for different family types. More precisely it is 0.35 x single + 0.26 x married with no dependents + 0.11 x married with one dependent + 0.16 married with 2 dependents + 0.12 x married with 3 dependents. The separate replacement rates are computed as in 4. (Right-hand columns 1951-76) and the weights are the approximate proportions in the unemployed in 1972.

4. 1922-38, (Benefits plus Supplementary Payments to the Unemployed)/(Average number of insured unemployed on the register) ÷ ($\frac{1}{52}$ of Average Annual Earnings of all Employees).

   1951-76, (Total unemployment benefit paid)/(Number of unemployment benefit recipients) ÷ (Net Weekly Income of male manual workers after deducting tax and National Insurance Contributions).

Supplementary benefits are presently £18.30 for a single householder excluding the rent subsidies and family allowances.[1/] Table 12 shows the percentages of male recipients in the different categories of unemployment benefits. It is readily apparent that the majortiy of the unemployed do not receive ERS. During the 1970s an increasing proportion of the registered unemployed came to depend on supplementary benefits.

The standard rate of unemployment benefits is not payable for the first three days of a period of unemployment. It is paid for up to one year. If two periods of unemployment are separated by less than 13 weeks of employment, they are counted as one spell of unemployment, for purposes of benefit assessment as well as for the waiting period. Supplementary benefits are not tied to any time limit.

By the Social Security Act of 1975, the insurance schemes were restructured, and the flat rate system in the principle of calculating contributions was abolished. The employee's contribution and that of his employer are now earnings related above a certain floor. The contributions to all social insurance schemes are a fixed percentage of earnings equal for all wage classes, 5.75 percent for the worker earning up to £120 weekly and 8.75 percent for the employer.[2/] An important feature of the British Social Security System is that many of the main cash benefits (such as supplementary benefits) are financed out of general taxation.

An employee who is dismissed for misconduct, or who leaves his employment voluntarily, may be disqualified from receiving benefits for up to six weeks. A claimant is disqualified from benefits if, without good cause, he refuses suitable employment, fails to apply for suitable employment of which is is made aware or refuses to participate in resonable training activity. The concept of 'suitable employment' does not include employment too far from the claimants home or that which provides a lower wage or less favourable conditions than those generally recognized.[3/]

1/ See Social Trends (1981) p.234

2/ See DIW (1979)

3/ See Blaustein, S.J./Craig, I. (1976) p.227 and Donaldson, A. (1978)

TABLE 12

MALE RECIPIENTS OF UI BENEFITS

	REGISTERED UNEMPLOYED	FLAT RATE ONLY	FLAT RATE +SUPPLEM. BENEFIT	ERS	SUPPLEM. BENEFIT ONLY	NO BENEFITS
1970	519	206	54	89	125	118
1971	666	295	98	139	195	133
1972	729	209	69	101	220	107
1973	515	124	36	62	155	93
1974	514	173	60	82	172	115
1975	777	318	108	171	289	144
1976	1024	323	118	174	456	179
1977	1069	309	107	161	403	167
1978	1040	268	790	144	389	143
1979	964	248	69	-	352	147

SOURCE: Social Trends, various issues

Until May 1977 married women had the choice of paying contributions to UI at a reduced rate, now they are no longer permitted to choose reduced liability. Since April 1978 the normal rate of unemployment benefits for married women who have fulfilled the contribution conditions is the same as for single women or men.

3.4 A Comparison of Social Security for the Unemployed in the three Countries

UI exists to alleviate hardship experienced by workers during periods of unemployment. The extent to which income loss is compensated differs considerably from country to country. Although the three countries under consideration are among the first to have introduced a national compulsory UI programme (Great Britain in 1911, Italy in 1919 and Germany in 1927), the three insurance schemes show very divergent developments in respect to concepts, coverage and benefit provision. Great Britain has the most comprehensive net of social security for the unemployed, while the Italian one shows most imperfections and gaps. Apart from some very special scehmes, only the income compensation from the Cassa Integrazione Guadagni has a level comparable with the standards of other EEC countries.

All three countries provide benefits to unemployed eligible workers regardless of their means, according to a social insurance approach under which covered workers or their employers contribute to a fund for financing benefits. Germany and the UK in addition provide some kind of social assistance to the unemployed, subject to a means test.

The way in which UI operates in the different countries is also a result of the tradition of employment relationships, the availability of other social welfare programmes and the role and strength of labour unions. Little attempt is made here to describe how the three countries differ in these respects, although this fact should be borne in mind. Some points will be taken up in the discussion in a later part of this thesis.

Financing

Compared with other contingencies covered by social insurance programmes, unemployment is subject to much greater fluctuations and uncertainty in respect to incidence and timing. The financing of UI has to be organized in such a way as to cover the uneven and unpredictable costs through fluctuations in the level of unemployment with stable contributions. The FRG finances UI benefits on a tripartite basis, with equal contributions paid by employer and employees, and the Government being obliged to cover a deficit of the fund. In Italy, the employers finance the social security schemes for the unemployed, but the state is contributing a growing part in order to cover the enormous deficits of the UI schemes. The UK has a unified social security system where UI costs are covered by an overall contribution from employers, workers and the Government to all types of social insurances. 1/

In all three countries contributions are earnings related, in the FRG and the UK up to an income ceiling.

It is difficult to estimate the impact that the level and distribution of contributions to social security schemes has on labour costs and salaries. However, it appears that the redistributive aim in financing UI entirely by employers increases the tendency to 'non-institutional' labour. High contributions to insurance schemes provide an incentive for Italian enterprises to reduce the labour costs by illegally employing workers.

Generally, UI systems maintain a reserve fund for the payment of benefits which accumulate surpluses able to cover deficits that may occur in times of high unemployment. Contribution rates often also vary in relation to the economic development. In the FRG, UI contributions have frequently

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1/In West Germany the contributions to social security schemes are generally divided equally between employers and workers. The Italian employers pay relatively more also in other insurance schemes. In 1976 their overall contributions to social security were about 65 percent as against 15.2 percent paid by the employed workers. See Fausto, D. (1978) p.150

been modified following the movements in the labour market with a lag. 1/ In Italy the share of income to be paid to UI could remain relatively stable (and was even lowered some years ago). This was possible for two reasons. An increasing part of the unemployed, mainly people searching first employment, cannot claim UI benefits and thus a higher unemployment did not result in correspondingly higher expenditures on UI payments. Secondly, public subsidies, financed by general taxes, were increasingly spent on the social security schemes and the Cassa Integrazione Guadagni. In great Britain the problem of finding the financial means for growing unemployment is one for the state rather than for UI because many benefits are financed directly out of general taxation.

UI Benefit Provision

On average, UI benefits in relation to income are highest in the FRG. In Italy in some special cases of dismissals 80 percent of previous income is replaced, but in general, Italian UI benefits are extremely low. In the FRG,income replacement by UI is always 68 percent of previous net income, independent of family size, while in the UK replacement rates differ considerably by income level and between single persons and the unemployed with children because of family allowances. This may, in fact, lead to the phenomenon that married men with four or more children may be better off unemployed than they would be in work.

However, in most cases, workers who become unemployed have to face serious financial problems. This is quite obvious for most of the Italian unemployed. But also in the FRG, surveys among people out of work and receiving UI benefits suggest that only a small minority is satisfied with the material situation in unemployment. In spite of relatively high income compensation, the majority of the unemployed had

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1/ The persistent high levels of unemployment necessitated rises in contributions. In the recent debate, higher rates of contribution to UI are discussed as a possible remedy for the now chronic deficit of the Federal Labour Office. In Great Britain National Insurance contributions have been increased in 1980, but it is not clear how much was attributable to higher unemployment.

to cut down their personal expenses significantly and had to use up savings. 1/ British studies on the cost of unemployment stated that for the unemployed life is often a constant battle to find money for food, clothing and essential bills. 2/

The network of social security can normally prevent extreme poverty, but with unemployment income falls considerably. Especially among low salary earners (who, in general, are over represented among the unemployed) an income loss of 40 to 50 percent during unemployment means a drastic cut in the standard of living.

In both Italy and the FRG compensation is also paid for partial unemployment under a UI programme, but the two schemes are not comparable in their functioning and importance for the labour market.

The duration of UI payments differs widely among countries. In most European countries there are special assistance programmes to protect those who remain without work and without means after they have exhausted their UI benefits (in the FRG, unemployment aid or social aid, in the UK, supplementary benefits). The FRG has the longest duration of regular benefits (up to one year, six months for ERS in the UK). After exhaustion of UI benefits, unemployment aid or supplementary benefits in the FRG and the UK, respectively, are granted for an unlimited time. They are related, however, to other family members' incomes. In Italy the unemployed who has exhausted his benefit claims depends entirely on family support and, in most cases, for the duration of unemployment. In all three countries, family support becomes more important considering the increasing duration of unemployment and the growing percentage of long-term unemployed.

1/ See Brinkmann, C. (1976), Infratest (1978), and Büchtemann, C.F./ v. Rosenbladt, B. (1981)

2/ See Daniel, W.W./Stilgoe, E. (1977)

Coverage of UI

In the FRG and Italy, unemployed persons without employment records are excluded by law from the receipt of UI benefits. In the UK supplementary benefits are provided to all unemployed who are in need, but statistics reveal that a significant number of the unemployed who have registered and applied for benefits do not receive any unemployment compensation (in 1979 147,000). In May 1979, 22.3 percent of the unemployed registered in the FRG did not receive UI payments. In the FRG and Italy, young unemployed persons who are looking for first employment cannot claim UI benefits. 1/ Youth unemployment means a noticeable reduction in the family budget. This fact is especially important if one considers that unemployed young people often come from less well-off families. Youth unemployment is becoming a more serious problem of Western economies (in the UK little less than half of all unemployed were younger than 26 years of age during the last four to five years and in Italy more than half of the registered unemployed are now in search of their first employment). But this group of unemployed is either not at all or only very inadequately covered by social security. Thus an ever growing part of the unemployed falls through the net of social security. When difficulties increase for young people in search of their first job, the social control by the familes lasts longer and the tendency towards an earlier independence is reversed.

In all three countries women often do not benefit from UI to the same extent that men do. In 1979 in the FRG, 26.4 percent of registered unemployed women did not obtain unemployment compensation as against 17.1 percent of men. In the UK the possibility for women to opt out of UI until 1977 led to a lower registration of female unemployment. As many married women are financially secure because of their husbands' incomes and not regarded as in need, they often withdraw from the labour market without registering as unemployed.

1/ A study from the German Labour Office showed that 64 percent of the unemployed under 20 years of age were financially dependent on their parents and that all unemployed school-leavers are financially supported by the family. See Schober, K. (1978)

In Italy the high youth unemployment and the lack of social security for this group have the most important impact on family income. In the FRG high female unemployment reduces the financial means of the family in many cases, also because the proportion of married women earning money in addition to the family income is higher.

General Tendencies

With a constantly growing level of unemployment, Governments increasingly face difficulties in providing the financial means to fill the gap between contributions and benefit payments of UI. As there is a limit to the financial burden of unemployment the working population is willing to bear, the material situation of unemployed persons will probably deteriorate in future. In the FRG as well as in the UK, discussions are continuing with a view to cutting down on provisions awarded to the unemployed. In the FRG restrictions on the performance of the UI system have been introduced during the last years. The definitions of availability to the labour market and of the concept of suitable jobs were narrowed, and unemployed persons entering the labour market after school and university attendance were excluded from the receipt of unemployment aid.

In the UK the election of a Conservative Government has brought about restrictions in public services. The Budget introduced to Parliament in early 1980 contained the intention to abolish ERS from January 1982 onwards and an uprating of unemployment benefits far below those required for price-protection. And recently the notion of 'available for work' has been tightened up.

In Italy, starting from a lower level of social protection, recently there have been some qualitative and quantitative changes to the benefit of some groups among the unemployed. But new inequalities were created among different socio-economic groups and the different sectors of the Italian economy (industry, construction, agriculture), and one can, in fact, speak of a 'giungla retributiva'. 1/ Various groups could improve their position in respect to unemployment compensation because of their stronger bargaining power. The growing

1/ Gorrieri, E. (1972)

proportion of unemployed people who have never had employment has weak bargaining power and hardly profits from the modifications introduced in UI. In Italy, the 1949 employment policy still shapes today's administration. Forced to cope with frequent and severe employment problems, the state has implemented a short-sighted fragmented approach instead of reconstructing its policy and administrative structure.

In the FRG, the system of social security has grown in a rather systematic way. The West German and the British UI schemes now treat unemployment equally without regard to the former vocational class or economic sector of occupation. In reaction to increasing employment problems, the West German authorities shifted goals and capacities of their traditional administrative structure to a more active labour market policy. The high level of unemployment, however, has forced them during the last years to reverse this tendency and to concentrate on income compensation programmes.

One of the main problems of British employment policy in recent years has been youth unemployment. Much attention was paid to training programmes. Growing racial tensions, greater support for extremist groups and the increasing incidence of violent crimes have been seen as partly a result of high youth unemployment. In 1973 the Manpower Service Commission was established and made responsible for employment and training services. A new scheme in 1975 was designed to stimulate the employment of young job seekers, but cut-backs in the financial means led to some reduction in the services of the commission. 1/

1/ See Duffy, J/ A. (1981). However, in November 1980,a package of new measures to help unemployment was announced by the Government and the Youth Opportunity Programme was expanded.

4. The Effects of UI in the Context of Labour Market Theories

4.1 Introduction

In the two preceding chapters, the state of unemployment and the systems of social security for the unemployed have been described for the three countries with which this research is dealing. In this chapter the two aspects will be integrated in a theoretical framework. Some labour market theories and their explanation of voluntary as well as involuntary unemployment are discussed in the following paragraphs. By introducing compensation payments from unemployment insurance into the models of the labour market the impact can be analysed.

The theoretical approaches in the economic analysis of unemployment that are discussed in this chapter do not claim to be exhaustive. They try, rather, to give a picture of the kind of reasoning that has been done so far in labour market theories and show where UI can be expected to influence the performance of labour markets. The aim is identifying a theoretical model that can serve as a basis for empirical analysis.

In the first place, effects of UI are analysed in the context of the neo-classical theory of the labour market. Job Search Theory as an extension of simple marginal utility theory is particularly relevant in judging the effects of UI on the supply side of the labour market. Although it fails to explain all components of aggregate unemployment, Job Search Theory sheds light upon the behaviour of unemployed workers.

A more comprehensive model of the labour market would interpret the type of unemployment that we are presently experiencing, namely long-term persistent unemployment. Rather than neo-classical theory, models on marketing with quantity-rationing seem to be adequate for this kind of analysis. An approach assuming labour market disequilibrium, due to demand deficiency will form the basis of an empirical analysis of the impact of UI on the labour market.

Theoretical and empirical analyses are contrated mainly on the supply side in the labour market. Calculating the effects of UI on the demand for labour would not only imply a consideration of the costs resulting from employers' contributions to UI schemes, but also a research into the stabilizing effects of unemployment compensation which is of more importance. Expenditures on UI have significant repercussions on aggregate demand on product markets. The assessment of the overall effect of UI on the labour market cannot neglect demand aspects, i.e., the employment creating effects via a multiplier process. However, this research focuses on the supply behaviour of employed and unemployed workers. It will not explicitly deal with the effects of UI as a built-in stabilizer. 1/

More general research into the performance of social security for the unemployed would require an entire econometric model for the national economy. In the context of my doctoral thesis, this would be too ambitious an undertaking.

Contract Theory, an approach only recently developed in labour market theory,is presented in the appendix to this chapter. The models of implicit and explicit contracts on wages and employment can hardly be tested on empirical grounds. They give, however, interesting explanations for employment fluctuations and the impact of UI. Contract theories can serve as a theoretical basis which interprets different levels of employment in response to the social security schemes for the unemployed.

A deficiency in most of the theoretical approaches lies in their aggregate macro-economic level assumptions. The assumption of

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1/ On the importance of UI as macro-economic stabilizer see Furstenberg, G.M.v. (1976) and Clement, M.O. (1960)

homogenous labour supply and identical behaviour of labour market participants do not correspond to observations from reality. At this point, the theories on segmentation of labour markets have to enter into theoretical discussion. 1/ Job stability can be regarded as a source and index of the division between the different labour market segments. Among different demographic groups in the population, there exist great inequalities in the incidence of unemployment. Thus, reactions to UI will differ considerably between workers of different segments of the labour market. However, the Segmented Labour Market Theory is stronger in criticisms of the neo-classical orthodox theory than in advancing a coherent self-contained theory as a replacement. According to its representatives, historical and institutional dimensions of labour markets have to be taken into consideration. Different theories on unemployment are probably valid to different degrees in each segment of the labour market. But it is difficult to establish empirically any borders between primary and secondary labour markets. Thus, in this chapter the Segmented Labour Market Theory will not be discussed as a separate theory explaining the emergence of unemployment and the impact of UI. Its more descriptive approach will be taken into consideration in the later evaluation of theoretical and empirical results of the research.

Hence, the pre-eminent theoretical models for my research are Job Search Theory - describing the workers' supply behaviour - and the Disequilibrium Theory for non-clearing labour markets. Empirical research presented in the following chapters is based above all on these theoretical approaches.

4.2 Neo-classical Theory

4.2.1. The Theoretical Model with Marginal Utility

The basic hypothesis that unemployment compensation increases unemployment can be described theoretically in the framework of the neo-classical labour market supply model. However, the neo-classical

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1/ Prominent representatives of this approach are Doeringer, P.B./ Piore, M.J. (1971), and Gordon, D.M. (1972), see also the survey by Cain, G.G. (1976).

approach in which labour supply is based on the assumption that workers are maximizing utility cannot explain the emergence of involuntary unemployment. The effective offer on the labour market depends on the prevailing wage rate. Unemployment does not occur because anyone who is willing to work at the wage resulting in the equilibrium point of demand and supply will find employment. Thus, any idleness is the consequence of voluntary leisure and represents only a shift in the labour supply schedule. In the neo-classical model, 'voluntary unemployment' is equated with leisure. A utility maximizing individual will prefer more leisure (and thus be 'voluntarily' unemployed) when leisure becomes relatively cheaper, as it may happen through lower wages as well as in the context of UI, through unemployment compensation.

The presentation of the model of the neo-classical labour market theory is justified mainly as giving the basis for models that go beyond its simplified assumptions. It is presented in this context and should be considered as a reference rather than as an explanation of the functioning of labour markets.

L. Robbins' classical article on the supply of labour in terms of demand for leisure has led to the approach of analysing the effect of income and prices or wage rates on the supply of labour. 1/ He divided the time of an individual into leisure and work activities and noted that an increase in wages would raise the prices for leisure relative to time spent at work. In general, a rational individual will shift his consumption towards goods whose relative prices have fallen, in this case leisure, and away from other goods whose relative prices have risen. 2/ If leisure is a normal good, an increase in the ratio of UI benefits to ordinary work income will tend to lead

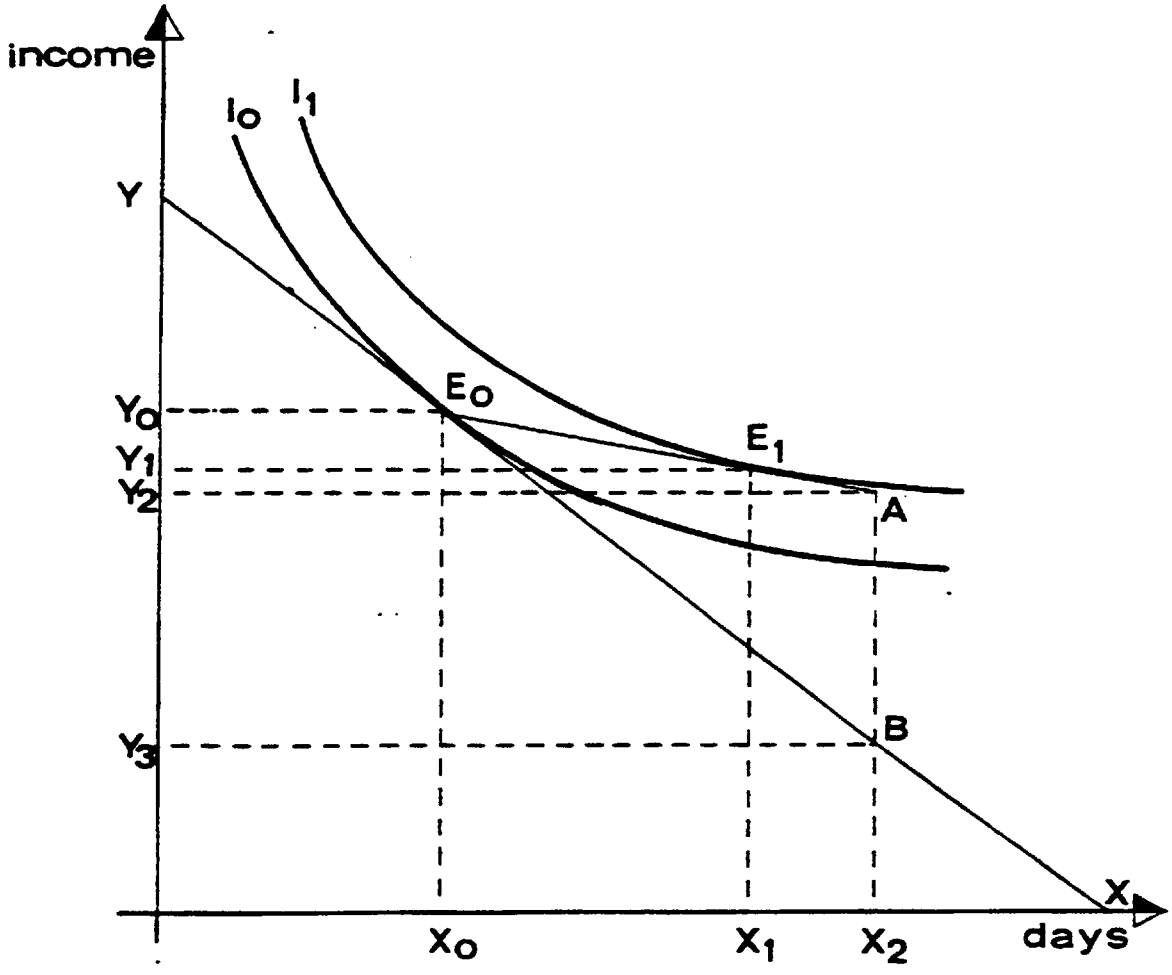
1/ See Robbins, L. (1930)

2/ Empirical studies showed that different flexibilities in trading off leisure time for income exist in different age and race groups. A cut in wage rates of low income workers may lead to the desire to work longer in order to maintain income, thus their indifference curve will show a sharp bend, illustrating an inflexibility or preferences in the choice behaviour. See Dunn, L.F. (1978)

to higher consumption of leisure.

Using this framework of neo-classical marginal utility theory, I will examine how the existence of unemployment benefits influences the choice between work and leisure of an average worker. It is assumed that an individual does not have to search for a job because a single known wage offer is always obtainable at zero cost, and the worker can obtain employment at his previous wage at the instant he wants it. The basic model is presented in Figure 6. 1/

FIGURE 6: INCOME, LEISURE AND UI BENEFITS



1/ A similar model is presented in Grubel, H.G./Maki, D. (1976)

The horizontal axis measures the number of days per period that are at the individuals' disposal and can be spent either on work or on leisure. The vertical axis indicates the income per period. The slope of YX, the leisure-income trade-off, is determined by the individual's wage rate. If the worker does not take any leisure he has a potential income of OY.

The individual's preferences are reflected in the indifference curves I_o and I_1. In the point of equilibrium E_o he has chosen OY income and OX_o days of leisure (or non-earning activities) which are assumed to be the number of weekends and legal holidays. Theoretically an individual could as well work overtime and by that realize less than X_o days of leisure.

The Government then is assumed to introduce a UI. For the sake of simplicity it is assumed to be financed out of a general budget surplus. Hence, no shifts in the curves occur through increased taxation or contributions to social security schemes. Furthermore, it is assumed that the worker does not have to engage in job search activities in order to obtain unemployment benefits and that job search costs are zero. Under these assumptions, the introduction of UI changes the leisure-income opportunity from YX to YE_oABX in diagram 1. The slope of the line E_oA relative to that of YX measures the ratio of unemployment compensation to income from employment.

Without UI the amount of X_oX_2 leisure costs Y_oY_3 income. Because of unemployment benefits it now costs only Y_oY_2. The ratio of unemployment benefits to income from work $R = Y_2Y_3 / Y_oY_3$ gives the replacement ratio. The maximum duration for which unemployment benefits are available, X_oX_2 in the diagram, is reflected in the horizontal length of the line E_oA. X_2X days of work are required in order to claim UI.

If leisure is considered to be a normal good, a higher replacement ratio will lead to a higher consumption of leisure according to this simple model. This may take place by employed workers initiating their own unemployment for some period or by unemployed poeple extending their period of unemployment. The quantity of leisure consumed is an increasing function of the ratio of benefits to income from employment.

A higher replacement ratio would result in a new equilbrium point above and to the right of E_1. In this point the consumption of leisure would be higher. The equilibrium point of non-income earning activities would lie somewhere between X_1 and X_2.

"In the context of the present model we shall call 'induced unemployment' the increased amounts of leisure consumed by workers as a result of the introduction of an unemployment benefit plan."1/

In this simple version of the model, changes in unemployment compensation tend to change the budget of the individual who is eligible for such payments. These changes will have both substitution and income effects on the choice between labour and leisure. The first results from changes in relative prices, i.e., from the lower cost of an additional day of unemployment. If the benefit is rsised, workers will be more likely to stay unemployed additional days, since the lost income from doing so is lower. The second effect occurs because UI benefits raise the whole amount of resources available to the unemployed workers and enables him to buy more of all those goods he wishes to consume.

The decision process of an individual who is choosing between leisure and income from work can also be explained in the context of utility functions. Implicit in the interpretation is the assumption that the individual may purchase as much as he cares and likewise work

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1/ Grubel, H.G./Maki, D. (1976) p.277

as many hours as he wishes at the known wage rate.

The conventional utility function of an individual can be described by:

$$u = u\ (x,\ l)$$

with x = income from work

and l = leisure.

It is assumed that the worker is able to work only up to some maximum of hours, $\bar{h}$. The utility for working of an individual who can decide either to work or not work is given by:

$$u_1 = u\ (\frac{w\ \bar{h}}{p},\ h - \bar{h}),$$

with w the wage rate, $\bar{h}$ the legally fixed number of hours of work, p a vector of the prices of the commodities faced by the worker, and h the total time the individual has at his disposal.

The utility of the individual when out of work and eligible for UI benefits, B, is given by:

$$u_2 = u\ (\frac{B}{p},\ h).$$

Some kind of reservation wage w^a, i.e. a level of wages at which the individual would accept a job offer, if he is indifferent to having a job and being unemployed can be found by setting equal the two utility functions:

$$u_1 = u_2;$$

$$u\ (w^a\ \bar{h},\ \ h - \bar{h}) = u\ (\frac{B}{p},\ h).$$

The reservation wage, accordingly, can be seen to depend on the fixed hours of work and the potential UI benefits:

$$\frac{w^a}{p} = f\ \ (\bar{h},\ \frac{B}{p}).$$

The utility of an individual is taken as a function of labour income and leisure of the form:

$$u = A\, x^{\alpha} l^{\beta},$$

where the coefficients of α and β determine an individual's preference for work and leisure. The acceptance wage thus can be derived from:

$$A \left(\frac{w^a \bar{h}}{p}\right)^{\alpha} \cdot (h - \bar{h})^{\beta} = \left(\frac{B}{p}\right)^{\alpha} (h)^{\beta}$$

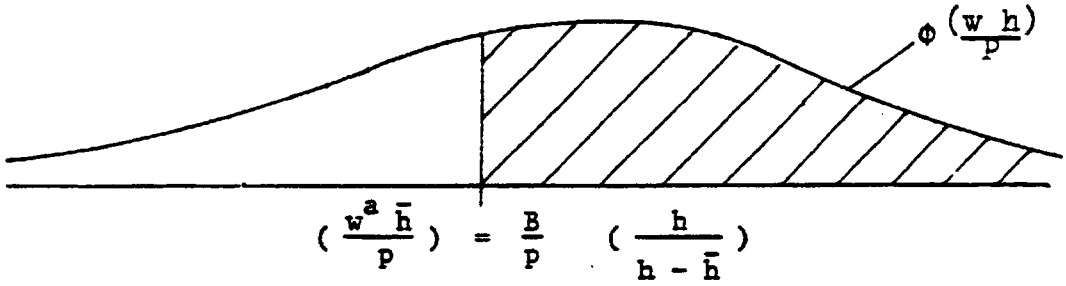
$$\left(\frac{w^a \bar{h}}{p}\right)^{\alpha} = \left(\frac{B}{p}\right)^{\alpha} \left(\frac{h}{h - \bar{h}}\right)^{\beta}$$

$$\left(\frac{w^a \bar{h}}{p}\right) = \left(\frac{B}{p}\right) \left(\frac{h}{h - \bar{h}}\right)^{\beta/\alpha}$$

In this equation the reservation income $w^a \bar{h}$ depends on the available UI benefits and the preference for leisure time. The lowest wage offer that will be accepted has to be at least as high as the UI benefits. However, the individual also has some preference for leisure. The higher it is the more important becomes $\left(\frac{h}{h - \bar{h}}\right)$, i.e. the higher is the coefficient β. In the case of $\beta = 0$ the individual does not gain any utility from leisure and would accept any job offer that pays as much or more than UI benefits. 1/ We may assume that an individual would be more willing to accept a job offer equal or a little higher than unemployment benefits when employment perspectives are worsening because he may consider a decreasing utility from leisure in prolonged unemployment. Thus β may fluctuate with the labour market conditions. The individual's acceptance wage depends on his preference for leisure expressed by the coefficients α and β.

1/ However, in the income-leisure approach, work is never considered as pleasant. In this case the income effect of a lower price of leisure would be very different or absent, because money cannot buy more time. See Scitovsky, T. (1976) p.98. Also having a job is not seen as providing utility per se.

The frequency of distribution of wages is often assumed to be known for any individual, $\Phi\left(\frac{w\,\bar{h}}{p}\right)$, and the unemployed person is assumed to receive one job offer in every time period $\Delta t = t_1 - t_o$. Then we can formulate the probability that the individual finds an acceptable job offer.



The probability that a wage offer $\left(\frac{w\,\bar{h}}{p}\right) > \left(\frac{w^a\,\bar{h}}{p}\right)$ is given by the plane to the right of the acceptance wage. Without introducing any more complicated elements of job search, the basic idea of how UI benefits influence the decision process can be formulated.

The financing of the social security schemes for the unemployed too has to be taken into consideration. There exists a difference between private and social costs. The lowering of the private costs of unemployment for the most of the unemployed is assumed to induce higher unemployment in the neo-classical model. The worker initiating an unemployment spell or prolonging his unemployment does not take into account the cost in form of contributions to UI or taxes. "I believe that the relatively low cost of unemployment in these circumstances is a substantial cause of our high permanent rate of unemployment."[1/] The social costs such as taxes and contributions have not much relevance in the individual's decision on income and leisure.

This is true, however, only to the extent that a system of 'experience rating' is incomplete. In a situation where contributions to UI are calculated according to past experiences of unemployment spells, as well as their duration and where they have to be brought up by the potentially unemployed workers, also the cost side of UI may

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1/ Feldstein, M. (1978), However. this argument overlooks the effect which current unemployment has on future benefits, including pensions.

be relevant for a choice between labour and leisure. In practice, UI contributions are not calculated according to individuals' probabilities of becoming unemployed.[1/] How far can this model of marginal utility as presented in this simple approach help us in the research on effects of UI on unemployment ? It can be regarded as a first step for explaining a decision process in respect to supply behaviour in labour markets. There exist several extensions of the neo-classical model with utility maximization including some kind of search and wait unemployment.[2/] By introducing job search activities into the marginal model, the period of unemployment is divided into times of leisure and job search.

Another interpretation of the leisure-income approach is given by the so-called auction model. [3/] The unemployed workers are not devoted to searching for better jobs which they believe to be available but are enjoying leisure while waiting for the higher wages they believe they will be able to obtain in the future. According to this approach, utility maximization requires the taking into consideration of future consumption. However, the extended and modified models still fail to explain why anyone becomes unemployed even if they explain how long someone will remain unemployed. It is regarded as being of voluntary nature resulting from a decision of the individual choosing leisure or engaging in job search. In the model the current

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1/ Also the UI system in the United States which practices some kind of 'experience rating' does not calculate the individual contribution of workers according to their past unemployment. Experience rating is carried out only on firm level and is of little relevance to the individual's decision on unemployment. In the three countries with which my research is dealing, contributions are exclusively levied in relation ot the income of the workers, charged to employers and workers.

2/ In a second step, Grubel/Maki modified their model by an adjustment in respect to waiting periods after giving up the job voluntarily, job search cost and their documentation necessary to receive benefits.

3/ Negishi, T. (1979) pp.43 discussed this approach and its relevance for unemployment of Keynesian type.

wage rate may be viewed by the unemployed as below the wage rate at which he would prefer income from work to leisure. This could lead to a temporary withdrawal from the labour force, rather than to registered unemployment.

4.2.2 Job Search Theory

The basic neo-classical type of model over-simplifies the effects of UI on unemployment quite apart from the fact that it considers unemployment as preference for leisure. Job Search Theory may be appropriate for explaining a 'frictional' component of unemployment which, however, is chosen by the unemployed who are assumed to be receiving plenty of job offers and could be employed if deemed.

In the Walrasian economy, each buyer and seller has complete information about his alternatives during transactions. The discussion on the functioning of labour markets, however, must go beyond perfect and instantaneous adjustments in markets in which large costs of movement, uncertainty and limited resources of households occur. Aspects of behaviour that are ordinarily excluded from basic economic models have to be taken into consideration. To obtain the large amounts of information necessary for making decisions on the labour market, and especially choices between job offers, substantial resources and time, are consumed by workers as well as by employers. 1/ Job Search Theory points to the role of imperfect information on the job seekers' side. With imperfect information it is rational for unemployed workers not to simply accept the first job offered to them but to search until locating particularly attractive offers.

In the publication of E. Phelps' "New Macroeconomics" the labour market is treated as a dynamic process of rational search by unemployed workers for available vacancies. 2/ Imperfect information is

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1/ See Holt, C.C. (1970) and Salop, S.C. (1979). The theoretical aspect of information in the search process in the labour market has first been elaborated by Stigler, G.J. (1962).

2/ Phelps, E.S. (1970). Comprehensive descriptions of Job Search Theories are given in Lippman, S. A./McCall, J.J. (1976) and König, H. (1979).

a crucial element in the Job Search Theory, for it implies a need for rational search rather than simple market clearing in each period. Disregarding the unrealistic neo-classical assumption of perfect knowledge about the labour market, one can consider unemployment as an investment in job search. Unemployment in Job Search Theory is due to friction in the search process and imperfections in the information rather than to any deficiency in aggregate demand.

Two basic assumptions in C.C. Holt's Job Search Theory explain workers' behaviour on the labour market and are valid whether UI exists or not.[1/] (1): The longer a worker is unemployed, the more he will be willing to accept a job offer, i.e., he has a declining aspiration level with the duration of unemployment. (2): The unemployed workers' aspiration level is also influenced by changes in the general wage level and by the expected employment chances represented by the number of relevant job vacancies.

Related to the concept of declining aspiration levels, empirical evidence shows that, in general, the average duration of job search and of unemployment is longer when the level of unemployment is high.

The intensity with which people are searching for jobs and the wage they are willing to accept are key determinants of the duration of a spell of unemployment. The payment of UI benefits, in turn will change the behaviour of individuals and the length of spell of unemployment.[2/]

The costs of job search are the direct costs that are required in job search, such as information and travel expenses plus

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1/ See Holt, C.C. (1970) pp.60

2/ See Baily, M.N. (1978) p.379

the opportunity costs of a refused job offer, i.e., the difference between an income offer and UI benefits. When the costs of job search are rising because of decreasing unemployment compensation, the unemployed person will shorten the search and thus unemployment.

The quantity of labour offered by an unemployed worker who is head of a household will not only be affected by real wage rates. His labour supply curve will not be rigid but rather influenced by his possibilities to finance the basic expenditures of his family. The identification of the level of reservation wage (as a critical value above which a wage offer is accepted) has to take into account also other sources of income which are available to the unemployed worker. If a present job offer is good enough, wages, expected UI benefits and other things considered, a job-seeker is likely to accept it and forego the possible costs and rewards of further search and waiting. If a certain portion of unemployment is assumed to be due to the job search process, it is necessary to identify and measure the factors which influence the time it takes to successfully match a job-seeker with a vacancy.

Since UI compensation lowers the worker's cost of unemployment, it may increase the duration of unemployment, ceteris paribus. A job-seeker's attitude towards risk in respect of his possibilities in the labour market has also an effect on his expected duration of job search. 1/ UI will lower the material risk of remaining out of work for a longer period and by that prolong job search. For these reasons, UI can be regarded as a cause of frictional unemployment in the Job Search Theory. Assuming that an individual views the employment he eventually accepts as permanent, then a rise in UI payments or an increase in the potential benefit period may result in a higher reservation wage and a lower search intensity (i.e., less contacts with the labour exchange and potential employers). This

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1/ See Feinberg, R. M. (1977)

in turn will result in a higher expected duration of unemployment. 1/

Reservation wages presumably fall as the duration of unemployment lengthens. This pattern shows up more in a willingness to accept lower paid jobs. The cost to the worker of this bahaviour is diminished by the availability of UI. One may suggest that UI support enables workers to resist financial pressures for re-employment in relatively low-paying or unstable jobs. But the acceptance of lower-grade jobs is itself a form of under-employment. This indicates that an unemployment-prolonging effect of UI compensation should be judged in the light of potential productivity gains attributable to UI-supported search in assessing the benefits and costs of such a support to the individual worker and society. UI can provide the chance for more and more fruitful contacts between job-seekers and employers. By allowing unemployed workers to 'shop around' before accepting employment, UI benefits can help to preserve work skills and so assist in the process of efficiently re-allocating labour resources. Thus, UI contributes to an optimal factor allocation in the sense of employment according to the level of skill and education of job seekers. UI would presumably, have some effect on the frequency distribution of wage offers. When there is no UI, a low-paying employer has chances of getting individuals who cannot afford to continue to sample the market. But with unemployment compensation, such a low-paying employer is less likely to find employees and is forced to up wage offers, thus possibly reducing the dispersion of wages.

Unemployment benefits raise the level of wages unemployed workers are willing to accept in subsequent jobs. This suggests that

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1/ See Barron, J.M./Gilley' O.W. (1979). Warner, J.T./Poindexter, J.C./ Fearn, R.M. (1980) found for the US that UI benefits have quite a strong negative effect on the probability of UI recipients leaving unemployment and that this effect is very much due to the impact on search intensity. However, this positive relationship between replacement ratio and length of unemployment can simply come from those with lower earnings potential who, under the UK and US systems, tend to have a high replacement ratio, but having poorer employment prospects.

the wages they receive in their post-unemployment job can exceed those received by individuals who do not draw benefits.[1/] Search unemployment has to be seen as important for economic efficiency and productivity. Voluntary unemployment can be viewed as a rational choice when specialization in job search would maximize the present value of future earnings.

In the models of search unemployment, the alternative to accepting a job is looking for another one. "The corresponding idleness might be called 'wait unemployment'. In any real-life situation, unemployment is likely to be an admixture of search and leisure (and some of the leisure may be spent in kinds of production, such as making one's own meals or making home repairs)."[2/] This 'wait unemployment' of workers who are expecting a generally higher wage level and better offers may be increased through UI payments.

At this point, it would be too much to go into depth on the criticisms of Job Search Theory. But it has to be kept in mind that, in general, most of the job search will start during employment rather than after quitting a job and in a period of unemployment. Even if a worker can claim UI benefits, on-the-job search may often be more effective than off-the-job search.[3/] Thus, for a great deal of movements on the labour market the existence of UI has little relevance. Only under certain conditions will workers search for jobs during a spell of unemployment. Those unemployed workers are not likely to have had notice of job separation and enough time to conduct successful pre-unemployment search, or they had advance notice of lay-off, but chose to specialize in search activities after becoming unemployed.

1/ See Burgess, P.L./Kingston, J.L. (1976)

2/ Phelps, E.S. (1970) p. 15

3/ In fact, estimates provided by Mattila, J.P. (1974) for the United States suggest that between half and two thirds of all job quitters have ensured new employment before quitting their previous jobs. On the critique of Job Search Theories, see also Hines, A.G. (1976).

Re-employment experience would be expected to differ for persons who do and do not experience a spell of unemployment as a result of job separation. Unemployed workers who have been laid off will, in general, face greater problems in finding a new adequate job. Furthermore, employers often consider the fact of being unemployed for a long period as a negative attribute.

In the context of Job Search Theory one can also argue that UI creates incentives to shorten unemployment, because an employment record would affect future eligibility for UI benefits. This is relevant above all for the first job seekers, since claimants of UI need to have been employed for a certain time span in order to be eligible for UI benefits. Higher UI benefits are attractive also for people not in the labour market. They may be induced to join the labour force because of a latter possibility of collecting UI benefits (after having been employed and having paid contribution for some time).

Employment may be associated with the probability of becoming unemployed and receiving UI benefits in the future. Since potential gains from finding employment also consist of becoming eligible for UI payments, higher future unemployment benefits or a longer duration of these payments make immediate employment more attractive. For those not currently receiving UI compensation, search intensity may rise and the reservation wage may fall in response to an increase in the value of UI benefits. 1/ This will be especially true for the reaction of UI by married women and unemployed young people. An impact of UI on the duration of unemployment may also be given by expectations about future unemployment benefits. Unemployment in one year may reduce (or remove) eligibility for UI benefits in the following year. It may also result in cuts of benefits from other social security schemes such as cash sickness benefits and old age pensions. Unemployed workers who are getting close to the maximum duration of UI payments or who have exhausted it, have to be aware of the necessity of working a certain number of months before becoming eligible again.

1/ See Mortsen, D.T. (1977)

4.2.3 The Relevance of Neo-Classical Models

The marginal utility theorem of neo-classical labour market models can hardly be regarded as a satisfactory explanation for unemployment. As Solow remarks ironically "... People who give the vague impression of being unemployed are actually engaged in voluntary leisure. They are taking it now, planning to substitute extra work later because they think, rightly or wrongly, that current real wages are unusually low compared with the present value of what the labour market will offer in the future. " 1/

Apart from general critiques on the concept of utility maximization, there are some weak points in the income-leisure approach. In reality the consumption of leisure (in the sense of unemployment) cannot be considered as such a voluntary decision. The worker is normally facing layoffs which limit a choice by himself in favour of leisure and unemployment benefits.

The worker also has only limited flexibility in his labour supply because the labour market regulations generally determine certain well-defined working days and periods. Contracts with employers are for a certain time and normally it is impossible for the worker to decide on the number of days spent on leisure.

Even if UI benefits are available, in most of the cases of unemployment the worker will not voluntarily choose to be out of work, but he is constrained to idleness because of the dismissals and the lack of employment opportunities. However, the neo-classical model can give a theoretical description of the individual's decision process when facing UI benefits. 2/

But we should not forget that the labour market is different from other markets in the sense that the objectives of the participants

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1/ Solow, R. (1970) p.7

2/ In this framework, Ashenfelter, O. (1979) calculates the unemployment compensation that is required, when time of unemployment is viewed as constraint on choice rather than a result of it.

are not always the ones we normally impute to economic agents, and some of the constraints prevailing in labour markets are not always the conventional ones. Choices between two market goods demand decisions different from the choice between leisure and income. "...We may predispose ourselves to misunderstand important aspects of unemployment if we insist on modelling the buying and selling of labour within a set of background assumptions whose main merit is that they are very well adapted to models of the buying and selling of cloth. 1/

As in the basic neo-classical model, an important point of critique on Job Search Theories lies in the fact that a form of cyclical unemployment exists, that cannot be explained by these models. The unemployment considered by neo-classical models is either voluntary or frictional, and the theories cannot be applied to depression periods with high rates of unemployment and long duration of spells. Empirically relevant is the fact that search models do not realize the existence of workers who have been laid off by employers, and thus do not give any answer to the essential problems of involuntary idleness. In fact, empirical studies point out that the bulk of unemployed workers did not quit voluntarily but had been dismissed against their own will for one reason or another. 2/

The microeconomic foundation of job search has contributed to the understanding of many aspects of the labour market, in spite of the limitations in respect of empirical relevance as a general labour market theory. It provides reasons as to why some unemployment may be voluntary and why it may be socially efficient.

Since my concern is the analysis of effects of UI on unemployment and its duration, job search models can serve as a theoretical

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1/ Solow, R. (1980) p.3

2/ A study for the FRG found that about 60 percent of the unemployed interviewed in a sample survey had lost their former jobs through dismissals by the former employers. However, only half of those who quit voluntarily did this without good reasons. See Infratest (1978). In a recent article, Burdett, K./Mortensen, D.T. (1980) developed a model that extends the theory of job search to include the case in which job prospects are characterized by layoff risk and where layoffs are explained by contract theory.

basis for quantitative calculations. UI benefits lower the search costs and the risk of unemployment for those who undergo a period of unemployment. Job search models can give indications of the behaviour of unemployed individuals without claiming to explain how unemployment arises. In the framework of this theory the impact of UI on unemployment and especially on the duration can be analysed empirically. The duration of unemployment spells can be assumed to depend, ceteris paribus, on the cost of unemployment and on the general employment perspectives. The general situation of the labour market and the demand for labour determine, among other individual factors, the employment possibilities. A decrease in the number of vacancies available to the unemployed workers will tend to increase the average duration of unemployment spells, if the labour turnover rate does not change. On the other hand, the relative costs of unemployment depend on the amount of UI benefits in relation to income from work.

The search effort that is required to be eligible for unemployment compensation affects the cost and thus the duration of unemployment. If the access to UI benefits is related to active job search, UI is less likely to induce 'voluntary' unemployment. The denial of unemployment compensation to certain claimants who are assumed to be out of work voluntarily (i.e., who have quit voluntarily or have refused job offers) will affect the initial unemployment and duration of employment.

Findings in the United States showed that the denial of benefits to certain applicants has a clear influence on the unemployment rate. 1/ More stringent administrative procedures could lower unemployment and more liberal benefits may lead to higher levels of unemployment. 2/ When benefits are denied for some weeks, the average income replacement by UI over the spell of unemployment is lower and thus make

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1/ See Holen, A./Horowitz, S.A. (1974) and the description of their study in Chapter 5. In this analysis cross-section data over all US states were used.

2/ On the other side, the strictness with which UI eligible standards are enforced can depend also significantly on the level of unemployment. See Wacker, A./Paul, G. (1975) and the empirical evidence in Chapter 6.2

unemployment more costly. The higher the cost of job search, the shorter the duration of spells of unemployment will be.

4.3 Non-Clearing Markets and Involuntary Unemployment

The existing amount and types of unemployment in the current economic crisis cannot be sufficiently explained by neo-classical theories. They are theoretical paradigms that have evolved as explanations of voluntary unemployment. The search paradigm provides a coherent account for large flows into and out of unemployment, but it is inconsistent with repeated and long-term spells of joblessness. 1/ Only a small part of all unemployment is experienced by persons who find employment after a brief spell. In the Federal Republic of Germany in 1979, for example, only about 37 percent of total unemployment was attributable to persons finding a job within three months.

For a more complex explanation of unemployment, we have to refer to different approaches of labour market theories. A model closer to reality has to contain some kind of involuntary unemployment as the Keynesian type that is due to deficient demand in the product market.

A simplified model of the labour market which takes reaction to UI into consideration, will be outlines. It starts from the Keynesian theory and its interpretation by D. Patinkin, in which the framework of market equilibrium is rejected and which explains a system of markets which are not always cleared. 2/ This model

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1/ See Clarke, K.B./Summers, L.H. (1979). Akerlof, G.A. (1979) argues that according to empirical evidence, most unemployment belongs to spells of sufficient length that it cannot plausibly be accounted for by misinformation regarding prices.

2/ For a more detailed description of the disequilibrium model presented here, see Barro, R.J./Grossman, H.I. (1971) and the interpretations of Keynesian theory on unemployment by Patinkin, D. (1965). For a discussion of this approach in connection with UI see also Spindler, Z.A./Maki, D. (1979).

represents an attempt to formulate a theoretical approach for empirical testing.

The norm of reference to be used in defining involuntary unemployment is the supply curve of labour. This curve shows the amount of employment which the workers in an economy want to obtain, when confronted with certain wages, price levels and budget restraints. As long as they succeed in selling all the labour they offer at prevailing wage rates, the economy will be in a state of full employment. By definition, the extent of voluntary unemployment is identical to the excess supply of labour at prevailing prices.

In general, the demand function of labour describes the behaviour of firms maximizing profits within the framework of perfect competition based, however on the assumption that they will be able to sell all output at market prices. In a situation where commodities are in excess supply, profit-maximizing firms will select the minimum quantity of labour necessary to produce the quantity demanded on the commodity market.

The theory developed by Patinkin demonstrates that unemployment may occur in the absence of constraints on the level or movement of real wage. The inability of firms to sell the output quantity according to their supply schedule and the resulting excess supply in the market for current output causes them to demand a smaller quantity of labour. According to Patinkin, cyclical (involuntary) unemployment could be due to excess supply in the product market, rather than to real wages being too high. Failure of the price level to adjust to clear the commodity market leads to deficient demand and excess supply in the labour market, which is usually referred to as involuntary unemployment.[1/]

1/ Malinvaud labels this type of involuntary unemployment as Keynesian unemployment which arises because firms are rationed in the goods market and households are rationed in the labour market. See Malinvaud, E. (1977) p.31

Let us now assume a labour market where labour demand (L^d) a decreasing function and labour supply (L^s) an increasing function of the real wage rate. If the labour market is competitive with free perfect information and mobility, the equilibrium real wage rate and employment will be given by $\frac{w+}{p}$ and L^+ as is shown in figure 7. The level of employment in equilibrium is jointly determined by the decision of households and firms, both of whose decisions are influenced by the wage rate. Point E can be denoted as full employment general equilibrium. 1/ Any kind of unemployment that may exist at this point can only be voluntary in the sense that members of the working age population prefer leisure to employment and income. (Imperfections and frictions do not exist at this stage of the model.)

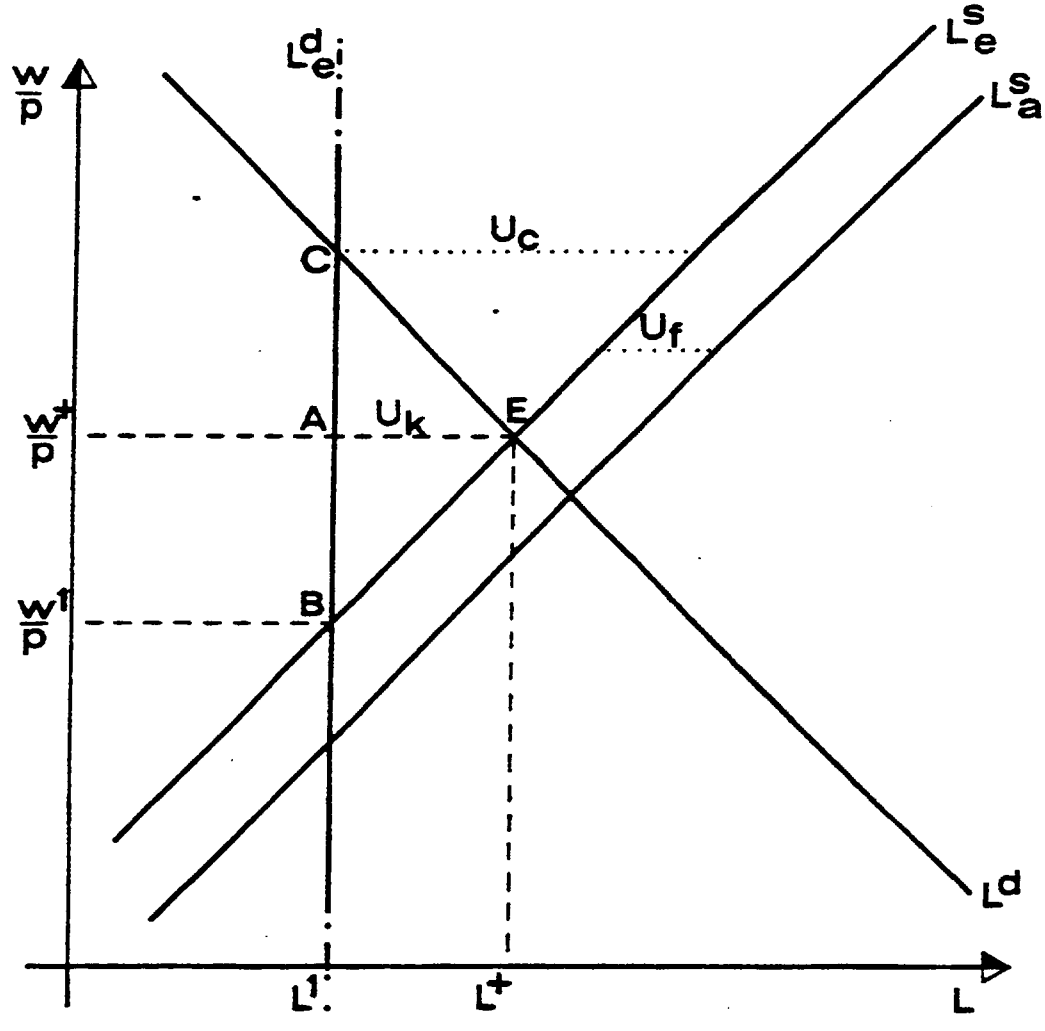
We assume that there is excess supply in the product market and that the effective labour demand curve (L_e^d) becomes vertical due to the disequilibrium in the output market. In a short-term analysis in a situation of disequilibrium, this shift will result in unemployment. At the real wage rate $\frac{w+}{p}$ in figure 7, the employment level is L_1 and unemployment is U_k. Anything that will shift the labour supply curve to the right increases unemployment, and anything that shifts the labour demand curve to the right decreases unemployment.

The effective labour demand curve would shift to the right through an increase of aggregate demand on the commodity market. If the labour supply curve is independent of aggregate demand, then unemployment would decrease. If the labour supply curve shifts to the right due to social or demographic changes, unemployment increases along the given labour demand curve.

A decline of real wages to $\frac{w^1}{p}$ would lead to equilibrium B of supply and effective demand for labour and involuntary unemployment would disappear.

1/ The commodity market is in equilibrium and it is assumed that effective supply and demand for labour coincide with the apparent supply and demand.

FIGURE: 7 NON-CLEARING MARKETS AND INVOLUNTARY UNEMPLOYMENT



However, a decrease in wages can be expected to affect the demand for commodities. Lower demand for goods subsequently could also reduce the demand for labour. Thus, the equilibrium point B will not necessarily be reached.

In situation B, however, the labour force is reduced by EA, and labour resources are idle. Involuntary unemployment due to an excess supply of labour has been replaced by voluntary idelness and withdrawal

from the labour market. 1/ In this case too high wages were not the cause of unemployment and their reduction would be a superficial remedy. Only an increase of commodity demand can restore full employment.

If real wages were above $\frac{w^+}{p}$, in $\frac{w^2}{p}$, the classical case of unemployment would exist where only a reduction of real wages could bring back full employment equilibrium. This classical type of involuntary unemployment could not be remedied by stimulation of commodity demand. It would appear in a situation where firms would not find it profitable to recruit the whole labour force even though they would be faced with an excess demand for their output.

Let the supply of labour

$$L^s = f\ (\frac{w}{p}, b),$$

where $\frac{w}{p}$ is the real wage rate and b contains social and demographic variables.

The demand for labour by the firm depends on

$$\pi = p \cdot Q - w\ L, \text{ and}$$

$$Q = f\ (L),$$

where the profit π is simply assumed to be the difference between the product of output and prices and the cost of labour. We disregard capital costs. The level of output for its part is a function of employment L. Under these conditions the demand for labour by the firm will be increased according to criteria of profitability. The demand for labour will be expanded up to the point where the marginal productivity of labour equals the wage rate,

$$L^d = g\ (\frac{w}{p}), \text{ until } \frac{w}{p} = f^1\ (L).$$

In this neo-classical context production and thus the demand for labour is not restrained by the demand for output. Unemployment will occur if

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1/ See Barro, R.J./Grossman, H.I. (1971) pp. 86

$$L^d < L^s .$$

In the second case of demand for labour we have

$$\pi = P\,Q - w\,L,$$
$$Q = f(L), \text{ and}$$
$$Q = D.$$

the output is determined by the demand for products D and the demand for labour depends on D, $L^+ = g(D)$, if $\frac{w}{p} \leqslant f(L^+)$,

Demand for labour will increase if the demand on the commodity market augments, as long as the real wage rate is lower than marginal productivity (otherwise production would be unprofitable for the firm).

The demand for labour will equal L^d if $Q(L^d) \leqslant D$, the demand for labour is equal to L^+ if $D \leqslant f(L)$.

The actual level of employment is determined by

$$L = \min (L^s, L^d, L^+)$$

and unemployment

$$U = L^s - L \text{ or}$$
$$U = f\left(\frac{w}{p}, b\right) - L$$

where

$$L = g\left(\frac{w}{p}\right), \text{ if } L = L^d \text{ or}$$
$$L = g(D), \text{ if } L = L^+ .$$

If L^s is the smallest of the three numbers, there is an excess demand for labour because firms would like to produce at full capacity limits or equal demand in the product market.

If $L^+ < L^d < L^s$ or $L^+ < L^s < L^d$ there is an excess supply of labour and we are in a situation where the Keynesian type of unemployment prevails. An extension of demand in the commodity market would reduce - or in the second case - remove unemployment.

If L^d is the smallest, there is an excess demand for goods but also an excess supply of labour. Unemployment is due to a lack

of profitable productive capacities. The level of capacity depends above all on the real labour cost and is a decreasing function of the wage rate. 1/ If $L^d < L^s < L^+$ unemployment can be overcome by a reduction of the real wage rate. A situation of full employment will be reached without constraints in the demand for labour determined by the product market. 2/

If the wage rate is above equilibrium level, the demand for labour will not be sufficiently high to employ the whole labour supply. Rigid non-clearing market wages bring about the classical type of unemployment. 3/

In our analysis we are interested in the two cases where unemployment appears. Theoretically we can expect different situations of unemployment to appear in different sectors of the economy. Some sectors will find themselves in the Keynesian situation where the lack of demand results in unemployment. In other sectors, production is limited by the lack of capacity, due to a wage rate that is too high for profitable investment.

The state of employment in the overall economy depends on the

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1/ On the distinction between Keynesian and classical unemployment see Malinvaud, E. (1977) and Pitoussi, J.P. (1979).

2/ If L^d L^+ L^s a reduction of the real wage rate will reduce unemployment only until L^+ is reached. At this point we will have the Keynesian type of unemployment, where only an expansion of demand on the commodity market can remedy unemployment.

3/ At this point we do not go into the discussion of why wages are rigid downwards. There exist different explanations why the real wage rate will not adjust to equilibrium level. The stickiness of wages can be attributed to institutional factors or to workers who suffer from money illusion. At least in short-run analysis it can be shown that sticky wages are consistent with rational behaviour by employers and workers. See Varian, H.R. (1976). Social customs and standard business practice, while paying some attention to labour market conditions, do not allow the payment of the market clearing wage at all times and in all circumstances. See Akerlof, G.A. (1980) p.232

proportion of the two sectors with different types of unemployment. [1/] The aggregate unemployment rate is determined by the supply side in the labour market and by the demand for labour which for its part is determined by the level of real wages and by the demand for output.

How in the context of this simple model can the introduction of UI be assumed to affect the labour market ?

Firstly, the effects which can be expected at the supply level will be described. For this purpose, we recall the discussion in the preceding chapter. As reaction to the introduction of UI (or an increase in UI benefits) more people would prefer to work during shorter periods of prolong job search and live on unemployment compensation. The effective labour supply would decrease, although the apparent supply would not change. Frictional unemployment reduces the number of workers actually available for employment. An increase in UI benefits would lead to voluntary unemployment appearing as the difference between effective labour supply (people immediately available for the type of labour offered) and apparent labour supply (the total number of people registered in the labour force). In Figure 7 this difference is given by U_f. Total labour supply can also increase as a reaction to the introduction of UI. Unemployment benefits make labour force attachment preferable to withdrawal from the labour market and may result in a higher participation rate.

At the same time, an introduction of UI benefits will tend to increase the wage rate by setting up the individual reservation wages. In general, a worker will not accept a wage that is not somewhat higher than the unemployment compensation which he could receive when out of work. Since the unemployed have an alternative source of income they might be less constrained by existing unemployment in asking for higher wages. The aggregate wage will thus be higher when UI exists. Classical unemployment would increase because, at a higher real wage rate, it becomes less profitable for firms to extend capacity.

1/ See Malivaud, E. (1978)

UI benefits also have an employment increasing effect in the context of stabilizing policies. UI as a built-in stabilizer helps to maintain demand for output during cyclical downswings. 1/

4.4 From Theoretical to Econometric Model

The econometric testing of disequilibrium models is only in its beginnings and involves complicated econometric methods. 2/ Discontinuous functions would have to be tested as in the simple model on classical and Keynesian unemployment, which has been outlined in the preceding paragraph. In my own empirical research, I will move away from the theoretical framework presented before in order to obtain a form which is more easily testable in regression analysis. For the model on rationing in the labour market, we assume that the two different types of unemployment exist in different sectors of the economy. But in the aggregate model, we do not distinguish between sectors. The variables which determine the labour demand, the real wage rate and the commodity demand, will be included in one function describing the demand for labour.

In this section, I outline the theoretical model on which I can base my empirical analysis. I want to establish those factors which can be assumed to affect unemployment and at the same time, I will account for the impact of UI. The model for empirical testing will comprise elements from different theories. It describes disequilibrium in the labour market and is based upon microeconomic foundations by which the supply of labour can be explained by the individuals choice between income, leisure and job-search process.

Most of the analyses on the effects of the level of UI benefits on unemployment have the same basic structure: a simple equation relating the unemployment rate to the ratio of UI benefits to income, to a variable representing demand deficiency (the deviation from the trend in output or its annual growth rates) and some other variables which can be expected to affect unemployment. It is assumed that the

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1/ See Hauser, M.M./Burrows, P. (1969) pp. 123

2/ See Bowden, R.J. (1978)

partial derivation of aggregate unemployment with respect to the replacement ratio is positive. This prediction appears to be justified from the model of the supply side in the labour market, where unemployment is a voluntary choice of utility maximizing workers as in neo-classical theory, or a result of lower job search costs due to the availability of UI benefits. 1/

Most studies on the impact of UI are concentrated on the supply of labour and although including demand variables in the equation, they are not explicitly considering the demand increasing effect of UI on the goods and labour markets. The demand for labour and the impact of UI on this side of the labour market are assumed to be captured in the level of output, which for its part, represents the demand on the commodity market.

In connection with insurance-induced unemployment, the supply of labour is based on two types of decisions by the household. The worker decides whether to become a member of the labour force, as is reflected in the participation rate, and whether to become or remain unemployed.

An analysis of the overall impact of UI on unemployment requires an entire model of the labour market. The approach presented here is based on the concept of non-clearing markets as described in the preceding paragraph. From there we want to derive a basic testable equation in which unemployment is explained by different variables, each of them representing some aspects of labour market theories in connection with UI.

In equilibrium models, the current wage is assumed to equate quantity demanded and quantity supplied and unemployment is due to job search. 2/ Here we assume a disequilibrium in the labour market.

1/ See Spindler, Z.A./Maki,D. (1979)

2/ See Lucas, R.E./Rapping, L.A. (1970)

Approaches for an econometric testing of markets in disequilibrium will be adopted and adjusted taking into account the effects of UI on the supply and demand for labour. 1/

(a) Demand for Labour

The demand side of the labour market is important in the context of our research because UI schemes are partially (in some cases even completely) financed by employers' contributions. In most European countries these contributions represent variable costs in the sense that they are wage-related up to a given income ceiling; above this ceiling they are fixed costs and independent of the hours worked. For reasons of simplicity it will be assumed that the contributions are fixed costs.

The typical firm is assumed to minimize the total labour bill subject to the production function restraints. A necessary condition for profit maximization requires that the marginal product of labour equals the real wage

$$w_t = f_L \ (L_t, \ K_t, \ t)$$

where f_L is the partial derivative of the production function

$$Q_t = f \ (L_t, \ K_t, \ t)$$

where L_t is the man-hours of labour, K_t is the flow of services of capital, t is a time trend representing the state of technical progress in period t and Q_t is output. 2/

1/ Econometric estimations for markets in disequilibrium have first been carried out by Fair, R.C./Jaffee, D.M. (1972) and for the special case of labour markets by Rosen, H.S./Quandt, R.E. (1978)

2/ See Rosen, H.S./Quandt, R.E. (1978) p. 372

The wage that is relevant for the firm is assumed to include contributions to social security schemes, c_t (of interest here: UI),

$$w_t^i = w_t + c_t^i$$

The total wage costs for the firm are the sume of the wage rate multiplied by the number of workers and the fixed contributions to UI for all workers. A rise in c_t^i, i.e. higher labour costs will, ceteris paribus, lead to a decrease in the demand for labour.

The income creating effect of UI that brings about an increase in aggregate demand in the commodity market is assumed to be included in the output variable.

The demand for labour, eliminating K_{ti} is given by

$$L_t^D = \phi (w_t, c_t^i, Q_t, t).$$

If we distinguish between the different sectors of the economy L_t^D would be a discontinuous function, which is depending on the cost of labour if no constraints appear in the product market ($f (L_t) > Q_t$), or it is depending on the demand for output if Q_t is lower than $f (L_t)$. The aggregate econometric model for the entire economy includes both types of rationing in the labour market in one equation, one represented by w_t, the other by Q_t, without diffrentiation by sectors.

With the equation above we have a structural relationship but not a reduced form equation, because the endogenous variable Q_t appears on the right hand side. But for reasons of tractability it will be assumed that output is exogenous.[1/] For purposes of estimation a log linear

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1/ Ideally output should be treated econometrically as an endogenous variable in a multi-market model. But estimating multiple markets in disequilibrium is beyond the scope of the current study and involves considerable econometric problems.

transformation is employed

$$\ln L_t^D = a_o + a_1 \ln w_t + a_2 \ln Q_t + a_3 \ln c_t^i + a_4 t + e_{t1}.$$

(b) Supply of Labour

The simplest formulation of the supply of labour draws upon the theory of leisure-income choice, based on the utility function

$$V = v\ (w_{nt},\ a_{nt},\ b_t)$$

where w_{nt} is the net wage, a_{tn} the net non-earned income and b_t the real UI benefit. 1/

It is assumed that the atemporal choice of the household depends on income variables of period t. This is a simplification of a more elegant formulation in a model of labour supply which also includes variables of future consumption and future labour supply in addition to the current ones. 2/ The simplification appears acceptable because in analysing the effects of UI on the supply of labour we are dealing with relatively short-termed reactions. Furthermore, we assume that non-labour income a_{tn} is endogenous. When hours of work are high, workers accumulate assets and thereby increase their non-labour income, on which they can fall back when employment is low. 3/

Thus labour supply can be formulated according to the function

$$L_t^S = \Psi\ (w_{nt},\ b_t,\ P_t),$$

where P_t is a population parameter, capturing changes over

1/ See Rosen, H.S./Quandt, R.E. (1978) p.373 and Harrison, A./Hart, B, (1981)

2/ See Lucas, R.E./Rapping, L.A. (1970)

3/ See Romer, D. (1980)

time in the size of the potential labour force.

The log linear transformation gives an equation that can be estimated

$$\ln L_t^S = \beta_o + \beta_1 \ln w_{nt} + \beta_2 b_t + \beta_4 \ln P_t + e_{t2}.$$

A difference could exist between the nominal and the effective supply of labour. If not all the desired consumption can be realized the actual offer of labour will be lower. The potential income from more work and thus a higher supply of labour would not find satisfactory consumption possibilities in the commodity market.

In general, the UI benefits are irrelevant in an equation on the supply of hours of work. 1/ The individual's optimal number of hours worked will be independent of a change in UI benefits. He can receive UI compensation only when he is completely unemployed, but not if employment is reduced by a few hours. Thus UI benefits will influence the number of days per time period, but not the number of hours. Income then is the variable as the outcome of a labour supply decision and the wage rate.

Income and UI benefits do not necessarily have to enter the equation as a ratio, like the replacement ratio. It has been done in most approaches that analyse the impact of UI on unemployment. But one may assume that an individual is likely to change his behaviour if both wage w_{nt} and benefit b_t double but the replacement ratio of benefits to income itself remains constant.

(c) The Complete Model

We have now outlined the equations specifying demand and supply of labour. Disequilibrium models often assume that

1/ See however the argumentation on the impact of UI on the demand for labour in Baily, M.N. (1977) and in Chapter 4.5.

the quantity observed is the minimum of quantity supplied and quantity demanded at the current wage,

$$\ln L_t = \min (\ln L_t^S , \ln L_t^D).$$

If aggregation is over submarkets, some of which are characterized by excess demand and some by excess supply, the observed quantity of labour might be some combination of L_t^S and L_t^D, as reasonable approximation to how the observed L_t is determined.[1/]

In our model, the level of unemployment is given by the amount by which the supply of labour exceeds the demand for labour. The difference between the employment level that is realized on the labour market, L_t, and the apparent labour supply, L_t^S, indicates the level of unemployment,

$$U_t = L_t^S - L_t.$$

The dependent variable in our model is unemployment which is determined by demand and supply in the labour market. Unemployment can thus be described by a set of variables derived from the structural form of L_t^S and L_t^D. The reduced form of the equation for unemployment can be formulated by

$$U_t = \Omega (w_t, w_{nt}, Q_t, c_t^i, t, b_t, P_t).$$

If we disregard the difference between net and gross wages,[2/] and have c_t^i included in the real wage, the log linear transformation yields

$$\ln U_t = \alpha_o + \alpha_1 \ln w_t + \alpha_2 \ln b_t + \alpha_3 \ln Q_t + \alpha_4 \ln P_t + e_{t2} .$$

The coefficients of this single linear equation will be estimated in the empirical part.

1/ See Rosen, H.S./Quandt, R.E. (1978) p.373

2/ We have, however, to be aware of the fact that the gap between gross and net wages may fluctuate over time.

(d) Participation Rates

In the model of non-clearing markets we pointed to the fact that UI may induce individuals to join the registered labour force. How the participation rate is affected by the existence of UI will be analysed.

For the following equations the total labour force LF is subdivided into primary (PLF) and non-primary labour force (NLF). 1/

$LF = PLF + NLF$

The first group consists mainly of male workers between 25 and 60 years of age and their labour market attachment will merely vary with cyclical fluctuations in employment. Workers of this labour market segment will be either employed or registered as unemployed. The registration of the non-primary labour force - above all women, young and old worker and migrant workers - can be expected to respond to variations in the level of employment. 2/

The two segments of the labour market will be affected differently by the variables wages and benefits. An increase in UI benefits may lead to a higher participation rate as a consequence of an increase in the participation on non-primary labour force. Married women and older workers above 50 years of age may join the labour force or register as unemployed, while they would withdraw from the labour market if UI did not exist. The non-primary sector of the labour force, contrary to what may be expected from the primary labour force, will show variations in the participation rates.

1/ See Tarantelli, E. (1974), pp. 155 and Mincer, J. (1966)

2/ See Clark, K.B/Summers, L.H. (1980). Over the period under consideration views about primary and secondary labour force have changed, the attachment of men aged 60 to 65 years has probably declined while that of women may have increased. Including these fluctuations in the analysis will, however, lead too faraway from the topic of this analysis.

The labour market participation of both groups can be expressed as proportions of the total population groups and depending on the level of UI benefits:

$$PLF = (a_1 + a_2 \; b) \; TPP \text{ and}$$

$$NLF = (a_3 + a_4 \; b) \; TNP,$$

where TPP and TNP represent the total primary and non-primary population, respectively.

The activity rate of both groups is a non-homogenous function of the employment level L.
Let

$$a_1 = \alpha_1 + \beta_1 L,$$

$$a_2 = \alpha_2 + \beta_2 L,$$

$$a_3 = \alpha_3 + \beta_3 L \text{ and}$$

$$a_4 = \alpha_4 + \beta_4 L.$$

Thus,

$$PLF = [(\alpha_1 + \beta_1 L) + (\alpha_2 + \beta_2 L)] \; b \quad TPP \text{ and}$$

$$NFL = [(\alpha_3 + \beta_3 L) + (\alpha_4 + \beta_4 L)] \; b \quad TNP.$$

Dividing the two components of the labour force by the total population P, we obtain

$$\frac{LF}{P} = \frac{[(\alpha_1 + \beta_1 L)+(\alpha_2 + \beta_2 L)b] \; TPP + [(\alpha_3 + \beta_3 L)+(\alpha_4 + \beta_4 L)b] \; TNP}{P}$$

Let us now assume that UI benefits have no effect on the participation rate of the primary labour force, and that its supply of labour is relatively inflexible in relation to cyclical variations in employment. This is quite plausible as in industrialised countries the participation rates of this population group are generally close to a hundred percent.
The hypothesis is:

$$H_o : a_2 = \beta_1 = 0,$$

thus

$$\frac{LF}{P} = \frac{\alpha_1 TPP + \left[(\alpha_3 + \beta_3 L) + (\alpha_4 + \beta_4 L) b\right] TNP}{P}$$

By adding and subtracting $_1TNP$ in the preceding equation we obtain

$$\frac{LF}{P} = \alpha_1 \frac{TPP + TNP}{P} + \frac{\left[(\alpha_3 - \alpha_1 + \beta_3 L) + (\alpha_4 + \beta_4 L)\right] TNP}{P}$$

$$= \alpha_1 + (\alpha_3 - \alpha_1) \frac{TNP}{P} + \beta_3 L \frac{TNP}{P} + \alpha_4 b \frac{TNP}{P} + \beta_4 L b \frac{TNP}{P}.$$

The activity rate is thus a function of the relation non-primary population to total population, the level of employment, and the UI benefits (or the replacement ratio),

$$\frac{LF}{P_t} = \phi \left(\frac{TNP}{P_t}, L_t, b_t \right).$$

Dividing equation of above by $\frac{TNP}{P}$ and including an error term yields

$$\frac{FL}{TNP} = (\alpha_3 - \alpha_1) + \alpha_1 \frac{P}{TNP} + \beta_3 L + \alpha_4 b + \beta_4 L b + e_{t3}.$$

Specifications of this structural relation shall be tested in the empirical analysis.

4.5 Appendix: Contract Theories

Implicit Contract Theory surfaced only a few years ago and has contributed an explanation of the working together of employment fluctuations and UI. 1/

Contract theory in itself cannot claim to explain why unemployment exists. But it can help to understand the phenomenon that a decline in aggregate demand falls on the quantity of labour(layoffs and reduced hours of those currently employed) and has little effect on wages. In the context of my research, the theory of contracts is not a central one, since its principal aim is to explain wage stickiness. Unemployment is understood as an optimal response to economic conditions, rather than as involuntary idleness. Like job search models, Implicit Contract Theory can account only for short-term unemployment. The type of unemployment described by contract theories is entirely voluntary. 2/

The theory of implicit contracts offers an explanation for the fact that people rationally choose to be unemployed some of the time. It can explain why workers may be interested in signing contracts that ensure stable wages but allow for fluctuations in employment. These implicit or explicit contracts between workers and employers include a form of risk shifting from the workers towards the firm. The notion of risk-shifting means that the firm carries the risk stemming from a decline in demand in the product market, while the workers get the security of stable income. Wage bargains allow workers to buy insurance in the form of real wage stability.

Wage stability is a means by which relatively risk-neutral firms provide income insurance for risk-averse workers, presumably in exchange

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1/The basic texts on Implicit Contract Theory are by Baily, M.N. (1974), Gordon, D.F. (1974) and Azariadis, C. (1975). The impact of implicit contracts together with UI on fluctuation in employment has been analysed by Baily, M.N. (1977) and Grossman, H.I. (1980c).

2/See Varian, H.R. (1976).

for a lower average wage.[1/]

One can assume, however, that the Implicit Contract Theory only works well when workers have income possibilities also when they are unemployed. If they are assumed to be risk-averse they presumably want to exclude as well the risk of being out of work and without income. Only the compensation of income losses through UI makes the employment insecurity acceptable for workers. [2/] "The risk-shifting hypothesis plays a critical part in the present anslysis, but by itself does not provide a full account within a market-clearing framework of the diverse phenomena associated with layoffs. An adequate analysis of layoffs seems to require, in addition, explicit allowance for the consequences of tax-financed unemployment insurance." [3/]

M.N. Baily explains implicit contracts and stability in incomes by the costs of adjustment and layoffs for both employers and workers, for which UI benefits are an important determinant. [4/] H.I. Grossman argues that workers who are risk-averse, and firms which are risk-neutral, agree on contracts that stabilize incomes. [5/] Baily assumes that firms and workers are risk-neutral and he shows how the cost to the worker who was laid off, actually influences the number of layoffs the firm makes. Both theories claim to explain why firms do not lower wages in the presence of declining demand or falling prices in the goods market. In certain states of the economy, employers are assumed to lay off workers and workers prefer income from UI to too low wages or to short a working time.

In the context of theories on unemployment and UI, the analytical framework of H.I. Grossman will be presented in more detail in the following section.

1/ The idea of risk-shifting is especially presented in Grossman, H.I. (1980b).

2/ See Solow, R. M. (1979) pp.350

3/ Grossman, H. I. (1980c) p.3

4/ See Baily, M.N. (1977)

5/ See Grossman, H.I. (1980c)

(a) The Model Without Risk Shifting and UI

Two groups of individuals who differ in their attitudes to risk are observed. The crucial assumption is that those who are risk-neutral will become entrepreneurs, while the risk-averse individuals are workers. In the model, all workers face the some utility function and these utility functions in respect to income and working time are additive. Furthermore, labour services are considered as being homogenous. In the absence of risk shifting and UI, workers receive the value of their marginal contributions to total product.

The variable wages w is stochastic and determined by

$$w = \begin{cases} w_1 \text{ with the probability } \alpha_1 \\ w_2 \text{ with the probability } \alpha_2 \end{cases},$$

where $0 < w_1 < w_2$,

and $\alpha_1 + \alpha_2 = 1$.

w_1 characterises a bad year (or state of nature, as formulated by Grossman) and w_2 a good one. They arrive with certain probabilities α_1 and α_2 - i.e., the probabilities for good and bad years are known.

In the following,

l - measures the units of employed time and can be $\{0, 1\}$, i.e. the worker will be employed (l = 1) or unemployed (l = 0).

Ω - measures the wage income, given by the product of wages and the units of employed time.

c - measures the worker's consumption which is assumed to be equal to the wage income.

In the following equations u stands for utility and v for disutility. E(u-v) gives the expected utility of a worker who is choosing between employment and wage income:

$$E(u-v) = \alpha_1 \left[u(c_1) - v(l_1) \right] + \alpha_2 \left[u(c_2) - v(l_2) \right] .$$

Workers obtain positive and decreasing marginal utility from their consumption, and negative and increasing marginal utility (positive disutility) from the number of hours and days worked per time period.

Workers select between three possibilities, employment in both states, in only one, or in no state of nature. The expected utilities are:

$$E_1 (u-v) = \alpha_1 u (w_1) + \alpha_2 u (w_2) - v(1)$$

$$E_2 (u-v) = \alpha_1 u (0) + \alpha_2 u (w_2) - \alpha_1 v(0) - \alpha_2 v(1)$$

$$E_3 (u-v) = u(0) - v(0)$$

The worker desires employment in a particular state of nature where his possible income is high enough so that the utility of being employed and consume income is at least equal to the utility of not working. So far the wage rates are changed according to the state of nature. Adjustments in employment reflect only wage-induced movements along the supply schedule of labour.

(b) <u>The Model With Risk-shifting</u>

Introducing now risk-shifting into the employer-worker relation, one has to include the constraint:

$$p \alpha_1 (\Omega_1 - w_1 l_1) = \alpha_2 (w_2 l_2 - \Omega_2),$$

where $(\Omega_1 - w_1 l_1)$ gives the additional income of a worker in state 1, in exchange for a reduction of income in state 2 $(w_2 l_2 - \Omega_2)$. p is the ratio of the expected value of the reduction to the expected value of an addition. We assume that p is equal to unity, i.e. a 'fair' price for risk-shifting. Then a worker would set Ω_1 equal to Ω_2 and $c_1 = c_2$, which means also that his consumption is stable over the different years.

This implies as constraint

$$\Omega_1 = \Omega_2 = \frac{p\alpha_1 w_1 l_1 + \alpha_2 w_2 l_2}{p\alpha_1 + \alpha_2}$$

Again the worker can choose between the three combinations employment in both states, only in the good state or no employment at all. The expected utilities are:

$$E_{S1}(u-v) = \alpha_1 u \frac{p\alpha_1 w_1 + \alpha_2 w_2}{\alpha p_1 + \alpha_2} + \alpha_2 u \frac{p\alpha_1 w_1 + \alpha_2 w_2}{p\alpha_1 + \alpha_2} - v(1)$$

$$E_{S2}(u-v) = \alpha_1 u \frac{2 w_2}{p\alpha_1 + \alpha_2} + \alpha_2 u \frac{2 w_2}{p\alpha_1 + \alpha_2} - \alpha_1 v(0) - \alpha_2 v(1)$$

$$E_{S3}(u-v) = u(o) - v(0).$$

In the risk-shifting contracts workers accept a constant wage low enough that the under-employed in bad years can be paid up to the local wage sum available to the firm.

This way of risk-shifting allows the worker to use the revenues of his marginal contribution to output in the good year to supplement his income and consumption in the bad year. Therefore, the value of working in the good year is larger, and the higher w_2 is in the good year, the higher w_1 has to be in order that the worker also desires to work in the bad year.

Risk-shifting gives all workers less variable wage income and its consequence is that a worker's contractual income does not equal the value of his marginal contribution to total product in each period.

(c) The Model with UI

We now look at the effects of the introduction of a UI. It is assumed to be financed out of taxes. The amount of benefits that an unemployed worker can receive depends on

his previous earnings. If the system of UI is 'fair' i.e., organized according to an insurance principle, the expected value of taxes paid to the UI fund by each worker has to equal the expected value of UI benefits he receives when unemployed. Actual UI, however, does not satisfy these conditions, but includes a redistribution from all employed tax payers to certain workers who are facing unemployment and are receiving UI benefits. In the labour market with UI, the worker faces the additional constraints:

$$c_1 = (1-\tau)\,\Omega_1 + b,$$

$$c_2 = (1-\tau)\,\Omega_2 \quad \text{and}$$

$$b = \begin{cases} \beta\Omega_2, & \text{if } l_2 = 1 \text{ and } l_1 = 0 \\ o, & \text{otherwise} \end{cases}$$

$$\tau = \begin{cases} g, & \text{if } b = 0 \\ h, & \text{otherwise,} \end{cases}$$

where τ is the worker's contribution to the UI fund and b is the amount of UI benefit, if the individual works only in the good state, b equals $\beta\Omega_2$ and τ equals h. Otherwise b equals zero and τ equals g. Fair UI would have equal to zero (i.e., workers who never receive benefits would not pay contributions to UI) and h equal $\beta\alpha_1/\alpha_2$. The replacement ratio is equal to $\beta/(1-h)$. The expected values again for the three combinations are:

$$E_{11}(u-v) = \alpha_1 u\left[(1-g)w_1\right] + \alpha_2 u\left[(1-g)w_2\right] - v(1)$$

$$E_{12}(u-v) = \alpha_1 u(w_2) + \alpha_2 u\left[(1-h)w_2\right] - \alpha_1 v(0) - \alpha_2 v(1)$$

$$E_{13}(u-v) = u(0) - v(0)$$

After the introduction of a fair UI, there would be less workers who would not want to be employed in any year, but more workers to be employed in the good one.

(d) The Model with Risk-shifting and UI

With risk-shifting combined with UI the worker faces all constraints together:

$$l_1 = \{0,1\} \quad , \quad l_2 = \{0, 1\}$$

$$c_1 = (1 - \tau)\,\Omega_1 + b, \quad c_2 = (1 - \tau)\,\Omega_2,$$

$$p\alpha_1\,(\Omega_1 - w_1 l_1) = \alpha_2(w_2 l_2 - \Omega_2)$$

$$b = \begin{cases} \beta\Omega_2 - \Omega_1, \text{ if } l_2 = 1 \text{ and } l_1 = 0 \\ 0, \text{ otherwise} \end{cases}$$

$$\tau = \begin{cases} g, \text{ if } b = 0 \\ h, \text{ otherwise} \end{cases}$$

The worker who chooses employment in the good year and unemployment in the bad year can receive income in the bad year either from rish-shifting arrangements with the employer or, alternatively, UI benefits. If he chooses risk-shifting, his income is $(1-g)\,\alpha_2 w_2/(p\alpha_1 + \alpha_2)$ in the bad year and the same in the good year. If the worker chooses UI, his income will be βw_2 in the bad year and $(1-h)w_2$ in the good one. If bad years mean deep recessions or they appear for a long period, the wages that would be possible according to Implicit Contract Theory might be actually lower than UI replacement. At this point, for both employers and workers, layoffs will be convenient. In a 'fair' system, however, the worker would have to consider that he is paying contributions to UI according to the duration and frequency of his unemployment. One could also assume that workers who decide to be employed only in the good state prefer UI to risk-shifting. However, risk-shifting will remain attractive in reducing income variability for other workers who choose to be employed in both states. These facts give the explanation for rigid wages and relative flexible employment.

The worker now chooses the employment situation with the highest value of E(u-v):

$$E_{A1}(u-v) = \alpha_1 u\left[(1-g)\frac{p\alpha_1 w_1 + \alpha_2 w_2}{p\alpha_1 + \alpha_2}\right] + \alpha_2 u\left[(1-g)\frac{p\alpha_1 w_1 + \alpha_2 w_2}{p\alpha_1 + \alpha_2}\right] - v \quad (1)$$

$$E_{A2}(u-v) = \alpha_1 u(\beta w_2) + \alpha_2 u\left[(1-h)w_2\right] - \alpha_1 v\ (0) - \alpha_2 v(1)$$

$$E_{A3}(u-v) = u(0) - v(0)$$

The range of values for which the worker chooses employment in neither good nor bad state is the same in all cases, with and without risk-shifting and UI. The range of combinations of w_1 and w_2, for which a worker chooses employment in both states of nature is larger with UI and risk-shifting together. According to Gorssman's findings, the actual effect of risk-shifting in economies which have UI is probably to make employment less variable. With the existence of risk-shifting, the availability of UI does not make unemployment any more tolerable, but it makes stable employment more attractive.

Unemployment generated by this mechanism is, in a sense voluntary. Workers reveal a preference for steady wages over steady employment. Such implicit or explicit contracts certainly do not themselves account for unemployment, they rather seem to have an effect on the fluctuations in employment.

The 'rational' theory of layoffs by Baily focuses on the layoff policy of firms which is that workers know at the time they are hired, that they may be laid off later.[1/] When workers decide upon joining a firm they will look at the expected wage-employment package being offered. Those firms that offer unstable employment will have to compensate for this instability in the form of higher wages.

1/ See Baily, M.N. (1977)

The worker evaluates the expected two-period income offer the firm is making. When prices vary (due to demand variation on the product markets) firms will first try to vary hours of work - overtime during peaks and short-time during slumps.

There exists a critical price P_c lower than the initial price P_1 ($0 < P_c < P_o$) so that for $P_c \leqslant P_1 < P_o$ employment will remain constant ($L_1 = L_o$) and reductions appear in hours of work ($H_1 < H_o$). There are no layoffs but hours are reduced. If $P_1 < P_c$ there are no further deductions in hours of work but layoffs will become more profitable ($L_1 < L_o$). H_1 as well as L_1 decrease with lower values of P_1.

The existence of unemployment compensation (in general the UI benefits minus the costs for job search) will provide a floor on wage income. Workers will not accept a cut in income due to less hours of work, when they would rather collect UI benefits or look for another job.

Implicit Contract Theories should be seen in the context of the theory of dual labour markets. We can observe two different types of labour markets; one can be regarded as a kind of 'spot market', the other as a labour market for stable employment. The risk aversion and the preference for stability of income and employment can be assumed to differ in these two markets. Implicit Contract Theory may be valid in the non-primary segment of the labour market.

5. A Critical Examination of Studies on UI

5.1 Unemployment in Great Britain in the Inter-war Period

The persistently high level of unemployment in Britain in the period between the two world wars was the principle concern in British economies at that time. Unemployment rates between 1921 and 1938 never fell below 10 percent, and in the years 1931 to 1933 they remained above 20 percent. Table 13 shows unemployment figures and income replacement by UI for the years 1922 to 1976.

At about the same time as J.M. Keynes formulated his theory on involuntary unemployment and deficiency of demand,another approach, pioneered by Jacques Rueff, argued that the problem of high permanent unemployment was caused only by the high unemployment benefits. 1/ Rueff's position was based on the high positive correlation he had found between the time series of unemployment and the level of real wages in the 1920s and 1930s in Britain. He postulated that unemployment benefits encouraged labour unions to resist any reduction of nominal wages, no matter what the level of unemployment amoung their members. Unemployment benefits were representing the floor for nominal wages and prevented them from falling. Even when prices were falling from 1925 onwards, the fixed unemployment conpensation prevented a fall in wages which would otherwise have been provoked by the excess supply in the labour market.

According to Reuff, there was a generous subsidy for the unemployed workers, which was paid for by the nation, and which contributed considerably to the strength of the British trade unions. The bargaining power of the trade unions would not have been sufficient to maintain the resistence of the unemployed workers without the financial security of UI. Increases in wages were brought about and they caused higher

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1/ See Reuff, J. (1931), Garraty, J.A.(1978) describes Reuff's reasoning as more typical of the thinking of 1831 than of 1931, p. 198

TABLE 13: UNEMPLOYMENT RATES AND REPLACEMENT RATIOS 1922-1976

Year	Total Unemployment	Male Unemployment	Replacement Rate Imputed for a Married Man with 2 Children		Replacement Rate (Based on actual benefits paid)
1922	14.3	-	0.37		0.28
1923	11.7	12.5	0.40		0.25
1924	10.3	11.1	0.42		0.24
1925	11.3	12.3	0.48		0.26
1926	12.5	13.5	0.48		0.23
1927	9.7	10.9	0.48		0.27
1928	10.8	11.4	0.50		0.22
1929	10.4	11.6	0.50		0.29
1930	16.1	16.5	0.53		0.17
1931	21.3	21.0	0.54		0.26
1932	22.1	25.4	0.50		0.30
1933	19.9	23.2	0.51		0.32
1934	16.7	19.3	0.53		0.32
1935	15.5	17.7	0.55		0.32
1936	13.1	14.8	0.57		0.37
1937	10.8	12.1	0.56		0.36
1938	12.9	-	0.56		0.29
			U.B.	S.B.	
1951	1.2	1.2	0.36	0.36	0.21
1952	2.0	1.5	0.42	0.42	0.24
1953	1.6	1.5	0.39	0.39	0.23
1954	1.3	1.3	0.37	0.47	0.22
1955	1.1	1.0	0.39	0.46	0.24
1956	1.2	1.1	0.37	0.47	0.22
1957	1.4	1.4	0.36	0.45	0.22
1958	2.1	2.1	0.44	0.51	0.28
1959	2.2	2.3	0.42	0.54	0.27
1960	1.6	1.7	0.40	0.51	0.26
1961	1.5	1.6	0.44	0.53	0.28
1962	2.0	2.2	0.43	0.54	0.28
1963	2.5	2.7	0.47	0.53	0.31
1964	1.6	1.9	0.45	0.56	0.29
1965	1.4	1.6	0.49	0.59	0.33
1966	1.5	1.7	0.53	0.61	0.36
1967	2.2	2.9	0.57	0.63	0.40
1968	2.4	3.2	0.54	0.63	0.39
1969	2.4	3.2	0.54	0.62	0.36
1970	2.5	3.5	0.58	0.61	0.37
1971	3.4	4.6	0.56	0.62	0.39
1972	3.8	5.0	0.56	0.60	0.38
1973	2.6	3.6	0.56	0.59	0.38
1974	2.6	3.6	0.54	0.61	0.37
1975	4.2	5.4	0.54	0.61	0.35
1976	5.8	7.0	0.54	0.60	0.35

Source: Metcalf, D./Nickell, S./Floros, N. (1980)

unemployment, but the unions' wage policy was not violated by the masses of unemployed as the system of unemployment compensation enabled them to stay out of work almost indefinitely.

"Ainsi, la 'dole' a surtout pour effet d'assurer indéfiniment le maintien de la discipline syndicale. C'est elle qui est l'instrument essentiel de la stabilisation des salaires à un niveau entièrement indépendant du niveau des prix, c'est elle qui est, par là, la cause du chômage permanent." 1/

As another example for induced unemployment, Rueff mentioned Germany where the system of UI was assumed to ensure a very low flexibility of wages. In those countries where no UI existed - France and the United States - he hypothesised that unemployment would disappear very soon through an adaptation of wages to falling prices.2/

For his theory, Rueff had such important supporters as W. H. Beveridge, E, Cannan, and A. C. Pigou. 3/ But he stated that the general public, as well as the great majority of specialists who were researching and recommending remedies for unemployment, ignored or did not accept his explanation.

E. Cannan explained how UI operated to increase unemployment by increasing the amount of job search and the incidence of layoffs. "Especially in the occupations in which the superiority of employment over unemployment is least, the insurance scheme has reduced the economic pressure which used to make persons grab at every chance of employment." 4/

1/ Rueff, J. (1931) p.222

2/ See Rueff, J. (1931) p. 229. In Germany where UI was introduced in 1927, the numerous fluctuations in the unemployment curve did not seem to have any discernible connection with the very regular rise of the wage-price index, see Murette, F. (1931)

3/ Beveridge explained the considerable rise of female unemployment in 1930 and 1931, rather than by economic conditions, by changes in the insurance system, see Beveridge, W.H. (1936) and Chapter 3.3.1. Pigou estimated that UI benefits had added five percentage points to British unemployment figures, see Pigou, A.C. (1927), pp. 356 and Pigou, A.C. (1933) p. 254.

4/ Cannan, E. (1930) p.49

Immediately after the publication by Rueff his article was contested by contemporary economists. Several points of critique were put forward. Doubts were expressed on the correlation between real wages and unemployment. 1/ The regional and sectoral differences in the rates of unemployment have to be explained by reasons other than unemployment compensation. In historical perspective, the introduction would, according to Rueff's hypothesis, have been expected to induce additional unemployment, but in fact, the rate of unemployment declined until 1919. Afterwards, in spite of the fall in real wages, unemployment went up.

Furthermore, the fact that a high percentage of the unemployed had no claims on UI benefits, which in any case were not really high enough to allow a comfortable way of life (in 1930 UI benefits were 17 shillings for a single man, while the lowest wage for a manual worker was 40 shillings per week) cannot be neglected. 2/

If unions had been the key, wages should have declined less in 1921, when wages stayed nearly constant but the power of trade unions had declined. Moreover, if unemployment was being caused by the unions' obstinacy, one would expect the levels of unemployment in defferent industries to have been correlated positively with the relative rise in wages in those industries, since the most obstinate unions would have caused more unemployment. The correlation was, however, in the reverse direction. 3/

The enormous regional differences in the rates of unemployment of inter-war Britain can hardly be explained by variations in the wage levels or the benefit-income ratios. The standard explanation for the distinct regional pattern to unemployment by economic historians is simply that some industries were more depressed than others. When the narrow industrial base in areas of high specialization stagnated,

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1/ See Picard, R. (1931) and Maurette, F. (1931)

2/ See Picard, R. (1931)

3/ See Benjamin, D.K,/Kochin, L.A. (1979) p.470

declined or collapsed, the communities were particularly vulnerable both in economic and in social terms. Wages and employment levels were not high enough in the prosperous areas to attract large numbers of workers from the depressed areas. 1/

Recently, the debate on the effects of the 'dole' in inter-war Britain has been taken up again. In spite of the miserable situation of unemployed workers during the 1920s and the 1930s which has become known by description of contemporary writers, it has been argued again that most of the observed unemployment was of a voluntary nature. 2/

Recently, two economists Benjamin and Kochin, attempted to explain why high unemployment was persisting in inter-war Britain.3/ They tested the hypothesis that UI benefits had an important impact on the rate of unmeployment and adduced both cross-section and time series evidence in support of their claim. The weight of their case, however, rests on the performance of time series estimates of a single equation over the years 1920 to 1938:

$$U = \alpha_0 + \alpha_1 \left(B/W \right) - \left(\log Q - \log Q^{+} \right) ,$$

in which unemployment is explained by the ratio of unemployment benefits to wages and the deviations of the logarithm of national product (log Q) from its trend value (Q^{+}). This single equation produced the following estimates (t-values in parenthesis) :

$$U = \underset{(2.64)}{5.19} + \underset{(4.46)}{18.3} \left(B/W \right) - \underset{(-8.30)}{90.0} \left(\log Q - \log Q^{+} \right)$$

$$R^2 = 0.84 \qquad DW = 2.18$$

1/ See Booth, A. E./Glynn, S. (1975) P.623

2/ On a description of the lives of unemployed people and the economic conditions in England in the inter-war period, see for example Orwell, G. (1962).

3/ See Benjamin, D.K./Kochin, L.A. (1979).

They were considered as "clearly consistent with the hypothesis that UI had an important effect on the rate of unemployment in inter-war Britain." 1/

Benjamin and Kochin concluded: "The persistently high rate of unemployment in inter-war Britain was due in large part not to deficient aggregate demand but to high unemployment insurance benefits relative to wages." 2/ They found that over the period during the late twenties and thirties the insurance system raised the average unemployment rate by about five to eight percentage points. 3/ The levels of UI benefits acted directly on the unemployed by making unemployment preferable to employment at wages little higher than unemployment benefits.

A more careful analysis of the unemployment data and the respective benefit levels for the single years does not support the hypothesis of benefit-induced unemployment. The events of 1918 to 1924 were inconsistent with the high replacement ratio - high unemployment argument. In 1921 as a consequence of the high level of unemployment, benefits were raised but unemployment fell continuously for the next three years followed by falling nominal wages. 4/ There is evidence that in the 1920s UI benefits were periodically adjusted upwards because unemployment rose. 5/

In spite of a relatively low employment and contribution requirement, less than half of the insured unemployed workers were entitled to benefits and many not even passed the much easier requirement for assistance. 6/

Data available on unemployment of the time before World War II are rates amoung insured workers, representing about 60 percent of the total work force. The insurance figures tend to over-state the

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1/ Benjamin, D.K./Kochin, L.A. (1979). p. 453

2/ Benjamin D.K./Kochin, L.A. (1979). p.474

3/ See Table I in Benjamin, D.K./Kochin, L.A. (1979) p. 467

4/ It is argued, however, that the puzzle about rises in real income but remaining high unemployment only started in 1924, See Benjamin, D.K./ Kochin, L.A. (1979) p.443

5/ See Alber, J. (1979)

6/ See Beveridge, W.H. (1936) p.363

general unemployment as non-insured workers had a somewhat lower unemployment. 1/

The approach and findings of Benjamin and Kochin were recently called into question in several articles published by British economists. 2/ A more detailed analysis of the inter-war period and a regression approach based on a linear relation between the unemployment rate, the benefits to income ratio and demand variables, provided absolutely no clear-cut results about the impact of UI benefits on unemployment in this period. 3/ In this study pre-war unemployment series were adjusted, in order to make them comparable to post-war standards. An alternative replacement ratio was calculated as a weighted average across different family types. Married men with two children, for whom replacement ratios were calculated in most of the studies, are rather rare among the unemployed. Furthermore, half of UI recipients were subject to the means-test and the actual scale of benefits was lower for many unemployed. 4/ A more relevant benefit measure has to reflect compositional changes of different groups of unemployed. Metcalf/Nichell/Floros, by applying the same equation as Benjamin and Kochin but defining variables differently, received very divergent coefficients for different specifications of the regression equation. They conclude that the thesis of Benjamin and Kochin is simply incorrect. 5/

The pre-war system is in no respect unique, as has been argued by Benjamin and Kochin. In fact, the post-war system shares most of its features (no experience rating, benefits that are not earnings-

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1/ See Booth, E./Glynn, S. (1975) p.614

2/ See Metcalf, D./Nickell, S./Floros, N. (1980), Sawyer, M.C. (1981 and Hatton, T.J. (1980.

3/ See Metcalf, D./Nickell, S./Floros, N. (1980)

4/ See Sawyer, M.C. (1981) and Hatton, T.J. (1980), who calculated that actual benefit payment per unemployed was only half the amount of the benefit calculated by Benjamin and Kochin.

5/ At the time of writing, I have no notice of a reply by Benjamin and Kochin to the critique that followed their article.

related, the possibility of 'linking-up' three days of unemployment during a week to continuous unemployment in order to avoid the waiting period). 1/ As Table 11 shows, post-war UI benefits are more generous, both absolutely and relatively in respect to income replacement, and in terms of coverage, than those of the inter-war period. Thus it appears that the same characteristics of the UI scheme explain high as well as low levels of unemployment.

"If unemployment was high in the inter-war years due to the generosity of benefits, then in the 1960s and 1970s it should have been truly gigantic. On the contrary, however, it is amazingly low by pre-war standards." 2/

5.2 Research in the United States

Analyses and empirical research on the impact of UI on the labour market, especially on unemployment, have mainly been conducted in the United States. Application of results from US studies to Western European countries are limited because the UI system in the United States has different features from those of European countries. 3/ A basic difference lies in the American system of experience rating which has an impact on employment policies of enterprises. Furthermore, major changes in the UI system in the 1970s have involved the maximum potential duration of benefits. Extended Benefits, that is the general extension of the potential UI benefit period, are automatically provided if the unemployment rate of total covered unemployment is at

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1/ See also Chapter 3.3

2/ Metcalf, D./Nickell, S./Floros, N. (1980) p.15

3/ The federal tax on UI is 3.4 percent of wages up to a certain base (in 1979 $6,000 of each covered worker's wage) payable entirely by the employer. Great inter-state variation is in the determination of the tax rate paid by the firm, since the federal law allows states to void up to 0.5 percent of the federal tax. The states are free to construct sets of schedules that vary the tax rates charged to individual plants so long as overall financial solvency is maintained. Almost all states use some type of experience rating of employers to fix the rate paid on the taxable earnings of their employees. The tax rate varies depending on the employer's past experience. If a firm has a high layoff rate and a large fraction of its former employees receive UI benefits after separation from the plant, its tax rate will be higher. See Hamermesh, D.S. (1977).

or above four percent and above 120 percent of the average of its level in the same three months in the past two years. 1/ There is no single system of UI in the United States; each state has its own system.

In general, among American economists involved in research on UI, there is little dispute about the soundness of the argument that, on balance, UI creates incentives to greater unemployment. However, the quantitative importance of this phenomenon is still under question.

A number of studies on UI have analysed its effect on the duration of spells of unemployment. They were generally based on cross-section data on micro-economic level, dealing with the roughly 50 percent of the unemployed who are covered by UI. Some of these studies will be presented here, in order to give a picture of calculation methods and empirical evidence from analyses of the impact of UI in the US. Recently, the effect of UI on the number of spells of short-term unemployment have been analysed. However, due to labour market pecularities, this phenomenon appears to be relevant mainly for the US. Two studies have been published, in which the total impact of UI on unemployment rates is examined. They will be described more in detail since their proceedings have been adopted also for studies in countries other than the US.

5.2.1 Studies on Individual Data

Especially since 1973 the effect of UI on the duration of unemployment has been analysed more extensively. In his study for the Joint Economic Committee, M. Feldstein, one of the main representatives among economists arguing UI as being an important factor for changes in the unemployment rate, gave some raw estimates on the impact of UI on the duration of unemployment. 2/ He calculated that the total

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1/ See Hamermesh, D.S. (1977) p.6

2/ See Feldstein, M. (1973). In his Nobel Lecture Milton Friedman argues that the natural rate of unemployment has risen among other reasons because of unemployment compensation. The UI benefits are considered as often being attractive enough to induce individuals to search longer for the 'right' job. See Friedman, M. (1977).

impact of the UI system increased the overall permanent unemployment rate by at least 1.25 percent as a result of prolonged duration. "A restructuring of the unemployment compensation system could reduce the unemployment resulting from cyclical and seasonal instability and from unnecessary long durations by an additional 1.25 percent or more." 1/

Taking data for 20,000 individuals from the National Longitudinal Survey for the period 1966 to 1969, Ehrenberg and Oaxaca based their model on assumptions from Job Search Theory. 2/ They investigated the relationship among the individual's average duration of unemployment, the ratio of an individual's weekly UI benefit to his pre-unemployment weekly wage, and other variables thought to influence the duration of unemployment. The basic regression equation is:

$$\ln (D) = \alpha_o + \alpha_1 R + \sum_{j=2}^{k} \alpha_j x_j$$

where R is the replacement ratio and x_j are variables which serve as proxies for certain variables with an impact on re-employment success, such as race, number of dependents, education, non-labour related income, family income, former spells of unemployment, etc. They estimated the impact of UI benefits relative to the absence of such benefits to be small, but statistically significant. For males the estimated change in the duration of unemployment through an increase of the replacement ratio of 0.1 was 1.5 weeks, as the highest figure found among the different groups. For females this effect was found to amount to only 0.3 weeks, for males between 14 and 24 years it was 0.2 and for younger females 0.5 weeks. According to Ehrenberg and Oaxaca, the question remains as to whether the cost to society of an increased duration of unemployment by higher UI benefits is more than offset by the increases in expected post-unemployment wages.

1/ Feldstein, M. (1973) p.54

2/ See Ehrenberg, R.G./Oaxaca, R. L. (1977)

K. Classen presented empirical estimates of the effects of the level of weekly benefit payments on the duration of unemployment and on the monetary returns of the accepted job. 1/ The sample consists of UI recipients from only two US states in the late 1960s. The regression equation applied is similar to the one in Ehrenberg and Oaxaca,

$$D = \alpha_o + \alpha_1 \text{ WBA} + \sum_{i=2}^{k} \alpha_i x_i,$$

where WBA is the weekly benefit amount and the x_i variables are proxies of a worker's skill level, the cost of search and the distribution of job offers. Results indicate that an increase of $10.00 in the weekly UI benefit amount leads to about a one-week increase in the average duration of unemployment. The use of compensated weeks of unemployment as the duration measure has two disadvantages. Firstly, estimates of the effects of benefits will be biased upwards because short spells of unemployment may be missed in the sampling procedure. Secondly, unemployed individuals who have exhausted the potential period of UI benefits are excluded. This implies that the longest duration of unemployment found in the sample is identical to the maximum period of UI benefits. If duration of benefits is extended, registered unemployment will increase automatically.

R. M. Feinberg examined the effect of a worker's risk aversion on the expected duration of job search, by relating the duration of unemployment to the cost of job search, an index of risk aversion and the mean and standard deviation of the wage offer distribution facing the individual. 2/ The duration of unemployment was examined by multiple regression analysis of cross-sectional data for 1969, 1970 and 1971 from a panel study. The unemployment benefit in the search cost was seen to have the predicted positive effect on the duration of unemployment. Coefficients of this variable are, however, quite different in each of the years analysed. For 1970, which produced the 'best' fit for the regression specification, a $10.00 increase

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1/ See Classen, K.P. (1977)

2/ See Feinberg, R.M. (1977)

in the amount of UI compensation per weeks of unemployment would lead to a one-week increase in duration.

The study by A. Holen examined how variations in the level of unemployment benefits, the maximum weeks of eligibility, and the work test enforcement affect the duration of compensated unemployment. 1/ The 20,000 observations used in the study were collected during an experimental programme providing special counselling to unemployed workers in five cities. Ordinary Least Squares regression analysis was used to estimate the model:

$$D = \alpha_o + \alpha_1 WBA + \alpha_2 PD + \sum_{i=3}^{k} \alpha_i x_i,$$

where PD is the potential duration of UI benefits and the x_is stand for demographic variables, city dummies, previous earnings levels, etc. A $10.00 increase in the weekly benefit level is generally associated with an increase of about one week in compensated duration. In recent recessions special extensions have been made in potential duration of UI benefits. Longer entitlement was found to lead to increased unemployment and to very large increases in UI benefits. Based on her findings, Holen concluded that more stringent work test enforcement would reduce compensated unemployment duration and benefit exhaustion. These findings are in agreement with the outcome of other studies. However, the choice of the duration of compensated unemployment as dependent variable casts some doubts on the reliability of the general conclusions. Registered duration of unemployment coincides with duration of UI compensation because after exhaustion of benefits the registration ceases. Thus it is obvious that longer potential duration of UI benefits increases unemployment; not necessarily because of prolonged spells of actual unemployment, but because the unemployed remain in the register for a longer period. Analysing effects of longer entitlement requires a dependent variable that takes into account the entire actual duration of unemployment.

1/ See Holen, A. (1977)

In a recent study, M. Feldstein also analysed the effect of UI on temporary layoff unemployment. 1/ He used a sample from the Current Population Survey in order to measure the effect of UI benefits. The estimated regression equations related each individual's temporary layoff unemployment status to three kinds of variables:

(i) his potential UI benefit as a percentage of lost net wages;

(ii) his basic demographic characteristics such as age, sex and race; and

(iii) the basic characteristics of his employment according to industry groups and occupation categories.

Most temporary layoffs were found to be induced by short random or cyclical fluctuations in demand. Feldstein concludes that the existence of the insurance has a powerful effect on temporary layoff unemployment. According to his findings, 50 percent of this unemployment can be attributed to the average UI benefit replacement ratio (the ratio of benefits to income) as set down in the current US laws. This has to be seen, however, in connection with the fact that temporary layoffs account for about 50 percent of all unemployment spells in the US, and many of those who are laid off return to their original employers. The special features of the US labour market lead to Feldstein's conclusion that the current UI programme imposes an efficiency loss by distorting the behaviour of firms to lay off too many workers when demand falls.

Burgess and Kingston analysed the impact of UI benefits on the re-employment success in the framework of Job Search Theory, using data on UI claimants from three urban labour markets. 2/ Their results may be biased because these claimants were interviewed as a part of a special project. The study showed that re-employment success was positively related to higher weekly UI payments and longer

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1/ See Feldstein, M. (1978b)

2/ See Burgess, P,L./Kingston, J. L. (1976) and Kingston, J.L./Burgess P.L. (1977)

potential periods of unemployment compensation. On the other hand, post-unemployment earnings were negatively related to these workers actual duration of job search. Burgess and Kingston stated, however, that a number of other labour market characteristics of the unemployed, such as sex, age, education attainment and the labour market area in which search occurred, also significantly affected the level of re-employment earnings. However, these charteristics to some extent also determine eligibility for UI benefits and their absolute level. The available empirical evidence indicated that the reservation wage is inversely related to the duration of job search and unemployment.

D. S. Hamermesh gives an overview of 12 available studies of the effect of UI benefits on the duration of unemployment in the US. He summarizes these studies by posing the question: How much greater would the average duration of claims have been in the sample period and place if benefits had been higher but nothing else had been altered ? 1/

The results of these studies range from less than zero (a greater benefit amount decreases average duration of unemployment !) to 1.6 (indicating that a rise of 10 percent in weekly benefits increases duration of unemployment by 1.6 weeks). Analysing the studies more in depth under the aspect of sample size, representativeness and the phase in an economic cycle, he considers the best estimate of a single figure to be an increase of 10 percent in the gross replacement rate (a worker's total benefits to the pre-tax earnings when fully employed) leads to an increase in the duration of insured unemployment of about half a week when labour markets are tight.

Hamermesh concludes that the measured effect of an extension of benefits and coverage of UI is certainly small but not zero, and that UI is inducing an extra 0.51 percent of unemployment through its effects on the duration. The most likely impact of the entire system of benefits on the unemployment rate which is induced by the workers' behaviour (including the entrance or the remaining unemployed workers who without UI benefits would have left the labour market) is

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1/ See Hamermesh, D.S. (1977) pp.36

0.61 percentage points at low unemployment. 1/

But "UI's possible impact on unemployment is diminished by four sets of factors: incomplete coverage, the availability of means of financing job search other than UI benefits for many workers, the negative impact of an intermittent employment record on potential employers, and competition with non-recipients for scarce jobs. For all these reasons, it seems reasonable to conclude that the American system of unemployment insurance does not appear to be a major cause of unemployment." 2/

5.2.2 Studies on the Impact of UI on the Overall Unemployment Rate

Aggregate time series data on cross-section data on different US states have been used in research on the impact of UI on the overall unemployment. The theoretical and empirical approach presented by Grubel and Maki is representative of several other studies on UI. 3/ It is based on a theoretical model of marginal utility and the income-leisure trade-off. 4/ The econometric estimates are founded on the following equation which is assumed to describe aggregate unemployment:

$$UR_r = f\ (\ SU,\ CU,\ TU,\ IU\ ),$$

where UR_r is the officially reported unemployment rate, SU is the structural or frictional, CU the cyclical, TU the seasonal and IU is the induced unemployment. IU is considered to be due to the increased consumption of leisure by workers who otherwise would have been employed. Unemployment is assumed to be an increasing function of the benefit-income ratio and a decreasing function of the cost of job search.

1/ See Hamermesh, D.S. (1977) pp.32

2/ Fields, G.S. (1977) p.12

3/ See Grubel, H.G./Maki, D. (1976). The basic model presented in this article has been applied to a number of countries: for Canada by Grubel,H.G./Maki, D./Sax, S. (1975), for Great Britain by Spindler, Z. A./Maki, D. (1975), and with some modifications for New Zealand, Sweden, Belgium, Ireland, France and the Federal Republic of Germany, published in the proceedings of an international conference, see Grubel, H.G./Walker, M.A. (ed) (1978).

4/ See Chapter 4.2.1.

In the cross-section analysis for the whole US in 1971, the following proxies were used for estimating induced unemployment:

$$\ln UR = \beta_o + \beta_1 R - \beta_2 E - \beta_3 G - \beta_4 S + \varepsilon$$

where UR is the unemployment rate among workers insured against unemployment. The replacement ratio R is the average unemployment compensation benefit per week received by unemployed workers, in relation to the average weekly wages of workers in covered employment. E is a proxy for the strength of enforcement of eligibility rules, constructed from data on denials. The recent rate of growth in employment is given by G and the percentage of the civilian labour force covered by UI by variable S in the equation.

The cross-section analysis of the 48 United States of America in 1971 produced a significant coefficient for the replacement ratio and an elasticity of the insured unemployment rate with respect to the variable R of 0.9 All variables except the percentage of the covered labour force are significant. The relatively low $R^2 = 0.52$ indicates that unemployment is affected probably by other important conditions and social policies in the different states. Differences in the unemployment rates can, for the most part, be attributed to interstate differences in respect to economic performance and growth, and to political orientation of local governments and administration.

The time series analysis consisted of two equations that were estimated simultaneously using the two-stage least square technique:

$$\ln UR_t = \alpha_o + \alpha_1 R_t - \alpha_2 E_t - \alpha_3 D_t - \alpha_4 D_{t-1} - \alpha_5 S_t + \varepsilon_t$$

$$R_t = \alpha_o + \alpha_1 UR + \alpha_2 TIME + e_t ,$$

where D_t and D_{t-1} are the current and lagged percentage changes in the gross national product. The equation on R_t is included in the model in order to eliminate simultaneous equation bias resulting from the fact that the benefit-income ratio is itself a function of the unemployment rate, because both wages and benefits tend to rise pro- and contra-cyclically, respectively, around a trend. The hypothesis is

that during periods of high unemployment the average skill level of the unemployed rises, and thus earnings-related-average benefits increase. The time series for E, the ineligibility for UI benefits, is strongly contra-cyclical and, in addition, varies as a result of changes in administrative procedures. In order to obtain a variable reflecting the cyclically unrelated changes in the strength of enforcement of UI, INEL was defined as the residual from an equation with the denial rate as dependent variable and the current and lagged changes in GNP as independent variables.

The estimated coefficients in the time series for 1951-1972 are all significant (t-values are given in parenthesis) :

$$\ln UR = \underset{}{-1.271} + \underset{(1.67)}{17.622}\ R - \underset{(9.92)}{0.39}\ INEL - \underset{(4.21)}{0.35}\ D - \underset{(5.26)}{0.27}\ D_{-1} - \underset{(4.04)}{0.52}\ S \qquad (4.27)$$

$$R^2 = 0.93 \quad DW = 1.74$$

$$R = \underset{(60.63)}{0.302} + \underset{(5.06)}{0.0054}\ UR + \underset{(9.49)}{0.0017}\ TIME$$

$$R^2 = 0.84 \quad DW = 1.66$$

According to these estimates, in 1972 unemployment among the insured would have been 2.5 percent instead of 3.5 percent, if the variables R, INEL and S had been at their 1955 levels.

The Grubel/Maki findings are neither very convincing in their theoretical approach nor in their practical proceedings. The neo-classical model on marginal utility, as discussed in a preceding Chapter (see paragraph 4.2) is insufficient for explaining unemployment In particular, neo-classical theory does not account for involuntary unemployment, which Grubel and Maki, however, include in their calculations by the variables representing output (the growth rates of national product). Their basic theoretical model of the income-leisure trade-off is extended to the decision process of workers who have been laid off as a result of cyclical or structural changes in the demand for labour. But the neo-classical concept does not provide a theoretical

basis for all four types of unemployment as distinguished by Grubel and Maki. Furthermore, the theoretical model in their approach is one of individual choice on a micro-economic level, while estimates are done for aggregate data on macro-level. The theoretical model describes the decision process of an individual who is voluntarily choosing leisure, but does not explain the causes and duration of unemployment. It does not provide the foundations for the equation that is used in empirical testing.

Time series analysis on the impact of UI on unemployment generally creates problems because the variations of the replacement ratio over time are relatively small. The lack of substantial variations in the US replacement ratio since 1945 causes any observed change in unemployment to be attributed to very small changes in the replacement rate. 1/

Holen and Horowitz sought to ascertain to what extent provisions of the UI laws and payment practices account for inter-state differences in unemployment rates. 2/ Using a similar approach, a multi-equation model, and similar data to those of Grubel and Maki, they related each state's employment and unemployment rates to various characteristics of that state's labour force (race, age, and educational composition), its industrial composition, and the characteristics of the UI system, including benefit levels.

Two equations of their model estimate the interaction of UI benefit liberality and the unemployment rate. 3/

$$U = f_1 (UI, W, \bar{X}, \bar{L})$$
$$UI = f_2 (U, PI, \bar{X}),$$

where U = state unemployment rate,
UI = benefit liberality,
W = wages,

1/ See Hamermesh, D.S. (1978)

2/ See Holen, A./Horowitz, S.A. (1974) and Horowitz, S. A. (1977)

3/ See Holen, A./Horowitz, S.A. (1977) p.408

$\overline{X}$ = a vector of industrial mix variables,

$\overline{L}$ = a vector of labour force characteristics, and

PI = a political index, computed as a simple average of the state's congressional votes.

The two stage least squares procedure is assumed to eliminate bias resulting from association between the independent variable and the error term, including any association arising from causal mechanisms running from the dependent variable to the independent variable.

Holen and Horowitz found that unemployment is positively and strongly affected by benefit liberality measured with denial rates. The elasticity of the unemployment rate with respect to benefit liberality was estimated to be 0.7. At an unemployment rate of 5.9 percent in 1971 this implied an increase of 0.4 percent in the rate of unemployment for each 10 percent increase in benefits.

The liberality of UI benefits appears to be significantly explained by the state's political position relative to that of organized labour, not simply by the level of unemployment. The effect of UI on employment and labour force participation was also tested:

$$E = f_3 (UI, W, \overline{X}, \overline{P})$$

$$LF = f_4 (UI, W, \overline{X}, \overline{P}),$$

where $\overline{P}$ is a vector of population characteristics.

Finally, benefit liberality was decomposed into the components coverage by UI, the fraction of initial claimants eligible for UI, denial rates, the weekly UI benefit and the ratio of exhaustions of UI. Of the five determinants of benefit liberality only the denial rate had a significant estimated impact on the unemployment rate. Contrary to the findings by Grubel and Maki, Holen and Horowitz indicated that variations between states in average weekly benefits paid had no direct bearing on the unemployment rate, while doubling the denial rate would imply a reduction of 1.4 percent in the unemployment rate.

It is strange that for the set of four equations the benefit liberality and the denial rate are statistically significant determinants of the unemployment rate, but not significant for employment and labour force participation. This fact sheds some doubts on the reliability of the results, because an increase in unemployment should be reflected either in a decrease of employment or in higher participation rates. Furthermore, the denial rate in the different states are related to the level of unemployment for another reason. 1/ The administrative costs of operating the UI system are funded by the federal government through grants from the federal UI tax. The amount of a state's administrative grant depends mainly on the level of unemployment. The number of work-tests and thus of denials of UI benefits is determined by the amount of money and administrative staff at disposal. This inter-dependency of unemployment and work test could be a source of considerable difficulty in untangling causal relationship.

5.3 The Debate on ERS in Great Britain

Many British economists assumed a causal link between the substantial and apparently permanent increase in Great Britain's measured unemployment rate starting at the end of 1966, and the introduction into Britain's unemployment compensation scheme of an 'Earnings Related Supplement' (ERS) which was first paid in October 1966. 2/ Estimates of the order of magnitude of unemployment induced by UI benefits since the introduction of ERS have varied widely.

Mackay and Reid presented results from a multi-variate analysis based on the unemployment experiences of 658 male employees in the West Midlands during 1966-1968. 3/ The regression results confirmed the findings of previous analyses that age is the most important personal attribute influencing the length of unemployment. Their evidence showed that higher unemployment benefits do have some, though rather weak, disincentive effect. An increase in UI benefits of £1.00

1/ See Ashenfelter, O. (1977)

2/ The ERS is paid in addition to the normal flat rate benefit, see Chapter 3.3.2

3/ See Mackay, D.I./Reid, G.L. (1972)

per week tended to increase the length of unemployment by almost one half of a week. They also found that the amounts of redundancy payments for workers who are dismissed did not appear to be linked very markedly with the length of time out of work.

Gujarati suggested that the introduction of ERS along with the introduction of the Redundancy Payment Act in 1965 were responsible for the change in the behaviour of the relationship between unemployment and vacancies. 1/ In an article Taylor challenged this assumption and put forward that the 'shake-out' of hoarded labour was a more significant explanation. 2/

A further discussion was started by an article by Maki and Spindler. This article was based mainly on the evidence of a simultaneous increase in unemployment benefits and in the unemployment rate from 1966 onwards. 3/ They presented an aggregate time-series regression analysis, applying the theoretical and empirical work of Grubel and Maki for the United States. For the econometric estimation the total unemployment rate UR was regarded as a function of the benefit-income ratio (Ben/Inc) and variables determining cyclical (CycVar), structural (StruVar), and seasonal (SeasVar) unemployment:

UR = f (Ben/Inc, CycVar, StrucVar, SeasVar).

If there exists a substantial reverse causation between the benefit-income ratio and the unemployment rate, then empirical estimations

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1/ See Gujarati, D, (1972)

2/ See Taylor, J. (1972)

3/ See Maki, D./Spindler, Z.A. (1975). However, the change-over to ERS took place at a time of already rapidly increasing unemployment due to a severely restrictive government policy. The rise in unemployment may therefore have simply been a continuation of the underlying trend already apparent before the changes in UI. See Hauser, M.M./Burrows, P. (1969) p.104.

with ordinary least square techniques will yield biased coefficients. By including the equation:

$$\text{Ben/Inc} = g\ (\ UR,\ ChangVar,\ RPI,\ O/PE\ )$$

with variables for changes in social preferences (ChangVar), the retail price index (RPI) and output per person employed (O/PE). Two stage least squares estimation will reduce one source of simultaneous equation bias.

Proxy variables are assumed to represent the different types of unemployment. Thus the regression equations were:

$$\ln UR = \alpha_o + \alpha_1 R_t - \alpha_2 \ln D_t - \alpha_3 \ln D_{t-1} + \alpha_4 S_t + \varepsilon_t$$

and

$$R_t = \beta_o + \beta_1 UR - \beta_2 SHIFT + \beta_3 TIME + e_t\ ,$$

where UR is the unemployment rate, R the replacement ratio and D_t and D_{t-1} represent the cyclical variables as the current and lagged ratio to trend of the index of gross national product. The proxy for StrucVar is S_t, a labour force index multiplied by output per person. Since annual data is used no seasonal variable is necessary. Changes in social preferences (ChangVar) were represented by a consecutive integer time variable (TIME) and a shift dummy (SHIFT) starting in 1966.

The equation yielded the following results (t-values are given in parenthesis):

$$\ln UR = \underset{(-5.59)}{-1.129} + \underset{(2.558)}{1.197}\ R_t - \underset{(-5.607)}{11.615}\ D_t - \underset{(-2.224)}{4.557}\ D_{t-1} + \underset{(2.458)}{0.00009067}\ S_t$$

$$\bar{R}^2 = 0.907 \qquad DW = 1.258$$

$$R_t = \underset{(14.738)}{0.3135} + \underset{(1.841)}{0.02617}\ UR + \underset{(10.919)}{0.2231}\ SHIFT + \underset{(3.267)}{0.00575}\ TIME$$

$$\bar{R}^2 = 0.975 \qquad DW = 1.988.$$

Ordinary least squares results were virtually identical to two stage least squares. 1/

According to these estimates the effects of ERS on unemployment are quite substantial; on average the overall and male unemployment rates were 30 percent and 33 percent higher respectively, as a result of ERS during the first six years of its functioning. 2/

Though debate and speculation has continued over a number of years, a definite answer to the question of what caused the changed relationship between registered unemployment and notified vacancies had not been agreed. In April 1974 the Department of Employment set up a working party to " appraise the evidence of a change in the relation between unemployment and vacancies from about 1966, and to study possible explanations for such a change." 3/

The Department of Employment Working Party on the Changed Relationship between Unemployment and Vacancies made estimates on the likely magnitude of an effect of ERS, without using econometric methods. The shift in the unemployment-vacancy relationship in 1966-1974 was about 300,000 measured in terms of unemployment. In the years 1966 to 1970 ERS was being received by an average of about 100,000 unemployed men. The Working Party reckoned that it would be very much an over-estimate to regard these 100,000 as the upper limit of additions to the register because due to ERS as many of these men would have been unemployed in any case, also without any UI. Even if ERS had doubled unemployment duration, this would indicate induced unemployment of only 50,000. Another way of calculating a maximum effect was to take the number of men unemployed for 2-26 weeks (the period of receipt of ERS, if eligible) plus those unemployed for less than two weeks who would go on to receive ERS, and then to compare this sum with the equivalent situation in the previous cycle. The estimate arrived at for the ERS effect was thus 80,000. For these

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1/ See Maki, D./Spindler, Z.A. (1975) p.446

2/ See Maki, D./Spindler, Z.A. (1975) p.449

3/ Department of Employment (1976) p.1

reasons the effect of the introduction of ERS could explain no more than a small part of the shift of 300,000.

The fact that only a small proportion of the stock of unemployed actually receive the Earnings Related Supplement (only about 22 percent of all registered unemployed in 1975 [1]) leads one to suspect that Maki and Spindler's statement about an effect of ERS of over 30 percent on unemployment is seriously mistaken. M. Sawyer criticized their approach because of testing, at the aggregate level, a theory that is based on an individual decision-making process. [2] In addition their study was criticized because of using benefit payments that are not representative of the level of benefits actually being received by the unemployed. Maki and Spindler referred to benefits which would be received by an unemployed worker who had previously been earning the average industrial wage, while the previous earnings of unemployed are generally below the average earnings. Thus, these comparisons overstated the effect through the introduction of ERS.

Calculations carried out by Sawyer were based on different time series as well as on different regression variables to represent the cyclical and UI factors. For a slightly shorter period from 1956 to 1972 (Maki and Spindler used data from 1952 to 1972) a regression with the same variables yielded coefficients on the benefit-income ratio that were not statistically significant:

$$\ln UR = \underset{(7.64)}{-1.911} + \underset{(0.398)}{0.166\, R_t} - \underset{(-7.415)}{13.378\, D_t} - \underset{(-2.874)}{4.513\, D_{t-1}} + \underset{(5.242)}{0.000211\, S_t}$$

$$R^2 = 0.967 \qquad DW = 1.980$$

1/ See Holden, K./Peel, D.A. (1979) and Table 12 in Chapter 3.3.2 Furthermore, a considerable percentage of the unemployed (about 50 percent in 1975) fall through the net of the UI scheme, they either are not entitled to any benefits at all or can only claim Supplementary Allowance. See also George, V. (1973) p.103.

2/ See Sawyer, M.C. (1979) p. 136

$$R_t = \underset{(8.831)}{0.247} + \underset{(1.238)}{0.0179\ UR} + \underset{(9.205)}{0.205\ SHIFT} + \underset{(3.492)}{0.00933\ TIME}$$

$$R^2 = 0.982 \qquad DW = 2.415$$

The introduction of ERS to unemployment benefits were unelikely to have been a relevant contributory factor to the higher level of unemployment. Furthermore, between 1968 and 1972, with the exception of 1970 the numbers receiving ERS were found to be about three quarters of the induced unemployment calculated by Maki and Spindler. 1/

Cubbin and Foley estimated the duration of unemployment and the logarithm of unemployment as linear functions of the benefit-income ratio, permanent income and vacancies, where the latter variable was a proxy for the probability of finding the right job. 2/ They found that when both the benefit-income ratio and permanent income variables are included in the same estimation equation, permanent income is significant while the benefit-income ratio is not. They concluded that the income effect of changes in permanent income, played the main role in explaining the apparent shift in unemployment. But since both the replacement ratio and unemployment have risen over most of the years under examination, the inclusion of any variable that moves monotonuously over time will always tend to reduce the impact of the replacement ratio.

In a recent article Junankar has re-examined the theory of unemployment that is induced by UI benefits. 3/ He tested the equation from Maki and Spindler, separating the benefit-income ratio and taking logarithms for the variables. Ordinary least squares yielded the following results for the period 1952 to 1970:

$$\ln UR_t = \underset{(-3.194)}{-7.587} + \underset{(0.041)}{0.008\ \ln (B/P)} - \underset{(-3.875)}{3.172\ \ln\ Y/P)}$$

1/ See Sawyer, M.C. (1979) p.144

2/ See Cubbin, J.S./Foley, K. (1977)

3/ See Junankar, P.N. (1980)

$$\underset{(-6.00)}{-9.967 \ln D_t} - \underset{(-4.377)}{6.669 \ln D_{t-1}} + \underset{(4.197)}{0.0003 S_t}$$

$R^2 = 0.92 \qquad DW = 2.08$

where B is the benefit, Y the net income and P the price level. The benefit variable was not significant in any sub-period and even negative for 1952 to 1966. It was significant and positive for the whole period of 1952 to 1975. The vector of the coefficient for real UI benefits showed structural instability over the time periods under examination. Results from further calculations that made some allowance for other causes of unemployment suggest that the level and composition of aggregate demand is an important explanation of increasing unemployment.

In a reply to the critique of their article, Spindler and Maki argued that their model may not be complete, and the exogenous variables, as measured, may not correspond exactly with the theoretically relevant variables. The model may also be highly collinear. But the same criticisms might be made about the empirical models developed by Cubbin and Foley and Sawyer. 1/ Since a time-series analysis of unemployment and benefit-income ratio will always be biased by multicollinearity, they see the only valid approach which is one that involves cross-section or micro data. This, however, makes it difficult to take demand effects into account.

S. Nickell recently conducted an interesting empirical analysis of the impact of increased benefits on the duration of unemployment spells. 2/ It is based on cross-section data from the unemployed males interviewed in the General Household Survey of 1972. Nickell adds variables to the relationship between unemployment duration and the replacement ratio. These variables, which are liable to affect the probability of an individual leaving unemployment, are personal characteristics, family composition, local labour demand, and income variables that may be relevant for the duration of unemployment of an individual.

1/ See Spindler, Z.A./Maki, D. (1979) p.156

2/ See Nickell, S.J. (1979/a) and Nickell,S.J. (1979/b).

The conditional probability of a man leaving unemployment in a particular week (still being out of work at the beginning of that week) is given by:

$$p(s) = \left[1 + e^{-z(s)}\right]^{-1},$$

where s gives the number of weeks that have passed since the beginning of the unemployment spell. The logit transform is used to ensure that the function is bounded by zero and one. Functions of x(s) are part of specifications of z(s):

$$x(s) = \Sigma \beta_i x_i + a_o s + a_1 s^2 ,$$

where x_i are different variables like age, marital status, ill-health dummy, etc. The simplest specifications are:

$$s_o : z(s) = \beta_o + x(s)$$

$$s_1 : z(s) = \beta_o + x(s) + R(s)$$

$$\text{with } R(s) = \frac{y_2(s)}{y_1(s)}$$

as the replacement ratio, in which y_2 is the real potential income while the individual is out of work and y_1 the real potential family income were the individual to work.

Nickell cannot, however, reject the hypothesis that benefit and income effects on duration arise only through the ratio of these variables. He found an elasticity of duration with respect to the replacement ratio of between 0.6 and 1.0, but the effect of UI benefits on the probability of leaving unemployment seems to be negligible for the long term unemployed. He concludes that the introduction of ERS increased unemployment by about 10 percent. 1/

5.4. Calculations on the Effects of UI in the FRG

The discussion about UI as an element inducing voluntary unemployment is not new in the FRG. Especially employers organizations frequently put forward the argument that 'shirkers' are voluntarily out of work

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1/ See Nickell, S.J. (1979/a) p.47

because unemployment benefits are avilable. [1] Cuts in UI benefits are being seriously considered as a way of lowering the unemployment rate, as the deficits of the Federal Labour Office are rising. Unlike in the UK and the United States, little empirical research has been done in this field for the West German labour market. Only a few general estimates have been provided and only one study has tried to establish the effects of UI on unemployment in an econometric framework. This approach by König and Franz followed methodologically the lines of Grubel and Maki and was based upon yearly and quarterly observations for the period 1950 to 1975. [2] The regression analysis - based on the same equation system as applied by Grubel and Maki for the United States - did not yield satisfactory results. The Two Stage Least Square version for all registered unemployed for the whole time period yields: [3]

$$\ln UR = 20.45 - \underset{(0.6)}{0.082}\ UCB/AWWCE + \underset{(3.1)}{0.456}\ INEL - \underset{(1.6)}{0.097}\ PCGNP - \underset{(0.8)}{0.057}\ PCGNP_{-1} - \underset{(1.7)}{0.213}\ PCOV$$

$$R^2 = 0.532 \qquad DW = 0.594\ ,$$

where UCB/AWWCE is the replacement ratio, INEL is defined as residual from an equation with the denial rate as dependent variable and the current and lagged percentage change in gross national product as independent variable. PCGNP and $PCGNP_{-1}$ are the current and lagged percentage changes in gross national product, reflecting the cyclical variations in demand. PCOV is the percentage of civilian labour force covered by UI.

The replacement ratio and PCOV have been replaced by their estimates according to the following equations:

$$UCB/AWWCE = b_o + b_1 UR + b_2 TIME \text{ and}$$
$$PCOV = c_o + c_1 MFG/TOT + c_2 AG/TOT,$$

1/ See for example Der Spiegel(1978), Süddeutsche Zeitung (1981)

2/ See König, H./Franz, W. (1978)

3/ Figures in brackets are t- values.

in which MFG/TOT and AG/TOT are the share of manufacturing and agricultural in total employment.

Results do not improve with Ordinary Least Squares or the autoregressive version. Results for the sub-period 1960-1975 are better from the statistical point of view, but the magnitude of the parameters appears to be completely implausible indicating that a seven percentage point decrease in the benefit ratio would have been sufficient for the re-employment of the one million unemployed persons in 1975. The authors state that the statistical material is inadequate for this type of analysis. Because of some particular aspects of the West German labour market it is better in any case to limit the analysis to the period after 1960. 1/

König and Franz suggest modifying the dependent variable, the officially published rate of unemployment. It is considered to be biased because it neither includes the 'export of unemployment' of foreign workers, nor the discouraged workers nor short-time working. These are certainly good points in criticizing the unemployment rate as an economic indicator for the state of the labour market or in international comparisons. But why these corrections might improve the analysis of the effects of UI is not explained. If the replacement ratio is assumed to affect unemployment, the impact should be expected on those workers who in the case of unemployment will profit from UI benefits. UI will hardly induce or prolong the duration of unregistered 'hidden unemployment'.

In the calculation of participation rates and the potential labour supply, König and Franz exclude the foreign members of the labour force. This seems to be a somewhat arbitrary decision because a substantial number of the migrant workers are registered as unemployed and thus form part of the labour supply. The argument that the income-leisure approach cannot be applied to them because they consider leisure as an inferior good and they should thus be excluded from analysis

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1/ Especially the inflow of refugees and the exclusion of West Berlin and the Saarland from official statistics until 1960 explain the data deficiency before this period, see Chapter 2.1.

does not hold for those foreign unemployed who are eligible for UI benefits. 1/ A number of German unemployed, such as workers who are head of a family, might as well regard leisure as an inferior good.

With several transformations and a labour demand function based on a Cobb-Douglas production function, König and Franz compute a variable for unemployment that is defined as the difference between potential and actual labour demand, both measured in hours. The unemployment rate, calculated only for the German labour force, is given by:

$$UR' = \frac{(EP^{+} \cdot H^{+}) - (ET \cdot H)}{EP^{+} \cdot H^{+}}$$

where EP^{+} is the labour force, ET the number of employed persons, and H the weekly working hours. The potential hours per worker, H^{+}, are defined as:

$$H^{+} = \frac{N^{+}}{ET - V}$$

where N^{+} is the demand for labour that has been calculated from the labour demand function, divided by the sum of employed persons and vacancies. The demand for labour is assumed to be determined by wages W, user costs of capital UC, capacity utilization CU, the demand for labour of the previous period N_{t-1} and seasonal dummies S.

In the approach of König and Franz the two equations on the demand for male and female labour result from the same optimization procedure.

$$\ln N_{jt} = a_o + a_1 \ln W_{jt} + a_2 \ln UC_t + a_3 \ln CU_t + a_4 \ln (N_j)_{t-1} + a_5 S_1 + a_6 S_2 + S_3 ,$$

$$j = M, F$$

The underlying assumption is an equilibrium model for the firm, where the level of output is fixed and thus the problem is one of minimizing

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1/ In May 1979, 66,552 unemployed foreign workers, about 10 percent of all unemployed recipients, claimed unemployment compensation.

costs. The demand for labour - according to the model - is determined by the capacity utilization rate, which, however, in itself reflects the level of demand for labour and its lagged value. An equation designed to explain the demand for labour which includes a measure of capacity utilization is misspecified and will not yield reliable estimates. The level of capacity utilization and, at the same time, the user costs of capital (which are particularly determined by the level of capacity utilization) stand in the same equation. This may bring about problems of multicollinearity. To a certain extent the costs of capital depend upon the level of capacity utilization, because a different utilization factor of the productive facilities implies a different cost structure.

Furthermore, the implicit assumption that the costs of one man working 40 hours is equal to those of 40 men each working one hour is not realistic. Neither the way of calculating nor the reasons for the preference of the measure of unemployment in hours are convincing. It is not evident why the computation of potential and actual working hours rather than the rate of employment should provide a better measure for analysing the effects of UI, especially as compensation for short-time working is not included in the UI benefits. The potential labour force participation rate has been computed for an unemployment rate of zero, any type of frictional, structural or search unemployment has been disregarded. No kind of structural unemployment has been included in the model. These proceedings are certainly not realistic, but they are convenient because of the lack of precise indication of the normal level of these types of unemployment.

Two of the regression results obtained by König and Franz are presented here:

$$\begin{aligned} \ln UR' = {} & 14.47 + \underset{(6.0)}{0.089}\ UCB/AWU - \underset{(8.7)}{0.492}\ V/ET \\ & + \underset{(1.9)}{0.493}\ W/P - \underset{(3.6)}{0.181}\ UC - \underset{(0.7)}{0.013}\ INEL \\ & - \underset{(2.3)}{0.238}\ PCOV + \underset{(4.0)}{0.298}\ S_1 + \underset{(4.1)}{0.321}\ S_2 \end{aligned}$$

$$+ \underset{(3.6)}{0.277}\ S_3$$

$R^2 = 0.734 \quad DW = 0.549$

and

$$UR' = 302.683 + \underset{(2.6)}{0.495}\ UCB/AWU - \underset{(5.5)}{0.971}\ CU + \underset{(2.7)}{9.104}\ W/P$$

$$- \underset{(3.9)}{2.828}\ UC + \underset{(0.1)}{0.031}\ INEL - \underset{(2.6)}{3.507}\ PCOV$$

$$+ \underset{(0.6)}{0.514}\ S_1 - \underset{(0.6)}{0.557}\ S_2 - \underset{(0.9)}{0.745}\ S_3$$

$R^2 = 0.614 \quad DW = 0.444$

where UCB is the average unemployment compensation, AWU the average weekly net wage which unemployed persons earned before unemployment, V/ET is the vacancy-employment ratio, W/P the real wage rate, UC the user costs of capital, S the seasonal dummies and CU the capital utilization rate. In the second equation, one may doubt the theoretical validity of using any measures of capacity utilization in an equation that is supposed to explain the rate of unemployment. One cannot postulate a change in the unemployment rate in response to a modification of UI benefits while controlling for the level of capacity utilization (which itself is a measure of under-employment of production factors).

With regard to statistical properties the distinction by sex yielded no advantage. This could have been expected because most of the variables (and especially the replacement ratio) are not available for the sex status.

From the statistical point of view the last results are more significant than those of the original model. But because of several deficiencies in the approach as well as in the data, they cannot be considered as supporting the hypothesis that UI is inducing unemployment. One effect of UI that has not been mentioned by König and Franz, however,

may be deduced from the analysis. The replacement ratio does not seem to affect registered unemployment, but shows a significant positive coefficient when the unemployment rate is constructed from potential labour supply and thus taking into account 'hidden unemployment' and the discouraged workers effect. For this reason, one may hypothesize that UI rather than affecting the level of unemployment has an impact on labour market participation and on the registering of the unemployed. When the unemployment rate UR' goes up as a result of a rise in the replacement ratio, this might not only be the result of higher unemployment, but also of an increase in EP^{+}, the registered labour fource. However, this assumption requires further analysis.

In their conclusions König and Franz admit that they are sceptical about their results.

Recently two studies on the unemployment prolonging effect of UI were published. In an analysis based on data on the duration of unemployment compiled by the German Federal Labour Office since 1966, H. König calculated transition probabilities from unemployment to employment. 1/ He distinguished between unemployed workers who are ineligible and those who are receiving unemployment compensation. The completed duration of unemployment for the two groups was estimated with a Markov model based on monthly data for the period 1970-1976. König found that the duration of unemployment is on average nearly one month longer for recipients of UI benefits compared to the average duration of all unemployed. He concluded that there exists some voluntary unemployment, as explained by job search models and the income-leisure approach, that is induced by UI.

König's findings were criticised in an article of the research institute of the Federal Labour Office. 2/ F. Egle and W. Karr considered the Markov model and the assumptions in the calculations of unemployment duration as unrealistic. A different method of calculating the duration

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1/ See König, H. (1978)

2/ See Egle, F./Karr, W. (1980)

of completed spells of unemployment leads to an opposite result, i.e., the unemployment duration of UI recipients is found to be lower than the average duration. A more careful analysis of the data published on UI shows that the number of UI recipients in König's approach was systematically underestimated. 1/ The most important argument against this type of analysis is that the two groups of unemployed persons do not only differ in respect to the receipt of UI benefits, but also have very different employment perspectives. Unemployed workers who are eligible for UI benefits are not comparable to those without claims for compensation; they show different characteristics in respect to the labour market. The hypothesis that UI is prolonging unemployment cannot be examined by comparing two groups for which differences other than the receipt of UI benefits cannot be held constant. 2/

Moreover, it has to be taken into account that the duration of the receipt of UI benefits is not identical to the duration of unemployment. Some unemployed persons stay in the register after the exhaustion of the maximum benefit period, others then end registered unemployment by withdrawing from the labour market. Figures on the duration of unemployment from official statistics may be misleading for an analysis of the impact of UI. Quite a profound understanding of data collection and of the functioning of the labour market and UI is required to make reliable statements about the effects of unemployment benefits.

In a reply H. König insisted on the soundness of his calculations, but he could not refute the basic critiques. 3/

1/ The percentage of unemployed persons who are receiving UI benefits is not identical to the percentage of persons eligible for UI because part of the applicants for UI have to wait until they receive unemployment compensation. They are counted as non-recipients until they receive their first payment of UI.

2/ On this point see also Chapter 6.3.2

3/ See König, H. (1980)

Only one study on the effects of UI exists for the FRG based on individual data. F. Windolf and H. Weirich published an analysis on the answers obtained from interviews of 103 unemployed persons in eight cities of West Germany. 1/ However, this sample can neither claim to be representative (blue collar workers were excluded) nor is it large enough to allow any generalization of the findings. The results indicate that about 8 to 10 percent of the unemployed can be classified as 'voluntary', in the sense that they either quit their last employment without good cause or they refused job offers. A reduction of UI benefits has only a marginal impact on the behaviour of the unemployed. But the system of social security was found to be stabilizing voting behaviour and political attitudes of the unemployed. Based on figures of UI benefit denials because of voluntary quitting and refusals of job offers, F. Egle calculated a voluntary and insurance induced unemployment ('unechte' Arbeitslosigkeit) of 3 percent of all registered unemployed. 2/ In 1977 voluntary unemployment after quitting was calculated to be 18,000 and because of refusal of a job offer, 8,600.

The German Labour Unions' Federation (DGB) has turned against the defamation of the unemployed because of individual cases of unemployed 'shirkers'. 3/ It has argued that a number of points explain high 'real' unemployment such as the high level of hidden unemployment, the relation of unemployed to vacancies which was 1 : 4 in 1978, a low level of denials of UI benefits, and a significant part of unemployed persons ineligible for benefits.

The discussion on the unemployment inducing effects of UI has never died down during the last years. Unemployment compensation can

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1/ See Windolf, P./Weirich, H. (1980)

2/ See Egle, F. (1979)

3/ See DGB (1978)

be assumed to have some impact on the incidence and duration of unemployment in certain cases. But the problem is to provide reliable estimates of the magnitude of this phenomenon.

5.5 Conclusions

It is hard to refuse the hypothesis that variations in the amount of UI benefits have an impact on the initiation or duration of unemployment among some persons who are covered by a UI scheme. A popular topic of conversation in pubs or at cocktail parties is the story about an unemployed person who is living on UI benefits, enjoying leisure and avoiding the possibility of re-employment. There is little doubt that some individuals prefer leisure and a low income to regular work and that some unemployed persons might indeed be better off by living on UI than by working. It is, however, not obvious that this is a widespread phenomenon among unemployed people and whether it can contribute to a higher overall level of unemployment.

On an individual level, UI can be seen in the context of a moral hazard and the work-leisure trade-off. The concept of a moral hazard is a well-known concept in the private insurance industry. The incidence of a certain risk is greater when its victims are insured against losses than when they are not. 1/ UI in concept reduces the costs associated with a spell of unemployment in the same way that insurance against fire is meant to reduce the cost associated with this event. In economic terms, the increased incidence of unemployment can be simply viewed as a rational response to reduced costs. However, the assumptions that are implicit in this concept are unlikely to be true for all unemployed persons. In spite of potential compensation from an insurance scheme, many workers would, for a number of reasons, not wish to become unemployed. Except for unemployed workers in some marginal categories, for most men and women the experience of unemployment is sufficiently unpleasant not to prolong it voluntarily and they are quite anxious to find another job. In any case, while

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1/ See Grubel, H.G./Walker, M.A. (1978) p.2. However, Topel, R./Welch, F. (1980) argue that UI has such features that traditionally limit the insurability of risk, above all the high covariance in the occurence of the adverse contingency. p.356.

the hypothesis of 'profitting' from the insurance system may be true for certain individuals, it does not necessarily provide a general explanation of the increasing level of duration of unemployment.

The number of unemployed at any time depends on the size of the labour force, the number of spells of unemployment experienced by labour force participants and the average duration of spells of unemployment. The impact of UI on unemployment and the unemployment rate may therefore occur through three effects:

(1) It may increase the registering of unemployment and thus the labour force participation.

(2) UI may induce the initiation of a spell of unemployment by voluntary quitting of the workers or layoffs by the employers.

(3) And it may increase the duration of a spell of unemployment.

With regard to (1), there is little doubt that the type of extended UI programmes that exists in the US induces some of the unemployed who have exhausted their regular benefits to remain in the labour force rather than drop out. In the UK and in the FRG no such extensions of UI benefits are provided in periods of high unemployment. When employment levels are low, labour market participation generally decreases . The availability of unemployment compensation may cancel or mitigate this effect because people will not withdraw from the labour market as long as they receive UI benefits. Unemployment rates can rise because of higher participation rates. However, when unemployment is high it is unlikely that persons who otherwise would not be seeking work are induced by the existence of UI benefits to enter the labour force. In the absence of any unemployment compensation many unemployed workers (especially members of the secondary labour force) would not register at the employment offices but withdraw from the labour market.[1/]

[1/] This argument is, above all, valid for the group of married women and elderly people who are nearing retirement.

Much of this effect on unemployment will depend on how unemployment is measured. In this respect, UI does not increase the overall unemployment but rather lowers the level of 'hidden' unemployment. UI benefits can simply turn 'discouraged' workers into unemployed workers until benefits run out. But in these cases, unemployment benefits have not caused any substantial change in employment. Workers were just shifted from one status to another in the labour force. Most studies on the impact of UI never clearly determine whether it is this type of unemployment that is created by increased UI benefits or whether registered unemployment is prolonged.

With regard to (2), in the US the effect of UI on layoff practices of employers has been studied. It has been found that imperfect experience rating in the UI contributions is inducing a higher level of fluctuations in employment. These findings cannot be applied to Western European countries. In the FRG, Italy and the UK, employers have to pay contributions to UI schemes independently from their experiences in unemployment. But labour market administration and laws on dismissals also determine a different type of industrial relations where temporary layoffs are either impossible or an exception. The existence of UI mitigates the social consequences of unemployment and we may hypothesize that it takes off responsibility from employers in cases of dismissals. It thus makes it, under moral aspects, easier for firms to dismiss workers. However, it is impossible to estimate these effects for the UK or the FRG.

One may postulate that it is quite unlikely that UI benefits induce workers to quit their jobs because UI regulations require a waiting period before becoming eligible in cases of voluntary quitting.

With regard to (3) the main impact of UI can be seen on the duration of unemployment. A doubling of the average duration of spells of unemployment would lead to a doubling of the unemployment rate assuming there are no changes in the numbers of persons being made redundant. If UI affects the duration of completed spells of unemploy-

ment we may conclude that unemployment varies in proportion to the change in duration induced by UI.

Studies in the US and the UK on the effects of UI on the duration of unemployment vary widely in the magnitude of their estimates. The duration of unemployment can be affected by UI either through changes in the benefit amount or the potential duration of these benefits. In US studies, it was found that an increase in the potential duration of benefits prolongs unemployment, especially when the level of unemployment is high. But it is a result of longer registering rather than a preference for leisure. In the UK and the FRG estimates on prolonged duration of unemployment have been limited to the effects of changes in the level of benefits because no modifications in the potential duration of benefit receipt have occured. The available studies on the effects of UI postulate an increase of the unemployment rate through longer durations of unemployment when UI benefits increase. But estimates differ considerably from one study to another. We may conclude that some unemployment is induced by UI, but the present studies on the importance of this effect are inconclusive. The measuring of the impact of UI is a difficult process, and it is not certain which type of unemployment is created, search employment or simply that 'discouraged' workers turn into unemployed workers. The likely effects that can be estimated appear to be small. 1/

Effects of changed UI benefits depend upon the situation of the labour market. High unemployment rates are normally correlated with long duration of spells of unemployment because the lack of available job offers forces workers to search longer. In this situation additional UI benefits will have little influence on the duration of unemployment. When employment perspectives are bad, individuals are more likely to spend unemployment compensation on intensified job search. Any prolonging effect of increased UI benefits on the duration of unemployment will be less than in good times. Under

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1/ See OECD (1978) p.23

adverse conditions UI benefits may not be expected to induce recipients to prolong the duration of the period for receiving UI unduly, or therefore cause general unemployment levels to rise. 1/

Studies on individual cross-section data in the US and the UK indicate that any impact of UI on the duration of unemployment is not the same for different population groups and for different income levels. The disincentive effects will differ among demographic groups. Primary workers are less likely to be affected by work disincentives because of social pressures existing in this group. 2/ For long-term unemployed workers, independently of the state of the economy, the effect of UI on the duration of joblessness can be assumed to be negligible. For them personal characteristics such as age, health and skill level are particularly decisive for the duration of employment.

In the context of moral hazards, and the unemployment inducing effects of UI benefits, we also have to consider that there are limits set on the prolonging of unemployment and abuses of the UI system. According to prevailing legislation, jobs offered by the employment agencies have to be accepted. A refusal of a suitable job offer will, in most cases, result either in a denial of UI benefits for a certain time or in a complete cut of benefit payments. When this component of UI legislation was included in the analysis it was, in fact, found that it has a significant impact on the registering of unemployment.

In most cases, the effect of UI on the supply of labour has been studied without regard to the stabilizing effect of UI. In the US some studies have, independently from the effects of UI on the workers' behaviour, analysed the function of UI as an automatic stabilizer. The evidence suggests that as an aggregate measure UI

1/ For the US Cooke, W.N. (1981) found that the negative effect of increased unemployment on job search duration offsets the effect of increased UI benefits.

2/ See Munts, R./Garfinkel, I. (1974)

benefits function quickly and effectively to prevent even greater drops in employment during recession. 1/

We may conclude that a possible impact of UI on the duration of unemployment can be expected to be small and, in addition, is diminished on aggregate level because of the effects of UI as an instrument of fiscal policy.

6. Can We Measure the Impact of UI Empirically ?

6.1 The Replacement Ratio as Variable Representing UI

6.1.1 Definition and Calculation

In the analysis on the impact of UI we can basically expect two different factors affecting unemployment. The main effect presumably arises from the amount of UI benefits paid to the unemployed (in relation to income in employment). Furthermore, the strictness with which eligibility rules are enforced may affect the decision to initiate a spell of unemployment and its duration. A pre-condition for the second effect, however, is that UI benefits of a substantial amount are available.

In order to understand the relation between unemployment and UI benefits and the way in which they influence each other, definitions and calculations of replacement ratios need to be understood.

The replacement rate is the most relevant variable in the analysis of the impact of UI on unemployment. It describes the relation of benefits from UI schemes to some kind of average income in case of employment. There are fundamentally two ways of calculating the replacement ratio. One is a ratio of UI benefits which a representative individual can claim and the post-tax earnings he had before

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1/ See Hamermesh, D.S. (1977) p.64. But it is also possible that in the absence of UI individuals would save more during high employment periods to maintain their consumption when they experience unemployment. UI may only displace some private saving during booms and private spending during recession.

becoming unemployed. Another possibility is a ratio of average UI benefits as a fraction of average net income. The first type is based on data from individual cases of unemployment,

$$R^{1}_{ti} = \frac{\bar{b}_{ti}}{w_{t-1,i}},$$

where R_{ti} is the replacement ratio in the period of unemployment t of individual i, $\bar{b}_{ti}$ is his UI benefit and w_{t-1} his post-tax wage previous to unemployment.

In most countries this ratio is determined by law according to previous income, family size, and employment records. The Employment Promotion Act of the FRG states that unemployment benefits are 68 percent (and unemployment aid 58 percent) of net income up to a yearly changing ceiling.[1/] Thus according to legal provisions the replacement rate for all workers eligible for UI benefits amounts to 0.68, and it is correspondingly lower for those unemployed persons who previously had an income above the ceiling. The calculation of British replacement ratios is different because the benefit is not simply a percentage of previous income but is computed from fixed amounts for different income ranges. It can be calculated from the yearly information provided by the Department of Health and Social Security where potential benefit amounts for different incomes are published. [2/]

In the FRG the percentage of income replacement by UI for individual cases did not undergo any significant modifications during the last decades. [3/] A fixed replacement ratio does not serve the purpose of analysing the effects of changing UI benefits on unemployment, whereas the replacement ratio calculated as an average overall registered unemployed has variated over time. The second replacement ratio is composed of some

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1/ See Chapter 3.1.2 for the exact way of calculating benefits and aid and the requirements for eligibility.

2/ See Chapter 3.3.2

3/ Until 1972 the amount of regular unemployment compensation was 62.5 percent (and 52.5 for UI aid), but family allowances were paid in addition, which now are included in the 68 percent.

average percentage of UI compensation for all unemployed and the average income of all employed people, both of the same period t,

$$R_t^2 = \left(\frac{1}{n} \sum_{i=1}^{n} b_{ti} \right) \cdot \left(\frac{1}{m} \sum_{j=1}^{m} w_{tj} \right),$$

where b_{ti} is the percentage of income compensation by UI, w_{tj} is the net wage, n the number of registered unemployed and m the number of wage earners.

In practice, the average UI benefit is a combination of different types of income compensation through UI (in the FRG, benefits and aid; in the UK flat-rate benefits, Earnings Related Supplements, and Supplementary Benefits), but, at the same time, the case of being ineligible for UI is taken into consideration. In the FRG there are three different possibilitie for the unemployed worker, $b_1 = 0.68$, $b_2 = 0.58$, and $b_3 = 0$. We can calculate a weighted average that accounts for the percentage in each category of b. The average replacement ratio can now be formulated as

$$R_t^3 = \left(\sum_{i=1}^{3} a_{ti} \; b_{ti} \right) \cdot \left(\frac{1}{m} \sum_{j=1}^{m} w_{tj} \right),$$

with a_{ti} as percentage of the registered unemployed i who receives b_{ti} percent as unemployment compensation.

However, not all recipients of UI aid receive the full amount of 58 percent of previous net income, because income of their relatives is taken into account.

For the UK a_1 can be assumed to be the precentage of ERS recipients, a_2 is the percentage of unemployed persons who are eligible only for flat-rate benefits, and a_3 stands for persons claiming supplementary benefits. The computation of R_t^3 is complicated by the fact that combinations of the three different types of UI benefits are possible and again because benefits are not fixed percentages of previous incomes. In this case a way of calculating the replacement ratio is forming weighted averages for typical cases of UI recipients. The standard flat-rate benefit is the same for all unemployed persons who are eligible for UI.

1/ In the studies on UI in the UK, a replacement ratio for an individual considered as being representative has commonly been calculated. Maki and Spindler considered benefits of a married man with two children who are eligible for ERS as typical.

Having the percentages of the unemployed who recieve ERS, an average UI benefit can be calculated. Taking into account supplementary benefits as well as family allowances and child benefits (which all are fixed amounts independent of income) the amount of benefits for different family types (single, married and with dependents) can be calculated. An average of these potential benefits, weighted by the percentages of the different family types, provides an average replacement ratio for all unemployed persons. 1/

It is also possible and easier in practice to calculate an average UI benefit by dividing the monthly expenditure on income compensation from the UI scheme by the number of registered unemployed. The total of unemployment benefits paid results from the budget of the UI scheme. The amount calculated per month is divided by the average number of unemployed on the register. This proceeding should yield approximately the same figures as the calculations presented above.

$$R_t^4 = \frac{\frac{B_t}{n_t}}{\sum_{j=1}^{m} w_{tj}} ,$$

with B_t as monthly expenditures on income compensation by UI. The replacement ratio is obviously different if B_t is divided by the number of UI recipients instead of n_t as all registered unemployed. 2/ Since at each time a certain part of the unemployed persons is ineligible for benefits, the replacement ratio is higher if the total UI payments are calculated for benefit recipients.

Another way of calculating the replacement ratio is setting average income before unemployment, i.e., the previous average income of all registered unemployed in the denominator.

1/ Metcalf, D./Nickell, S./Floros, N. (1980) take the approximate proportions of family types among the unemployed in 1972.

2/ This type of replacement rate has been calculated in Metcalf, D./Nickell, S./Floros, N. (1980).

$$R_t^5 = \frac{\frac{B_t}{n_t}}{\sum_{i=1}^{n} w_{t-1,i}} \quad .$$

The two denominators can bring about quite different results. The outcome depends on how much the income distribution of the whole working population deviates from the one of the unemployed.

If unemployed persons are calculated, the denominator should theoretically also account for the financial situation of those unemployed - especially young people - who did not have any income before registering.

A ratio calculated from average income of the working population may be more relevant for the question of whether UI induces spells of unemployment because it relates the general financial situation of unemployed persons to the one with normal income from work. The other refers more to the question of how much the living standard falls in unemployment and whether it can be regarded as profitable to prolong unemployment. It is, however, difficult to decide which ratio is more appropriate for the analysis.

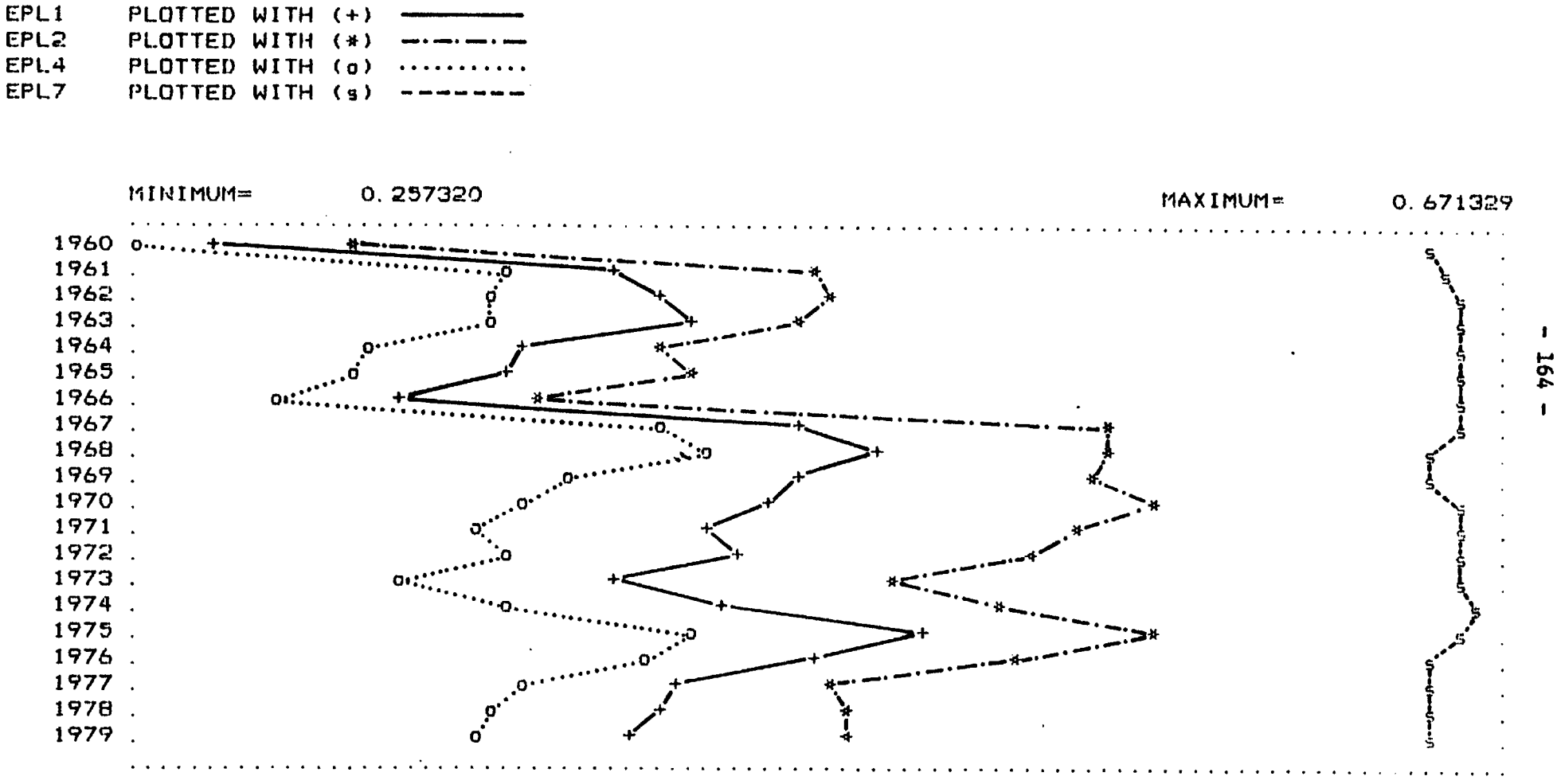
Different types of replacement ratios have been calculated for the FRG. Table 14 and the following graph show their developments from 1955 to 1979,

REPL1 has been calculated according to the formula of R_t^4, REPL2 according to R_t^5. REPL7 gives the average UI benefit of all recipients in relation of their previous income. REPL9 shows the calculation of the replacement ratio according to the formula of R_t^3. It has similar but much smaller variations than REPL1 and it has higher values. This may be expected because not all UI recipients receive the full 68 or 58 percent of previous income. In addition, income before unemployment can be calculated only approximately due to the lack of exact data. 1/

1/ In Appendix A calculations of replacement ratios are described in more detail.

	REPL1	REPL2	REPL4	REPL7	REPL9
1955	0.410958	0.000000	0.410958	0.000000	0.000000
1956	0.389747	0.000000	0.365773	0.000000	0.000000
1957	0.495038	0.000000	0.473469	0.000000	0.000000
1958	0.420055	0.473478	0.391191	0.655298	0.487003
1959	0.348391	0.380812	0.320528	0.658219	0.535272
1960	0.283301	0.327875	0.257320	0.658911	0.474795
1961	0.409575	0.471408	0.373407	0.664655	0.456237
1962	0.420849	0.472615	0.371399	0.667407	0.467775
1963	0.428911	0.462366	0.366984	0.669730	0.474303
1964	0.380991	0.423497	0.333367	0.668818	0.430795
1965	0.372051	0.429245	0.324884	0.670292	0.430795
1966	0.341006	0.383993	0.303328	0.671185	0.396131
1967	0.463106	0.559541	0.420639	0.670331	0.430303
1968	0.489041	0.559068	0.434256	0.660321	0.438126
1969	0.463198	0.554214	0.391779	0.660951	0.410447
1970	0.454733	0.573142	0.380414	0.666860	0.401256
1971	0.435666	0.551667	0.363825	0.670058	0.386146
1972	0.445510	0.537816	0.375242	0.669893	0.399271
1973	0.408504	0.493950	0.341482	0.668987	0.358709
1974	0.439530	0.526955	0.375306	0.671329	0.377149
1975	0.500766	0.574422	0.430962	0.667891	0.442922
1976	0.469697	0.529755	0.414376	0.659905	0.429986
1977	0.426626	0.472308	0.376614	0.657984	0.415462
1978	0.419181	0.480576	0.369738	0.657504	0.388690
1979	0.412586	0.479155	0.363917	0.658469	0.376697
	1	2	3	4	5

FIGURE 8: REPLACEMENT RATIOS



For calculations, see text

In the FRG UI schemes are paying contributions to health insurance for the registered unemployed. These expenditures are included in the figures on total benefit payments published in the budget of the Employment Office. If net income is the measure in the denominator, the total amount of UI benefits should be reduced by at least half of the expenditures on health insurance that are paid by the UI scheme. 1/ REPL4 in Table 14 shows a replacement ratio calculated in this way.

However, payment of social security contributions by the UI is one reason for unemployed persons to register even when they are ineligible for benefits. The relevant ratio for the analysis of UI and unemployment should include the payments to health insurance in average UI benefits.

6.1.2 The Relation Between Replacement Ratio and Unemployment

Which factors can cause variations in the average replacement ratio ? First of all, changes will occur when net average income varies. At a high level of unemployment, real wages can be assumed to fall or at least to have lower growth rates. Real income varies with the economic cycle. Income distribution and thus average income changes over time, determined to some extent by the level of employment.

More important in the context of the research on UI is the numerator of the replacement ratio. Absolute changes in benefit amounts come about through inflation and the continuous adjustment of benefits to income through the calculation formula. In the FRG the absolute figures change automatically because unemployment compensation is a percentage of income; in the UK the absolute amount of UI benefit is established annually.

The replacement ratio changes if by law or decree the percentage of compensation for income loss in unemployment is modified. Recently, in most countries there have been no or only minor changes in the ratio of income compensation. 2/

1/ In the FRG contributions to social security are equally divided by employers and workers

2/ In the UK there is now generally a downward pressure on the replacement ratio.

Significant variations in the aggregate replacement rate are above all due to changes in the share of UI recipients among the unemployed and to changes in their socio-economic structure. The percentage of unemployed persons ineligible for unemployment benefits and the level of unemployment are positively correlated. Average duration of unemployment is growing and employment perspectives are worsening. The correlation between the average duration and the rate of unemployment is high. With longer duration of unemployment, more unemployed workers reach the maximum period of UI benefits. In the case of West Germany they either obtain the lower unemployment aid or they do not qualify anymore for UI. In the UK ERS and flat-rate benefits are substituted by supplementary benefits after some time. Statistics for the FRG show also that denials of UI benefits go up with growing unemployment. 1/ Relatively more people are ruled ineligible for UI because the concept of suitable jobs is handled more strictly than in periods of low unemployment. In formula R_t^3 a_1 decreases while a_2 and a_3 grow.

Increases in youth unemployment as currently observed in most Western European countries result in a higher percentage of unemployed people ineligible for UI benefits; a_3 increases since UI can be claimed only after a certain period of employment with contributions paid to UI.

Older unemployed workers have, on average, less chances of finding new jobs. They will more often exhaust the maximum period of UI benefits. An increase in this group of unemployed will affect the distribution of a_1.

During a longer recession unemployment may also rise among high income earners. This may lead to higher average UI benefits and thus to a rise in the average replacement ratio. However, the ceiling for income compensation - which is automatically raised every year - will come into effect. Better qualified workers, who may be laid off more frequently when unemployment is high will reach the ceiling and thus receive an income compensation lower than 68 percent. In the UK the absolute amount of UI benefits produces an inverse relationship between

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1/ See the discussion on denial rates in Chapter 6.2

replacement ratio and income. The higher the income, the lower is the compensation for income loss.

The relation of male to female unemployment affects the average UI benefit because of differences between male and female incomes. In the UK UI benefits for married women are absolutely lower. The extra amounts paid for dependants under UI schemes are received by husbands but usually not by the wife, if unemployed. In general, the percentage among unemployed women who are ruled ineligible is higher than among men. Furthermore, according to social security laws the income of family members is taken into account when calculating UI aid. Relatively more unemployed women do not receive UI payment because their spouses' incomes are too high.

The effects described above are mitigated by the fact that unemployed persons who are ineligible for UI benefits will be the first to withdraw from the labour market. There is little incentive for unemployed workers to register if they cannot profit from social security.

Increasing unemployment duration and diminishing probabilities of finding employment will reinforce the 'discouraged workers effect'. A number of unemployed persons who are ineligible for UI will not register. Consequently, the replacement ratio appears higher, as the average UI benefit is calculated for all registered unemployed, excluding the hidden unemployment.

In the FRG the individual replacement rate is a constant, determined by law. Variations in the aggregate level have occured because of changes in the social structure of the unemployed and because of changes in the duration of unemployment. These variations, after all, result from changes in the total level of unemployment. However, movements in the time series of unemployment and replacement ratio are not parallel, because the single effects of unemployment on UI benefits described above are working in different directions.

6.1.3 Can the Impact of UI be Described by the Replacement Ratio ?

As indicated in the examination of previous studies on the impact of UI on unemployment, little attention has been paid to the question of to what extent the replacement ratio can be considered as an independent variable. In the case of Great Britain, the substantial change in social security laws in 1966 was of particular interest. However, a research into the effects of UI on unemployment in the UK in later years finds similar problems as those for the FRG. In time series analysis the lack of substantial variations in the replacement ratio since World War II causes us to attribute any observed change in unemployment to very small changes in replacement rates. 1/ In most countries the relative amount of UI benefits has not undergone any significant modifications through legal provisions. Yearly observations of the replacement ratio themselves depend on the variable unemployment. Different levels of unemployment will produce different structures of unemployed persons in respect to receiving UI benefits. Furthermore, country comparisions over longer periods show that modifications in UI legislation appeared as reaction to the actual situation of labour markets. In the past improvements in the compensation of income losses in unemployment have been introduced as response to growing numbers of unemployed and the worsening of the material position of the working class. 2/

Recently, as expenditures and the deficits of social security schemes are gowing, labour market authorities have begun to curtail UI benefits - so far not by an absolute cut in UI benefits, but by certain

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1/ Hamermesh, D.S. (1978) criticises this point also for studies in the United States in his comment on the analysis by Grubel, H.G./ Maki, D. (1974).

2/ Research on UI legislation in Western European countries of the last 50 years showed that most of the laws, that aimed at improving the material situation of the unemployed, were introduced in periods of high unemployment and as reaction to the current state of the labour market. See Alber, J. (1978).

administrative measures. In the UK ERS bebefits are being phased out and discussion is on-going on including unemployment compensation in income taxation, whereas, German labour market offices more frequently deny UI benefits and UI aid. 1/ Average replacement rates are affected by more restrictive administrative procedures.

In time series regression analysis variations in the total level of unemployment cannot directly be attributed to variations of the replacement ratio. The same argument holds true for an analysis based on individual cross-section data. In the FRG, the replacement ratio as determined by law, has not only remained relatively unchanged over time. But it is also equal for all those people out of work who are eligible for the same type of unemployment conpensation. This problem will be discussed more broadly in the following chapter on approaches with cross-section data. Under these aspects, the average replacement ratio appears as an endogenous variable, that is explained by the level and structure of unemployment. There is, however, a somewhat different way to deal with the replacement ratio, which may justify its application as explaining variable. In the approaches based on time series, we look at aggregate data. Variations of the aggregate replacement rate may affect the number of spells and the duration of unemployment as well as labour market participation rates. A higher average replacement ratio can be traced back to a higher proportion of recipients of UI benefits or to higher numbers of unemployed persons eligible for any type of UI. Relatively more unemployed workers can then be expected to prolong unemployment since our working hypothesis (as for instance according to Job Search Theory) is that UI benefits influence unemployment duration.

When more registered unemployed qualify for UI benefits, a potentially higher portion can be induced to prolong unemployment. As the number of unemployed ineligible for UI benefits grows (e.g., increasing youth unemployment), the replacement ratio falls, ceteris paribus. The 'average' unemployed worker receives lower income compensation. Average

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1/ This is especially a result of a more extended interpretation of suitable jobs unemployed persons are assumed to accept. See Chapter 3.1.

duration and the incentive to prolong unemployment can be assumed to fall because relatively less people out of work will profit from UI. On average, unemployed individuals who face high costs of unemployment in the absence of UI benefits will end unemployment faster than UI recipients. Likewise, the incentive to initiate a spell of unemployment is lower. People in employment realize that a high share of the unemployed remains without compensation. They have to fear that UI benefits are denied to them - especially because of stricter application of the work test. 1/

However, we have to take into consideration that some of the unemployed workers who are ineligible for benefits will end registering and withdraw from the labour market. This reaction mitigates the effects described above.

The theoretical model of UI in labour market pointed to the aspect of labour market participation as being influenced by unemployment compensation. Mainly for non-primary workers UI benefits may provide an incentive to join the labour force. A member of the non-primary labour market segment is more likely to register as unemployed when he realizes the chance of receiving UI payments. As he notices the bulk of registered unemployed is eligible for UI he will expect benefit payments also for himself. A high average replacement ratio resulting from a low share of ineligible unemployed workers may thus induce a higher participation rate, which consequently augments registered unemployment. Above all, female participation rates may be influenced by the availability of UI benefits. On the other hand, a low replacement ratio, deriving from a high share of unemployed who are ineligible for UI benefits, signals to a potential member of the labour force that it is not worthwhile joining the unemployment register He has to assume that probably he too will not receive any benefits.

These considerations point to the fact that not the replacement rate itself but rather the ratio of recipients to non-recipients has an impact on unemployment. What can be analysed in our regression

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1/ Moreover, in the case of voluntary quittings, UI benefits are not paid during the first weeks of unemployment.

approach is the duration of unemployment and the labour market participation when less unemployed workers are eligible for UI benefits (i.e. the average replacement rate is lower). When fewer unemployed persons receive UI benefits, less people will see an incentive to become unemployed. We can hypothesize that the average duration of unemployment decreases when the percentage of UI recipients and thus the average replacement ratio falls, ceteris paribus.

The main problem in this type of analysis lies in the interdependency of replacement ratio and unemployment. The replacement rate in a time series but also the variation of the rate over different states (for the case of the US) corresponds to certain levels of unemployment. When unemployment is high, more unemployed persons exhaust the maximum period of UI benefit payments. The replacement ratio can be expected to be low. If there is no significant change in the ratio of income compensation for the unemployed as laid down by law, it is difficult to establish empirically in what way changes in the level of UI benefits should affect unemployment.

6.2 The Denial Rate and Waiting Periods

The second variable representing the system of UI which can be assumed to have an impact on unemployment, is the denial rate. People who leave their employment voluntarily 'without just cause' are disqualified from receiving UI benefits in the FRG as well as in the UK. UI benefits are also denied to people registered as unemployed who fail to accept suitable employment. The operational definition of suitable employment differs among countries but also varies through time as a result of changes in administrative directives. These in turn are influenced by public opinion as well as by the financial situation of UI schemes. The denial rate is considered as a proxy for the strength of enforcement of eligibility rules. In the context of Job Search Theories, this variable represents a part of the costs of unemployment because it lowers the benefits from UI.

In the FRG unemployment benefits are paid after a waiting period of four weeks if unemployment results from voluntary quitting of a job. In the UK, the waiting period is up to six weeks for voluntary quitting as well as for a refused job offer. In the FRG the first refusal of suitable employment will lead to a denial of UI benefits for four weeks, and when a second job is refused UI benefits can be completely stopped. In 1979 UI benefits were denied to 283,000 workers which is almost ten percent of the 2.84 million unemployed persons who entered the register. Twenty percent of these denials were effected because of a refusal of jobs offered by an employment office. The other 80 percent resulted from workers quitting their jobs voluntarily. (See Table 15).

The denial rate can be expected to decrease when unemployment is growing. When it becomes more difficult to find jobs, less people will quit employment voluntarily and unemployed workers will refuse job offers less frequently. Empirical studies in the United States found a cyclical behaviour of time series for denials. They are high during periods of low unemployment and low when jobs are less readily available. In the FRG, the ratio of denials to the flow into unemployment has been growing during the last years. Compared with the movements of denials in the US it shows an opposite cyclical pattern. There exists a high positive correlation between the denial rates and unemployment. (For the rate of unemployment $r = 0.94$ for all denials, and $r = 0.93$ for denials because of voluntary quitting, for the duration of completed spells of unemployment $r = 0.93$ for all denials, and $r = 0.96$ for refusals of job offers.)

Regression analysis for the FRG shows that variations in the denial rate can be explained mainly by the level of unemployment.

$$\underset{}{DENI} = \underset{(2.76)}{0.970} + \underset{(3.89)}{1.171}\ UNR + \underset{(2.01)}{0.626}\ UNR_{-1}$$

$$R^2 = 0.9079 \quad DW = 0.999$$

Denials of UI benefits show a reaction of labour market administration to high and persisting levels of unemployment. In fact, in the FRG the interpretation of what has to be regarded as suitable employment

TABLE 15: DENIAL RATES FOR THE FRG

	DENI	DENIR	DENIQ	UNR
1960	0.000000	0.000000	0.000000	1.32015
1961	2.22000	0.450000	1.77000	0.865573
1962	1.82000	0.280000	1.54000	0.731581
1963	1.85000	0.220000	1.63000	0.867254
1964	2.04000	0.260000	1.78000	0.780492
1965	1.76000	0.240000	1.52000	0.671110
1966	2.31000	0.240000	2.07000	0.734288
1967	5.90000	0.690001	5.21000	2.13359
1968	4.58000	0.930000	3.65000	1.50191
1969	2.75000	0.510000	2.24000	0.816196
1970	1.80000	0.280000	1.52000	0.665327
1971	2.44000	0.340000	2.10000	0.818620
1972	3.29000	0.530000	2.76000	1.08461
1973	3.14000	0.500000	2.64000	1.19543
1974	5.20000	0.790001	4.41000	2.56004
1975	6.95000	1.29000	5.66000	4.78183
1976	8.04000	1.90000	6.14000	4.74315
1977	8.79000	2.15000	6.64000	4.60294
1978	9.93000	2.21000	7.72000	4.39419
1979	9.96000	1.93000	8.03000	3.83303
	1	2	3	4

Source: ANBA, own calculations

Notes to Table 15:

DENI - Denial rate

DENIR - Denial rate for refusals of job offers

DENIQ - Denial rate for voluntary quitting

has been extended recently. Consequently the number of registered unemployed disqualified from receiving UI benefits has been growing.

On the other hand, when employment perspectives are deteriorating more voluntary job quitters will not immediately find new employment. They have to undergo a waiting period, while in better situations of the labour market new employment might have followed without intermediate unemployment. Figure 9 shows the development over time of the denial rates.

In the analysis on UI for West Germany the denial rate was not found to contribute significantly to variations in unemployment.

Findings for the United States showed that the denial of UI benefits to certain applicants had a clear influence on the rate of unemployment. 1/ More stringent administrative procedures could lower unemployment and more liberal benefits may lead to higher levels of unemployment. The more costly job search becomes, the shorter the duration of unemployment can be expected to be. If a significant part of the unemployed persons is 'scrounging' the system of social security, then unemployment should decrease, ceteris paribus, when UI benefits are more often denied to applicants. Evidence in the FRG, however, does not support this reasoning. 2/

In the Grubel/Maki model the variable denial rate, DENI, was substituted by the variable INEL in order to exclude the cyclical pattern in the denial ratio. INEL is assumed to reflect cyclically unrelated changes in the strength with which eligibility rules for benefit recipients are enforced by the administrators of the UI program. It is constructed as the residual from a regression with the denial ratio as dependent variable and the current and lagged percentage of changes as independent variables.

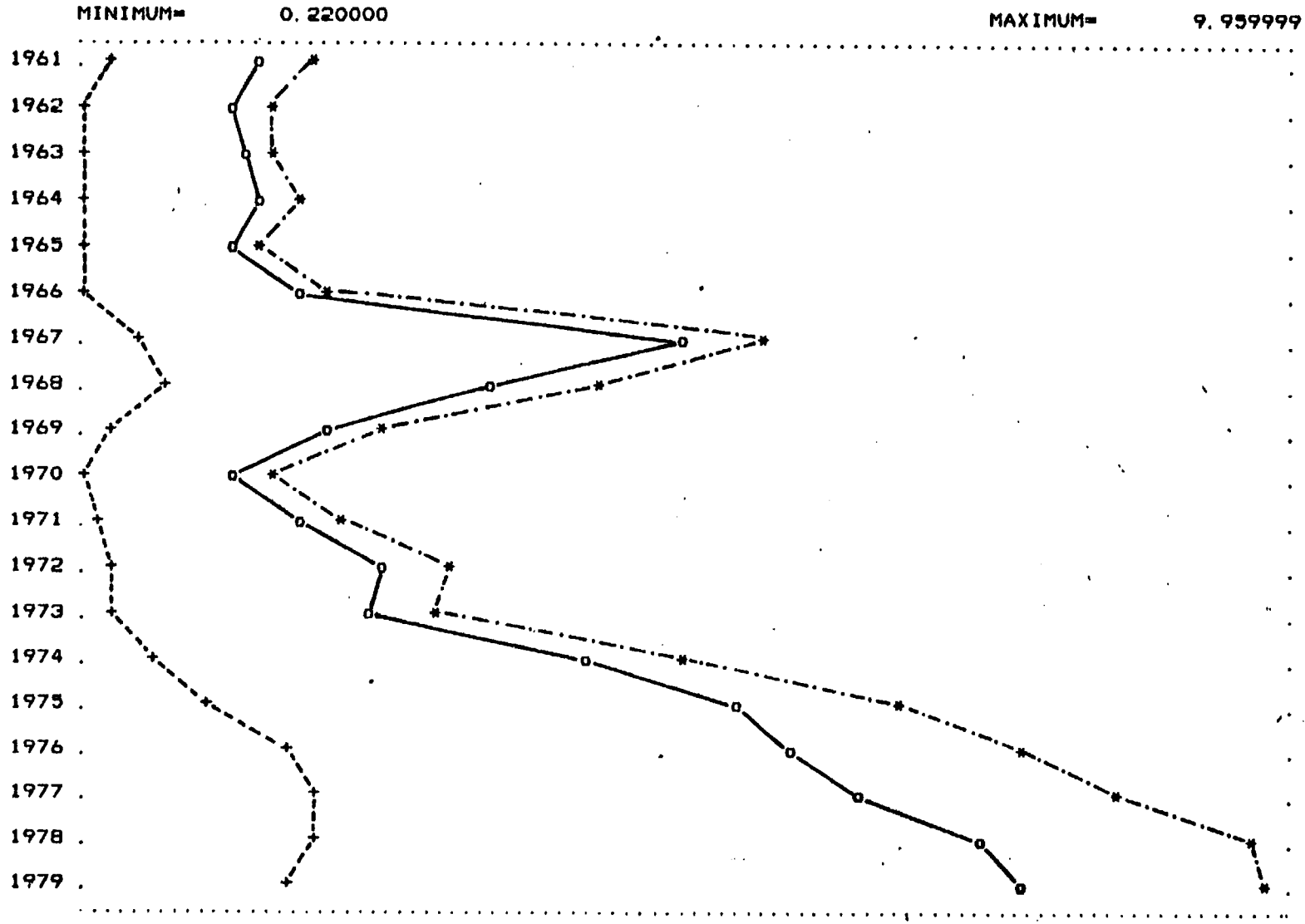
1/ See Holen, A./Horowitz, S. A. (1974) and Chapter 5.2.1.

2/ See Chapter 7.2.

FIGURE 9: DENIAL RATES

DENIAL RATIO PLOTTED WITH (*) —·—·—·—
DENIAL RATIO (REFUSED JOB) PLOTTED WITH (+) - - - - - - -
DENIAL RATIO (QUIT) PLOTTED WITH (o) ————————

POINTS EXCEEDING THE SCALE OF THE GRAPH AND POINTS WHERE TWO OR MORE VARIABLES HAVE THE SAME VALUE WILL BE PLOTTED WITH (&). THE VARIABLE CONCERNED WILL BE INDICATED ON THE FAR RIGHT HAND SIDE OF THE GRAPH.



$$D = \beta_o + \beta_1 X_t + \beta_2 X_{t-1}$$

$$\hat{\varepsilon} = D - (\hat{\beta}_o + \hat{\beta}_1 X_t + \hat{\beta}_2 X_{t-1})$$

This regression for the FRG yielded:

$$\underset{\quad (5.69)}{DENI = 7.655} \underset{(1.08)}{- 0.272\ PCGNP} \underset{\quad (2.27)}{- 0.518\ PCGNP_{-1}}$$

$$R^2 = 0.3238 \qquad DW = 0.3851$$

If the variable INEL is calculated from an equation with the precentage change in GNP, which again appears in the regression equation on unemployment, the following inter-dependency of the variables will be obtained:

$$U = \alpha_o + \alpha_1 \hat{\varepsilon} + \alpha_2 X_t + \alpha_3 X_{t-1}$$

$$U = \alpha_o + \alpha_1 (D - \hat{\beta}_o - \hat{\beta}_1 X_t - \hat{\beta}_2 X_{t-1}) + \alpha_2 X_t + \alpha_3 X_{t-1}$$

$$U = (\alpha_o - \alpha_1 \hat{\beta}_o) + \alpha_1 D + (\alpha_2 - \alpha_1 \hat{\beta}_1) X_t + (\alpha_3 - \alpha_1 \hat{\beta}_2) X_{t-1}$$

Knowing the denial rate one can also calculate the coefficients of the growth rates of GNP and its lagged value.

In some of the following regressions for the FRG INEL was included as the residuals from the equation with PCGNP. Coefficients for the variable however, were positive and thus contrary to the hypothesized impact of benefit denial. INEL as residual from a regression of the current and lagged unemployment rate was found to give more satisfactory results. 1/

The problem with the denial rate as variable is that it is not obvious at all whether it has to be treated as dependent or independent variable. The original variable never shows the expected sign in regression with the rate of unemployment as dependent variable. It is highly correlated with unemployment. The variable denial rates can

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1/ See the regression analysis for the FRG in Chapter 7.2

6.3 Different Quantitative Approaches

6.3.1. Individual Cross-section Data

The aggregate approaches which are applied in most studies on the relation of UI and unemployment are inadequate for analysing the behaviour of individual agents. When a phenomenon of voluntary decisions of unemployed persons is analysed according to the neo-classical Job Search Theory, studies should be based on individual data. Most statistical analyses have aggregate dimensions although they are based on a theory of individual decision making. The underlying theory does not account for unemployment resulting from demand deficiency, whereas the estimated equations include variables for aggregate demand. When arguing along the lines of Job Search Theory what is interesting to note is whether the availability of UI payments has an impact on the behaviour of unemployed individuals, holding constant other factors that may influence the duration of unemployment and the initiation of a spell of unemployment. This can be done best by applying cross-section data taken from interviews with unemployed people. Ideally, one would have to analyse different replacement ratios (the UI benefits in relation to previous income) and whether they determine a different duration of unemployment.

For Western European countries the only relevant and more sophisticated approach that has followed these lines is the one by S. Nickell on British data from the General Household Survey 1972. 1/ This kind of data analysis, in general, brings about problems because of the secrecy of individual data. (Nickell had access to the unpublished statistical material because he was asked to give a report to the Department of Employment !)

Statistics on individual cases may indicate the impact of certain personal characteristics and the individual financial situation on the duration of unemployment. But they are not yet adequate for an analysis of the effects of UI benefits. In some countries like in the FRG the level of income replacement by UI benefits does not differ

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1/ See Nickell, S.J. (1979) and Chapter 5.3

significantly among individuals. As described before the replacement ratio is identical for those unemployed persons who are eligible for UI benefits. In practice it is impossible to observe different reactions to different levels of unemployment compensation because either the replacement ratios are identical or differences are determined by characteristics which themselves affect the duration of unemployment. This inter-dependence of UI benefits, personal characteristics and duration of unemployment exist in the UK. One can tell exactly what type and how much UI benefits an unemployed person receives if the income previous to unemployment, the employment record and certain personal characteristics are known. These facts determine the replacement ratio (whether ERS, flat-rate benefit, supplementary benefit and/or family allowances can be claimed by the unemployed worker). But at the same time, these factors also influence the re-employment success and the individual's duration of unemployment. Unemployed workers with previously high income will receive high UI benefits (in the UK the replacement ratio will be above average because ERS can be claimed) but they can also be expected to be among the unemployed with the shortest duration of unemployment.

Individual cross-section data may allow to calculate effects of UI on the duration of single spells of unemployment. But they are inappropriate to estimate the overall impact of UI benefits on unemployment. In the context of neo-classical models the effect of UI on individual cases of unemployment can be analysed. These models do not explain the emergence of high and persistent levels of unemployment and whether in such a situation UI benefits would have any effect on the aggregate rate of unemployment. If unemployment is high and above some kind of 'natural' rate of unemployment (where demand for labour equals supply of labour) at individual level, unemployment can be considered involuntary. Hence UI benefits which are operating via the supply side cannot have an effect.

The theory of search unemployment is a theory of individual decision making whereas, the alternative theory of unemployment resulting from demand deficiency is a macro-theory. If unemployment is assumed to be at least partially determined by quantity restraints

cross-section studies reveal little since aggregate demand is ignored. In order to analyse changes over time and the impact of UI on different levels of unemployment, time series studies are required. Aggregate demand is excluded from individual cross-section analysis.

The relative duration of unemployment is assumed to depend on personal attributes rather than on the general situation of the labour market. Some elements of the demand side may be included in the analysis. For example, skilled workers are unemployed for a shorter period than unskilled labourers - in part because of higher demand. But aggregate demand does not enter in this type of analysis.

Individual cross-section studies on UI are often based on sample surveys originally meant for other purposes. Data and findings from these studies may be biased if the factors that are determining the composition of restrictive samples are not taken into consideration. In general, any kind of 'hidden' unemployment is left out but in many cases also workers who are ineligible for unemployment compensation are excluded. For economical reasons, sample surveys will hardly be conducted for the sole purpose of analysing the effects of UI on unemployment. But in any case, such a primary survey would have to take into account the lack of reliability of the answers given by the interviewed. It is likely that persons asked about their financial situation in and before unemployment will not tell the truth, either because of ignorance or, more probably, because they suspect cuts in their UI benefits.

In the FRG no comprehensive study on the effect of UI has been conducted with individual data. As there is little variation among individuals in respect to the replacement ratio such a study would not provide reliable empirical evidence.

6.3.2 Comparison of Identical Groups

Another theoretically promising approach is an analysis of two different groups of unemployed persons, one of which receives UI benefits (or relatively high benefits) and another with unemployed

workers ineligible for UI compensation (or very low benefits). If groups could be found which show practically no differences that were relevant for re-employment possibilities apart from the availability of UI benefits, a simple comparison of the average (completed) duration of unemployment could yield sufficient evidence. However, things are not that easy in reality. In each country the labour market group with members receiving UI benefits is fundamentally different in its social structure from the one of registered unemployed without unemployment compensation, i.e. those unemployed workers who either never had any claims on UI benefits or whose duration of UI payments has been exhausted. Regardless of the existence of UI benefits, both groups are faced with very different re-employment possibilities. "The difficulty with any hypothesis about the impact of earnings-related supplement is, therefore, the absence of a comparable group getting nothing who can be compared with those receiving the supplement. The supposition must be that, at most, the impact of earnings-related supplement will amount to no more than an increase in the selectiveness of men who are in any case able to get more work fairly easily." 1/

Consulting the respective laws and looking into labour market administration, it seems obvious that comparable and adequate groups of unemployed eligible and ineligible for UI benefits do not exist. The duration of unemployment in social groups of unemployed who cannot claim UI will depend on labour market attributes other than UI benefits. In the FRG H. König compared the duration of completed spells of unemployment of UI recipients with the one of all registered unemployed. 2/ By doing this he assumed implicitly that UI recipients show basically the same characteristics in respect to employment perspectives as the average unemployed worker. This is contradictory to empirical evidence from West German labour markets. 3/

1/ Hill, M. J. (1976) p. 173

2/ See König, H. (1978) and Chapter 5.4

3/ See Egle, F./Karr, W. (1980)

Furthermore, many non-recipients may leave official unemployment statistics by ending registration with the labour offices and withdraw from the labour market. Registered unemployment is not necessarily ended by the initiation of new employment. In a considerable number of cases, it ends with withdrawal from the labour market. 1/ Officially registered unemployment is transformed into hidden unemployment. Persons ineligible for UI benefits see less incentive to register with the labour office, generally. In official statistics their duration may appear shorter when they turn into 'discouraged workers' because employment perspectives are bad.

Two groups of unemployed workers in different regions or countries could be compared if identical or at least if similar population and social structures existed. Differences should be limited to the amount and/or duration of UI payments. These conditions can be found to some degree in the United States, with similar economic situations and population groups all over the country, but certain differences in respect to UI laws and administration in the single states. In the US some studies were based on cross-section regression analysis with different states as units. However, for the different states,one can expect a high correlation between potential weeks of benefit payments and average income and rate of unemployment.

In Western European countries, conditions as in the US do not exist. A direct comparison between countries such as the FRG, Italy and the UK is not practicable. Regional comparisons in one country are difficult because normally differences in respect to UI do not exist, and statistics on gross domestic product, production, UI benefits or vacancies are generally not sufficiently disaggregated at the regional level.

Maki and Spindler tried a regression analysis for 16 countries all over the world, in which they intended to estimate the impact of UI on unemployment. 2/ This approach appears by far, too ambitious. In

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1/ Clark, K.B./Summers,L.H. (1979) found for the US that almost half of all unemployment spells end by persons leaving the labour force.

2/ See Maki, D./Spindler, Z. (1978).

this kind of study the influence of UI cannot be accurately isolated. Too many factors which are specific to the single countries affect the rate of unemployment, but cannot be held constant. It is still more difficult to distinguish causal relationships between UI and the level of unemployment in country comparisons, because higher unemployment may as well induce higher UI benefits. In time series studies one can at least expect a time-lag in governments' reactions to growing unemployment.

6.3.3 Aggregate Time Series

I have to limit my analysis to data from time series as the only data officially provided. But I am quite aware of many critiques to this approach. An important point of critique that can be made for most studies on the effects of UI is the discrepancy between theory and empirical testing. The theoretical explanation for the impact of UI on unemployment is drawn from micro-economic models like the concept of utility maximization and job search theory, whereas empirical analysis is based on aggregate data. This is the case in practically all studies working with the Maki/Spindler model.

The causal relationship between unemployment and UI is not all that clear in time series analysis. Difficulties arise because of a high interdependency of unemployment and the system of UI. The ratio of income replacement by UI, the extension of coverage among the labour force and the strictness of enforcement of eligibility rules are related to the level of unemployment. UI can be assumed to induce unemployment but it is also quite probable that different levels of unemployment influence the decisions of authorities on conditions and the duration of UI payments.

In time series studies, one has to be aware of the existence of multicollinearity of the variables because many of them are following a similar trend in time. The effects of the single exogenous variables on the dependent variable unemployment cannot always be accurately isolated and the standard errors of the coefficients will be large. 1/

1/ On the problem of multicollinearity see Schneeweiss, H.(1971), pp. 134 and Dutta , M. (1975), pp. 142.

Time series regression analysis requires significant modifications in the observations of the variables. If the explanatory variable (for example income replacement according to UI laws) shows little variation over the observed time period, it is difficult to assess its contribution to the variation of the dependent variable unemployment. In the FRG there have been few and very small changes in benefit payments and the replacement ratio. In the UK only at one point of time in 1966 the UI regulations have been modified significantly. Changes occur in the composition of unemployed persons in respect to recipients and non-recipients and the proportion of different types of UI compensation paid to the unemployed. Aggregate replacement ratios therefore show changes over time, as described above.

For some variables it is difficult and sometimes impossible to find time series long enough to give good estimates. Series are often not consistent over time because changes in the definition and in the territory of analysis occurred. Some statistics have only been collected recently, such as statistics on the duration of unemployment in the FRG which are recorded from 1966 onwards.

In time series studies it is still more difficult than in cross-section analyses to determine the way in which UI influences unemployment. The socio-economic structure of the registered unemployed changes over time, and UI can induce unemployment through higher and longer unemployment, but also through higher propensity to register. Demographic factors would have to be held constant over time if the direct impact of UI on unemployment has to be examined.

Ideal conditions for a reliable test on the impact of UI on unemployment over time would be given if significant modifications had occurred in UI regulations in respect to income replacement, coverage and eligibility enforcement, while other factors such as the propensity to register had remained constant. In none of the countries under consideration has this been the case. We have to be aware of these shortcomings in time series analysis on the impact of UI.

7. Empirical Analysis for the FRG

7.1 Variables and Data

7.1.1 Unemployment Rates and the Duration of Unemployment

The dependent variables that are relevant in the empirical testing of the effects of UI on employment are the rate of unemployment, the flow into unemployment and the average duration of spells of unemployment. There are several reasons why the number of officially registered unemployed does not reflect precisely the state of the labour market. 'Real' unemployment is over-estimated by the figures in official statistics because a certain part of the registered unemployed is not willing to take up a job that is offered. This kind of voluntary unemployment may exist in cases where registering is connected with the collection of UI benefits. Contributions by UI schemes to other social security schemes provide sufficient incentive for inscribing at the labour offices. However, this type of unemployment cannot be excluded from analysis because the extent of the phenomenon of voluntary idleness is an important factor in empirical analysis.

Another shortcoming of official labour market statistics is the omission of 'hidden' unemployment. Discouraged workers who have withdrawn from the labour market or who did not register but are searching for employment are not counted as unemployed. 1/

It is difficult to estimate the extent of 'voluntary' and 'hidden' unemployment. Therefore, the analysis is limited to the impact of UI on registered unemployment. We can also assume that UI has, above all, a direct effect on variations of this measure of unemployment.

In a steady-state, the total number of unemployed persons equals the number of spells of unemployment beginning per month multiplied by the mean duration in months of completed spells of unemployment. Changes in the rate of unemployment are essentially a product of the change in the number of spells and the duration of unemployment. The impact of UI can be decomposed into effects on the initiation and on the

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1/ For a more detailed discussion of the extent of voluntary and hidden unemployment in the FRG see e.g., Egle, F. (1979) pp. 21-47 and IAB (1977), see also Chapter 2.1.1.

duration of unemployment.

An alternative variable to the aggregate rate of unemployment in empirical analysis is the number of flows into unemployment in relation to total employment (UNRF). The initiation of a spell of unemployment can result either from entry into the labour force or from the loss of employment. Since voluntary quitting brings about the denial of UI benefits for up to four weeks, it can be assumed that the effect of modifications in the level of UI benefits on the flow of unemployment is much smaller than on the duration of spells of unemployment. According to Job Search Theory lower costs of idleness and higher UI benefits will prolong unemployment.

Average duration of unemployment is calculated by the Federal Labour Office since 1966. Official publications only give percentages of unemployed persons who are out of work up to certain time periods (up to one month, three months, half year, one year, two years and over two years). These statistics provide information on the situation of one single day counting. They show the duration of unemployment as the time registered until the day of counting. It is not the duration of completed spells of unemployment but the duration so far. Statistics on the average duration so far of unemployment are misleading. They underestimate the length of completed spells because they relate to incompleted spells. On the other hand, they over-estimate the length because long-term unemployed workers will be over-represented. Persons with long duration of unemployment have higher probabilities to be counted on the key day of data collection as the following graph shows.

Data on completed spells of unemployment, calculated from additional information on the duration are more appropriate for an analysis of unemployment. In the calculation of the research institute of the Federal Labour Office, the duration of completed spells of unemployment equals the total unemployment suffered since the beginning of unemployment by those ceasing to be unemployed during a period, divided by their number (i.e. the number of people unemployed at the beginning of the period plus the inflow during it, less the number of unemployed

at the end). 1/

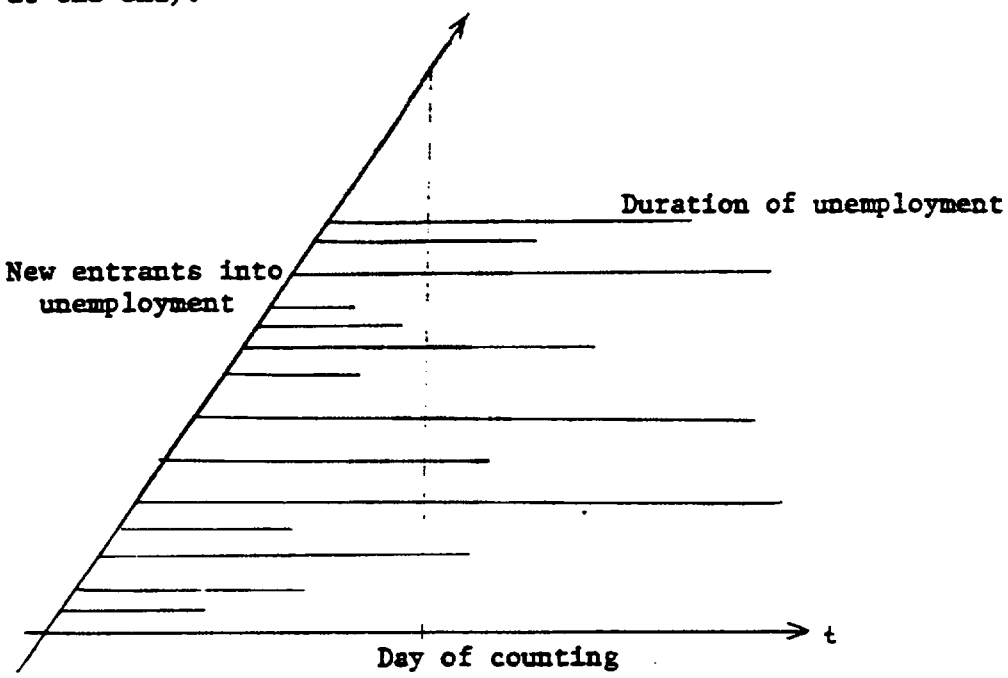

Figure 10 and Table 3 give an idea of the differences in the two types of duration of unemployment. 2/

Empirical studies on the effects of UI on unemployment, in general choose the logarithm of the rate of unemployment as dependent variable. This is justified by the assumption that the equation of the determining factors of unemployment is non-linear - the partial derivation of the unemployment rate with respect to the benefit-income ratio depends on the existing level of unemployment. Most studies, however, do not discuss the decision for the logarithm as depent variable instead of simply the rate of unemployment. But "the economic and statistical importance of taking account of appropriate funtional

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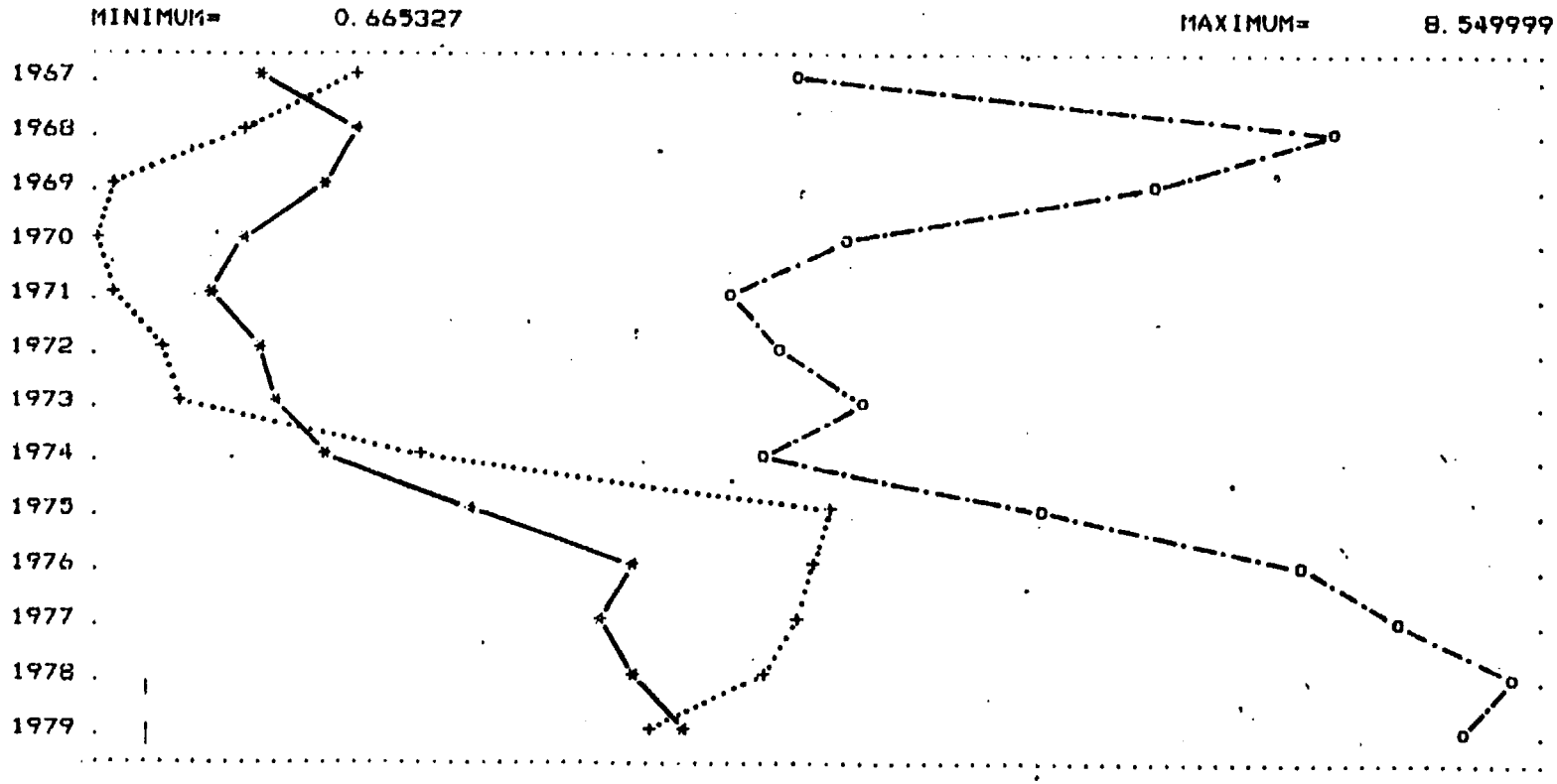
1/ On the calculation of the duration of completed spells of unemployment See also Turvey, R. (1977), Egle, F. (1979) and Egle, F./Karr, W./ Leupoldt, R. (1980).

2/ The outcome of the different methods for calculating the average duration of unemployment shows considerable structural differences in the FRG. The duration of completed spells of unemployment is higher for women than for men, while the average duration shows the contrary. See Egle, F. (1979) p.52.

UNR PLOTTED WITH (+) ·····
CDUR PLOTTED WITH (*) ————
ADUR PLOTTED WITH (o) —·—·—

POINTS EXCEEDING THE SCALE OF THE GRAPH AND POINTS WHERE TWO OR MORE VARIABLES HAVE THE SAME VALUE WILL BE PLOTTED WITH ($). THE VARIABLE CONCERNED WILL BE INDICATED ON THE FAR RIGHT HAND SIDE OF THE GRAPH.



forms of relationships cannot be emphasized too strongly. 1/

The Box-Cox analysis of transformation allows us to determine the appropriate transformation of the dependent variable. 2/

In the basic equation of the Maki/Spindler type the logarithm of the rate of unemployment (lnUNR) was found to be the appropriate dependent variable. Coefficients were always found to be more significant when the logarithm was chosen as dependent variable. Thus further regressions were done on the logarithm of unemployment.

7.1.2 The Independent Variables

Most time series studies on the impact of UI on unemployment have been produced using the general form

$$UNR = f\ (\ REPL;\ X\ ),$$

where REPL is the ratio of average UI benefit to average income and X is a vector of variables designed to account for differences in the unemployment rates not produced by the UI benefit. The X vector, in general, includes variables representing the state of the labour market, changes in the participation rates, and other characteristics of the system of UI. The basic approach followed in most of the studies that are based on aggregate time series is the regression of the rate of unemployment on proxies describing the supply of and demand for labour. Some modifications have been introduced in the different country studies according to pecularities of the respective labour markets.

$$UNR = {}_0 + {}_1REPL + {}_2DENI + {}_3PCOV + {}_4PCGNP + {}_5PCGNP_{-1}$$

$_1$REPL: income effect

$_2$DENI: severity of administration

$_3$PCOV, $_4$PCGNP, $_5$PCGNP$_{-1}$: supply of labour

$_4$PCGNP, $_5$PCGNP$_{-1}$: demand for labour

1/ Zellner, A.(1971) p.162

2/ See Zellner, A. (1971) pp. 162-169. The exact proceeding is presented in Appendix B.

The rate of unemployment is symbolized by UNR, the replacement ratio by REPL. In the analysis of the FRG, replacement ratios have been calculated according to formulas presented in Chapter 6.1. DENI and PCOV are two other variables which represent the system of UI. DENI and its substitution by INEL have been discussed in Chapter 6.2. PCOV is the percentage of the total labour force covered by UI. It shows an upward trend because the proportion of employees - for whom social security is compulsory - has increased during the last decades. PCGNP and $PCGNP_{-1}$ are the current and lagged percentage changes in real gross national product. These variables are assumed to represent factors determining the demand for labour and are reflecting cyclical variations. The deviation of GNP from its trend - which has been used in several studies on UI - appears to be less appropriate as a measure of the influence of demand forces. The sign of the variable may remain positive in the beginning of a recession because the curve of actual gross national product is still above the trend line. Thus, when negative changes in GNP appear, deviations from the trend do not reflect the severe point in an economic downswing. Growth rates provide a more immediate indicator of changes in the level of production. A demand variable constructed as a measure for capacity utilization was not introduced in the analysis as has been done in the König/Franz model for West Germany. It is not appropriate for explaining unemployment, since the variable itself is determined by the level of unemployment. In addition, the part of unemployment that is caused by lower demand for labour in the administrative sector cannot be derived from a capacity utilization ratio.

A variable reflecting the prevailing labour market conditions, a vacancy-employment ratio, may be more appropriate for the analysis. Growth rates of national product explain only one component of unemployment but leave apart any structural component. The number of vacancies as a percentage of total employment (VAC/EMP) is a proxy for job possibilities, reacting very directly on changes of labour market conditions. 1/

1/ We have, however, also to be aware of measurement problems in the variable 'vacancies', see e.g. Rosewell, B./Robinson, D. (1980)

With PCGNP defining the cyclical component of unemployment, a structural component should be included in the analysis. For the German labour market, the variable ILSET was constructed in the same way as done by Maki/Spindler for the analysis of British unemployment. ILSET is a labour force index multiplied by the productivity per person employed.

Variables that are used in the theoretical and econometric model outlined in Chapter 4.4 are somewhat different. In the present empirical analysis, unemployment is explained by the level of real wages and the growth rate of GNP (and its lagged value).

$$UNR = f\ (\ MGSLR,\ \ BENR,\ \ PCGNP,\ \ PCGNP_{-1},\ P\ )$$

MGSLR represents labour costs and is a proxy for the real wages. It is calculated as the monthly gross salary in real terms (gross salary multiplied by the price index, MGSAL x PI). It included social security schemes, such as UI. The average UI benefit BENR appears less appropriate for the analysis, because it is highly collinear with the variable wages. The replacement ratio as described before was chosen instead. A population parameter P is assumed to capture changes in the potential labour force. It is calculated as the ratio of total labour force to total population.

Time series of all variables used in the analysis, as well as their symbols and the statistical sources are shown in Appendix C. Data for a few variables were not available or not collected for the entire time period 1955 to 1979. Due to the aforementioned data deficiencies , the empirical analysis was limited to the period 1960-1979, although it is relatively short and for most equations we have only 20 observations. Quarterly figures could increase the number of observations. In the context of the present study, however, they would not be of any advantage because data of the key variables on the UI system are published on a yearly basis. 1/ A number of other variables, although published

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1/ König/Franz had quarterly data for their labour market variables, but the replacement ratio was from data recorded only on a yearly basis.

quarterly, are simply interpolations of yearly data and thus would not improve calculations.

Because of fundamental changes in the West German economy in the 1950s the time before 1960 was excluded from the analysis. Until 1960 West Berlin and the Saarland were not included in most official statistics. Furthermore, due to certain particular aspects of the German labour market, the inclusion of the reconstruction phase 1950 to 1960 would not increase the quality of the results but rather bias them. 1/

Most of the presently available studies have been carried out for the period up to the beginning of the 1970s when unemployment was still on low levels. It is interesting to analyse how UI affects unemployment when-levels are increasing. In the empirical analysis of the period 1960 to 1979 both phases - high economic activity with high employment and recessions with high levels of unemployment - are covered.

A distinction of the variables by sex would not yield any advantage with regard to statistical properties. 2/ Separate statistics of UI benefits for males and females do not exist. However, it cannot be assumed that the income distribution in employment and unemployment is identical for males and females. Women may show a higher responsiveness to changes in the replacement ratio.. But no such time series are available that would allow to test the different impact of UI on males and females.

7.2 Discussion of the Regression Results

The analysis on the effects of UI in the FRG, in the first instance, has been carried out following the lines of the model suggested by Grubel and Maki and by Maki and Spindler. The time series analysis is based upon yearly observations for the period 1960 to 1979. Table 16

1/ See the description of the German labour market in Chapter 2.1.2.

2/ This has also been stated by König/Franz. They conducted separate analyses for males and females but found almost identical results for both groups.

summarizes some regression results. [1/] Ordinary Least Square estimates are characterized by (a) on top of the column and the two-stage version by (b). Figures in brackets below the regression coefficients are t-values. The F-statistics are given below the R^2s. DW represents the Durbin-Watson statistic.

The Two-Stage-Least-Square version does not improve results. However, the replacement ratio is not well specified by the rate of unemployment and an integer variable TIME,

$$\begin{aligned} \ln UNR = {} & -717 - 24.17\ REPL + 0.262\ INEL \\ & \quad (2.07)\quad (1.83)\qquad (7.14) \\ & +6.70\ PCOV - 0.121\ PGCNP - 0.188\ PCGNP_{-1} \\ & \quad (2.0)\qquad (7.0)\qquad (7.2) \end{aligned}$$

$$\begin{aligned} REPL = {} & 0.359 - 0.0015\ UNR + 0.0043\ TIME \\ & \quad (10.8)\quad (0.14)\qquad (1.5) \end{aligned}$$

$$R^2 = 0.9679 \qquad DW = 1.299$$

When the variable vacancies per employed is chosen instead of the growth rate of GNP in the basic equation, results are found to improve. It must, however, be admitted that this is not very surprising, since the vacancy/employment ratio reflects the level of unemployment in its employment component.

As mentioned before, the denial rate is not significant as a variable explaining unemployment, neither is the residual INEL. Signs of its coefficients are always positive (i.e. stricter enforcement of eligibility rules would increase unemployment !). When INEL is defined as the residual from an equation with the denial rate as the dependent variable and the current and lagged rate of unemployment as the independent variables, it showed the right sign in some cases. The following OLS version can be viewed to be more satisfactory:

$$\begin{aligned} \ln UNR = {} & -0.172 + 1.806\ REPL - 0.0184\ INEL + 2.32\ PCOV \\ & \quad (0.47)\quad (2.92)\qquad (0.70)\qquad (6.2) \\ & -0.590\ VAC/EMP - 0.244\ VAC/EMP_{-1} \\ & \quad (12.3)\qquad (5.5) \end{aligned}$$

$$R^2 = 0.989 \qquad DW = 1.859$$

1/ Further regression results of the basic equation are presented in Appendix D, Table a.

TABLE 16: REGRESSIONS ON THE RATE OF UNEMPLOYMENT

DEPENDENT VARIABLE→ INDEPENDENT↓	a InUNR	b InUNR	a InUNR	b InUNR	a InUNR	b InUNR
REPL	1.609 (1.33)	-24.17 (1.83	2.370 (3.7)	-2.964 (0.37)	-3.094 (1.14)	-94.32 (1.5)
INEL	0.210 (10.0)	0.262 (7.14)	0.0266 (1.78)	0.0028 (0.14)		
ILSET					0.00816 (3.5)	0.0810 (1.83)
PCOV	0.41 (0.53	6.70 (2.0)	1.86 (4.4)	3.36 (1.54)		
PCGNP	-0.108 (6.3)	-0.121 (7.0)			-0.0596 (1.29)	-0.0810 (2.4)
$PCGNP_{-1}$	-0.140 (8.1)	-0.188 (7.2)			-0.109 (2.3)	-0.111 (3.04)
VAC/EMP			-0.589 (14.8)	-0.590 (9.03)		
VAC/EMP_{-1}			-0.195 (3.9)	-2.79 (4.05)		
CONSTANT	0.404 (0.58)	-7.17 (2.07)	-0.201 (0.61)	-0.921 (0.25)	0.428 (0.32)	29.07 (1.45)
R-SQUARED (F)	0.9644 (70.43)	0.9679 (78.28)	0.9908 (281.1)	0.9812 9135.4)	0.6865 (8.212)	0.8180 (15.74)
D W	0.9182	1.299	1.4937	1.7021	0.7834	0.8500

The coefficients of all variables, apart from INEL, are significant when logarithms of the independent variables are used, the level of significance of all variables increases, but INEL becomes positive.

$$\underset{}{\ln UNR} = \underset{(3.2)}{-2.43} + \underset{(4.4)}{0.693}\ \ln REPL + \underset{(0.94)}{0.0149}\ INEL$$

$$+ \underset{(6.6)}{1.088}\ \ln PCOV - \underset{(22.1)}{1.258}\ \ln VAC/EMP - \underset{(7.6)}{0.428}\ \ln VAC/EMP_{-1}$$

$$R^2 = 0.9959 \qquad DW = 1.947 \qquad SE = 0.058$$

The regression coefficients of the logarithms are approximately the elasticities of the variables. The elasticity of the rate of unemployment with respect to the replacement ratio is 0.693, i.e., an increase of 10 percent in the replacement ratio would raise unemployment by about 7 percent. In 1979 it implies that the rate of unemployment would have been by 0.26 percent higher or about 60,000 more people would have registered as unemployed. The magnitude of the parameter is plausible. The elasticity of unemployment with respect to the coverage by UI is 1.09, implying that if in 1979 10 percent more of the working population were covered by UI, unemployment would have increased by somewhat less than 90,000 persons. In this equation, the coefficients of coverage by UI is higher than the one of the replacement ratio. A stronger effect of coverage on unemployment than of UI benefits suggests that an extension of UI to more marginal labour market groups will induce more unemployment than an increase of benefit payments for the registered unemployed. These results are consistent with the hypothesis that UI benefits tend to affect registering of unemployment more significantly than the duration. The ratio vacancy to employment contributes most to explaining unemployment. The empirical findings suggest that there is a lagged effect of the vacancy-employment ratio on unemployment which is due to the fact that as demand for labour rises, the current variable VAC/EMP underestimates the effect of this variable.

The equation which Maki and Spindler applied to the British labour market does not provide satisfactory results for the FRG. Regression results of an equation including an index of labour supply in

efficiency terms (ILSET) are shown in the last two columns of Table 16. This specification does not appear to be adequate for our analysis. The variable ILSET captures most of the effect of PCGNP and the coefficient of the replacement ratio has a negative sign.

Omitting PCOV as explaining variable does not change significantly the coefficients in all specifications of the basic equation.

The regression was also carried out for the sub-period 1961 to 1975, i.e., the time before the economic downswing. Some results are shown in Appendix D, Table b. Results differ somewhat. In the period until 1975 the growth rate of GNP had a stronger impact on unemployment than in the more recent period. This is consistent with the hypothesis of a 'decoupling effect', which other authors have postulated for the FRG. 1/ The link between the rate of unemployment and the rate of growth seems to be interrupted for the 1970s. After the beginning of the recession - 1974/75 - unemployment remained rather constant for the period under examination. It did not show a sensitive response to variations in economic growth, whereas, the vacancy-employment relations appears to have become more relevant for unemployment in the later period.

The coefficient of the replacement ratio shows a higher level of significance in the period before 1975. The variable INEL (calculated from the rate of unemployment) shows the right sign or is closer to the level of significance in the period 1961-1975. These findings are consistent with the hypothesis that any effect of UI on unemployment can above all be expected in periods of low unemployment.

Secondly, the effect of UI on the duration of unemployment is estimated. The dependent variable, duration of completed spells of unemployment, is calculated in months. Some results are shown in Appendix D, Table c.

1/ See Bolle, M. (1981)

Only in one of the different specifications the coefficient of UI benefits was found to be significant. Also with logarithms of the variables the coefficient of the replacement ratio is not significant.

$$\ln CDUR = \underset{(1.80)}{-5.114} + \underset{(0.52)}{0.409}\ \ln REPL + \underset{(0.87)}{0.0375}\ INEL$$

$$+ \underset{(2.04)}{1.567}\ \ln CPOV - \underset{(0.37)}{0.0342}\ \ln VAC/EMP - \underset{(8.43)}{0.762}\ \ln VAC/EMP_{-1}$$

$$R^2 = 0.9684 \qquad DW = 2.182 \qquad SE = 0.091$$

The variable which represents denials of UI benefit always has the wrong sign (an increase in denials would prolong the duration of unemployment). The coefficient of PCOV has a positive sign. This indicates that a higher percentage of the working population covered by UI may lead to some increase in the average duration of unemployment. The elasticity of the average duration of completed spells of unemployment with respect to UI coverage is 1.57, implying that in 1979 an increase of 10 percent in coverage would have prolonged averge spells of unemployment by 0.6 months. The situation in the labour market in the previous year has a more important impact on the length of unemployment than the one of the current year. Only the coefficient of the lagged variable vacancies per employed is significant. This can be expected because the duration of spells of unemployment increases with a time-lag when there are less vacancies.

However, the time series available on the duration of unemployment are too short to provide reliable estimates. The inadequate number of observations may explain the quite unstable and diverging results of Table c. When the denial rate is omitted from the equation, results change completely and all but one variable become insignificant. (See the last column of Table c in Appendix D.) Further research and an analysis that can rely on longer time series (or individual data) are required to establish the effects of UI on the duration of unemployment in the FRG.

In a next step the effect of income replacement by UI on the flows into unemployment was examined. The variable UNRF is calculated as the ratio of flows into unemployment to total employment. It has smaller fluctuation than the rate of unemployment as variations in unemployment duration are excluded. The coefficient of REPL was in no case significant.

$$\ln UNRF = \underset{(8.7)}{3.521} + \underset{(0.44)}{0.115}\ \ln REPL - \underset{(1.20)}{0.031}\ INEL$$

$$- \underset{(2.06)}{0.79}\ \ln PCOV - \underset{(8.5)}{0.788}\ \ln VAC/EMP$$

$$- \underset{(0.44)}{0.0406}\ \ln VAC/EMP_{-1}$$

$$R^2 = 0.9413 \quad DW = 0.8496 \quad SE = 0.0950$$

The denial rate has the right sign, it is, however, not significant. The parameter of the coverage by UI has a negative sign. It is not evident whether PCOV should be expected to increase or decrease flows into unemployment. When UI is extended to new categories of the labour market layoffs may decrease because employment that is covered by UI is generally also characterized by higher stability. On the other hand, the availability of unemployment compensation for a higher percentage of workers may induce more voluntary quitting. A deterioration of job perspectives affects immediately the flow into unemployment, while the lagged variable yields an insignificant coefficient. Results are not very different with the growth rate of GNP instead of the vacancy relation as independent variable. The lagged variable representing the demand for labour is under the critical value of significance in all specifications. This is consistent with empirical evidence. A decrease in demand for labour increases the number of spells of unemployment immediately and, with some time lag, prolongs the duration of unemployment.

Different replacement ratios were not found to change results significantly. Signs and level of significance of the coefficients remain almost unchanged for REPL1 to REPL6. However, hypothetical replacement ratios, such as REPL7, had negative signs. This fact may be interpreted as underlining the inappropriateness of the variable

replacement rate as it is determined by law. Once casual fluctuations and variations due to changes in the composition of UI recipients are excluded from the variable replacement ratio, there remains no support of the hypothesis that UI benefits affect the level of unemployment. However, variations over time of a hypothetically calculated replacement ratio - much smaller than variations of the actual average ratio - are too small to allow a regression approach.

In the regression equations based on the Grubel/Maki approach the coefficients of the replacement ratio have practically always a positive sign (however, not in the two-stage version). But in the majority of cases the t-values are below the critical value of the five percent significance level. There is little evidence that changes in the average unemployment compensation affect the rate of unemployment. The Grubel/Maki model, however, is not a good specification for an analysis of the West German labour market. INEL calculated from growth rates of GNP is not appropriate, neither is the equation including ILSET. Therefore, the impact of UI benefits on unemployment is analysed according to the model outlined in Chapter 4.4 . The dependent variable is again the logarithm of the rate of unemployment. The explaining variables are the monthly gross salary in real terms, unemployment benefits, a variable representing the demand for labour (GNP)and the labour market participation rate. The variable representing UI benefits is the replacement ratio as described before. Real benefits and gross salaries are highly collinear, because UI benefits are calculated on the basis of salaries. An index of gross national product with 1960 as basis (IGNP) was chosen instead of percentage changes of GNP in order to allow for logarithms of the variable. For the period 1961 to 1979, the Ordinary Least Squares version yields: 1/

1/ The regression with BENR (UI benefits in real terms) yields:

$$\ln UNR = \underset{(5.8)}{26.75} + \underset{(3.3)}{0.0011}\ MGSALR + \underset{(0.76)}{0.00081}\ BENR$$

$$- \underset{(5.9)}{0.0628}\ IGNP + \underset{(1.4)}{0.0151}\ IGNP_{-1} - \underset{(5.5)}{27.4}\ P$$

$$R^2 = 0.9750 \qquad DW = 1.9540$$

$$\begin{aligned} \ln UNR = {} & 23.79 + 0.00132\ MGSALR + 1.828\ REPL \\ & (5.2) \quad (13.2) \qquad\qquad (1.67) \\ & - 0.0628\ IGNP + 0.01745\ IGNP_{-1} - 43.14\ P \\ & (6.9) \qquad\quad (1.77) \qquad\quad (5.4) \end{aligned}$$

$$R^2 = 0.9786 \qquad D\ W = 1.9337$$

The coefficient of the replacement ratio is not significant at the five percent level. The participation rate has a negative sign and is significant. The parameter for real wages is significant in all versions of the basic regression equation. Only for the current value the variable for gross national product has the expected sign and is significant. When the logarithms of the variables are used, coefficient and t-value of the replacement ratio are lower.

$$\begin{aligned} \ln UNR = {} & 109.6 + 3.45\ \ln MGSALR + 0.619\ \ln REPL \\ & (4.6) \quad (12.2) \qquad\qquad (1.18) \\ & - 9.602\ \ln IGNP - 1.616\ \ln IGNP_{-1} - 16.02\ \ln P \\ & (6.0) \qquad\quad (0.87) \qquad\quad (3.5) \end{aligned}$$

$$R^2 = 0.9726 \qquad D\ W = 1.409$$

It is not evident whether the parameter participation rate should be negative or positive. Higher labour market participation and thus a higher supply of labour may increase unemployment. Under this aspect a positive sign should be expected. However, higher unemployment (and a lower level of employment) may result in a lower activity rate, because of increasing numbers of 'discouraged' workers. A negative coefficient for the participation rate was found in most versions of the equation. This fact speaks in favour of the latter hypothesis, but the causal link appears to be from unemployment to labour market participation. The real gross salary and the index of gross national product have the expected signs and are significant in all specifications. These findings support the hypothesis of different types of unemployment, the Keynesian unemployment that is due to demand deficiency and the classical type of unemployment resulting from real wages too high to clear the labour market. There is little evidence that unemployment compensation induces unemployment. The level of unemployment can be explained by deficient demand as well as by too high real wages, but merely by preference for leisure or prolongled job search, because UI

benefits are available.

In order to distinguish between the two types of unemployment, the analysis has to be carried out on sectorial level. Classical and Keynesian unemployment are assumed to exist each in different sectors of the economy. Overall unemployment is then a combination of classical and Keynesian unemployment according to the proportions of the sectors where one or the other type of unemployment prevails. Such analysis, however, goes beyond the scope of this thesis. In this place it can be concluded that both, Keynesian and classical unemployment, exist in the West German labour market but estimates of the extent to which they exist would require further econometric analysis.

The analysis on the impact of UI benefits which has been described in this paragraph does not support the hypothesis of an unemployment inducing effect. In the FRG the rate of unemployment as well as the duration and the number of spells of unemployment are, above all, determined by the demand side of the labour market. Available vacancies, the growth rate of production and output and the level of real wages are the factors that are explaining unemployment. But there is little evidence of a significant amount of voluntary unemployment. Neither the rate of unemployment nor the duration , nor initiation of unemployment appear to be significantly affected by unemployment compensation.

Finally, the hypothesis that UI benefits have an impact on the rate of participation in the labour market will be analysed. The regression is based on the approach formulated in Chapter 4.4. The dependent variable is the activity rate defined as the ratio of the total labour force to the total population. The level of employment, the replacement ratio and the percentage of the population contributable to the non-primary labour force are the independent variables. For the period 1958 to 1979 the basic equation with logarithms of the variable yields:

$$\ln P = \underset{(3.6)}{-2.72} - \underset{(1.63)}{0.0474}\ \ln REPL + \underset{(3.2)}{0.258}\ \ln EMP + \underset{(8.3)}{3.31}\ \ln \frac{NPOP}{POP}$$

$$R^2 = 0.8734 \qquad D\,W = 0.6349$$

The coefficient of the replacement ratio has a negative sign. For the period under examination a higher level of employment increases labour market participation. The existence of UI benefits cannot be assumed to induce a significant part of the population to enter the labour market.

A regression equation according to the equation on labour market participation in paragraph 4.4 brings about similar results. 1/ But it is difficult to ascribe the single coefficients to a certain variable. Most of the explanation to the level of the participation rate is contributed by the variable population not contributable to the primary labour force in relation to the total population.

However, it has to be admitted that the available data are insufficient for an analysis of the impact of UI benefits on labour market participation. Variations in the replacement ratio are too small to allow reliable estimates of their effects on activity rates. Potential benefit duration and periods of UI contributions necessary for claiming benefits have merely been changed in the FRG. On the basis of time series data it is not possible to examine the effect of UI on the entering and remaining in the labour market. A number of other important variables have brought about changes in labour market participation. Activity rates cannot be explained by the short-termed variations in certain variables of the labour market. An insignificant coefficient of the replacement ratio may be expected for this kind of analysis. It is quite likely that participation rates of males and females do not so much depend on economic factors but on other variables such as the long-term growth of income, changes of consumption habits and certain cultural factors. Further analysis along the lines indicated here is necessary. In the context of my thesis, however, it leads too far to

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1/ $$P = \underset{(1.86)}{-0.593}\ (10^{12}) + \underset{(8.5)}{1.615}\ \frac{NPOP}{POP} + \underset{(3.9)}{0.857}\ (10^{-5})EMP.\ \frac{NPOP}{POP}$$

$$+ \underset{(1.86)}{0.594}\ (10^{12})REPL \cdot \frac{NPOP}{POP} - \underset{(1.78)}{0.334}\ (10^{-5})EMP \cdot REPL \cdot \frac{NPOP}{POP}$$

$$R^2 = 0.8908 \qquad D\ W = 0.7734$$

analyse more profoundly the determinants of labour market participation. The empirical evidence from an analysis limited to a short period of time does not support the hypothesis of a positive effect of UI benefits on labour market participation.

In conclusion, it can be said that UI benefits described by the replacement ratio cannot be assumed to increase overall unemployment significantly, neither by prolonged duration nor by a higher registering. However, results presented in this research are preliminary and need further elaboration in the context of a more comprehensive econometric model of the economy.

It is quite likely that variations in UI benefit amounts and in eligibility rules have some effect on the incidence or duration of unemployment in the population covered by the UI system. The problem is to measure these effects convincingly in a non-experimental environment so as to determine whether they are large enough that modifications in the system of UI might reasonably be expected to affect the rate of registered unemployment.

8. What Can We Learn from Empirical Studies on UI ?

8.1 The Validity of Time Series Data in Analysing UI

What is disputable in research on unemployment and UI is not the existence of voluntary unemployment, but its extent. A rise in the ratio of UI benefits to income from work would presumably lead to an increase in some individuals' duration of unemployment, but the impact on the overall unemployment rate is much less certain, since other areas such as labour market participation, unemployment registering and aggregate demand for consumer goods may be affected.

Studies on the impact of UI on unemployment, which are based on similar approaches, have produced widely diverging results. Findings depend fundamentally on the period under examination and the type and definition of variables chosen for the analysis. Too often researchers in the field of unemployment and UI tend to accept those results that are favourable for their hypothesis while they rationalize away unfavourable ones.

In several studies, regression is applied to equations with a vague theory behind, which may not correspond to the type of data and the level of aggregation of the estimations. It appears that frequently those specifications which do not fit the hypothesis, are thrown out and the best fit is chosen for publication. Several estimations based on the Maki/ Spindler approach, selected the type of data and those specifications which found significant coefficients for UI benefits. But it is always possible to find at least one specification that verifies the working hypothesis. Therefore, all results should be published 1/ I have preferred to show several regression results for the FRG, although the evidence is not unambiguous. In most specifications, UI benefits do not appear to have a significant impact on overall unemployment.

The question of whether an aggregate approach is appropriate for analysing the effect of UI on unemployment has been discussed in other parts of the thesis. The hypothesis that the duration of unemployment is prolonged when UI benefits are made available, requires tests which are based on individual data. But studies on a micro-economic level do not indicate the determinants of aggregate unemployment. In spite of several shortcomings, but also for reasons related to the availability of data, an analysis of aggregate time series was chosen for the research on UI and unemployment, and demand variables have been included. However, variations of the independent variables representing the UI schemes have been small. This may explain why empirical findings for the FRG as well as for several other countries are contradictory. In the UK the discussion of an unemployment inducing effect of UI has focused on the introduction of Earnings Related Supplements, when a significant change in the replacement ratio occurred. But over a longer time period only slight variations similar to those in the FRG for the period under examination, have been observed. Basically, both countries lack conditions for a convincing analysis of the effect of variations in the replacement ratio on aggregate unemployment.

1/Blaug, M. (1980) suggests that applied econometrics should seek to replicate previous results using a different data set and that authors should be required to present all the regressions they ran and not just the particular regression that happened to support their hypothesis.

Ideal pre-conditions for an investigation into the impact of UI on the labour market do not exist. Disaggregation of data on registered unemployment and an examination of homogenous groups with similar behavioural patterns and social conditions could improve the analysis, as reactions to UI payments are not identical in the different segments of the labour market. A 'typical' man, who is covered by UI and can easily find re-employment is not so much of interest for the empirical analysis. He would not seek to prolong unemployment for a number of reasons, particularly because longer idleness would result in a depreciation of acquired skills. The non-primary labour force, having a loose attachment to the labour market, is assumed to be more inclined to live on welfare programmes. Jobs in the secondary segment of the labour market are characterized by lower stability. While unemployment may rarely be initiated because of waiting periods after voluntary quittings, intermediate periods between two employment records may be extended when UI benefits are available. But when jobs become scarce voluntary unemployment frequently turns into involuntary, the more so as unemployment compensation decreases after some time. Furthermore, few members of the non-primary labour force have sufficient employment records to qualify for the maximum amount and duration of UI payments. Unfortunately, the data that is available on income replacement by UI and on re-employment success in different labour market segments is limited and does not permit a more profound analysis of different socio-economic groups.

We can make an attempt to estimate the magnitude of voluntary unemployment by looking at disaggregated information from labour market statistics, such as denial rates. According to prevailing labour market legislation in the FRG an obvious abuse of UI programmes will result in the denial of benefits for four weeks. In 1979, in about 54,900 cases, UI benefits were denied to claimants because job offers had been refused. Assuming a four-week duration of benefit denial (in exceptional cases the period can be reduced to two weeks) the number of unemployed persons who can be considered as unwilling to take up work amounts to an annual average of about 4,600 persons. Thus, it can be calculated that in 1979, voluntary unemployment induced by UI amounted to about 25,000 persons on annual average, which is little more than 3.5 percent of total registered unemployment. However, an increase in the denial rate

does not necessarily mean that more people misuse the UI scheme. It indicates rather that when unemployment is high, job seekers are more often requested to accept jobs below their skills level or which require high mobility.

In recent years, the denial rates for women have been lower than those for men. This contradicts the hypothesis that women, especially married women, tend more easily to prolong voluntary unemployment and are more inclined to live on UI benefits. However, women also have fewer chances to be affected by benefit denial because fewer jobs are offered to them.

Persons who had refused jobs a number of times above average were, in general, re-integrated into the labour market, while fewer of those who after a year were still unemployed or again out of work, had done so. This supports the hypothesis that 'voluntary' unemployment plays only a secondary role particularly among the long-term unemployed.

The analysis of West-German unemployment does not indicate any significant impact of UI benefits when recent years of high levels of unemployment are included. Overall unemployment has been growing in spite of decreases in the precentage of income replacement by UI. The rise in the rate of unemployment has to be explained by factors other than UI benefits. The most probable cause of increased unemployment is longer average duration because of a reduction in the probablity of being re-employed from the unemployment register. The empirical analysis for the FRG clearly shows that unemployment is mainly determined by the number of available vacancies and output growth.

A look at the socio-economic structure of the unemployed hardly supports the hypothesis that unemployment is significantly induced by UI benefits. Unemployment has risen over proportionately in those marginal groups of the labour market that have the lowest compensation or no compensation by UI. Youth unemployment has increased, but persons in search of first employment cannot claim UI payments. During recessions employers diminish their labour force in response to declining demand. The increasing female unemployment in all countries reflects a significant

growth in female labour force participation, but it also shows that women, especially married women, have been employed as a reserve army of labour. As the figures in Chapter 2 show, female unemployment has much greater cyclical fluctuation than male. Unemployment among unskilled workers has been particularly high. They form the bulk of unemployed in the recent recession. Their possibilities of re-employment have deteriorated and consequently the duration of unemployment is higher than average.

People with low earnings previous to joblessness have been hit most severely by unemployment. Pre-unemployment income of registered unemployed is, on average, substantially lower than the income of employed workers. This is the case for unskilled workers and young people, but also pre-unemployment income of the female unemployed is considerably lower than that of the male unemployed. But for low-earning groups a cut in income is more strongly felt and even income replacement by regular UI benefits gets them close and sometimes below the poverty line. In fact, surveys reveal that the majority of the unemployed suffer financial hardship and there is little reason to believe that they voluntarily choose unemployment. Increased leisure time can only be enjoyed if enough income is available to spend on the leisure pursuits chosen by an individual. Enforced leisure on an inadequate income would hardly be an attractive proposition. For the majority of unemployed UI benefits do not seem to provide sufficient incentive to remain out of work over longer periods. Even if a small part of the unemployed prefer unemployment compensation to a job, their existence is relevant for the problem of unemployment only in the sense that it determines who of the unemployed is the first to obtain a job offer, which in any case are insufficient.

8.2 Comparing the Effects of UI in the FRG, the UK and Italy

The time series analysis applied to British and West German unemployment data leaves some doubts as to whether the approach can provide reliable estimates of the effects of UI on unemployment. In the absence of any comparable groups with different eligibility for UI benefits, cross-country comparisons may provide indications on the effects of UI. However, the type of empirical analysis that has been conducted for the UK and the FRG is, for a number of reasons, not

applicable to the Italian case. No comparable system of income compensation exists for the unemployed, and data on unemployment are insufficient because of the high unregistered unemployment. The very distinct features of Italian UI schemes would require a completely different type of quantitative analysis. Estimations of the effects of UI on unemployment in the FRG have been carried out in this thesis while the comparative analysis refers for the UK, to those studies which have recently been made and have been described in an earlier chapter. Similar to M. Sawyer's findings for the UK, the empirical analysis for the FRG does not support the hypothesis that UI benefits induce unemployment on aggregate level. In both countries only specific equations and data of a particular period of time have found significant coefficients for the replacement ratio, but in general, there is little evidence that UI increases overall unemployment.

In addition to empirical evidence from national studies, a comparision of countries with different systems of social security for the unemployed may improve the understanding of the impact of UI. While the FRG and the UK both provide relatively generous income compensation to the unemployed, Italy protects employment rather than unemployment. An analysis of the three countries is of interest in view of their different social security schemes and the differences in the development of unemployment. It may indicate what changes can be expected on the Italian labour market if UI schemes were adjusted to the standards of other industrialised countries. These findings may also have some relevance in respect to a coordination of economic and social policy in the framework of the European Community. The comparison of employment and unemployment should, however, be limited to a qualitative analysis. Problems concerning the comparability of data across countries are considerable. Quantitative estimates obtained from cross-section regression analysis are still less reliable than those obtained from time series analysis in a single country. The only attempt of an international comparison of UI benefits and unemployment showed so many weaknesses in data collection and adjustment that this approach must be refused for the analysis of UI and unemployment. 1/ Italian labour

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1/ See Maki, D./Spindler, Z. (1978)

force statistics especially are not appropriate for international comparisons of UI and unemployment. The size of the 'black' or unofficial labour market, which has been growing rapidly in Italy, renders historical as well as cross-country comparison of the data quite unreliable. Studies which calculated average income replacement ratios for Italy, in general, give too high a figure which is not representative of the bulk of the unemployed. Average UI benefits calculated for all registered unemployed do not show the whole picture because the most important component of Italian UI compensation for short-time working is not taken into consideration. Since in Italy UI benefits, their potential duration and eligibility rules differ among sectors of the economy any average replacement ratio is irrelevant for the analysis of overall uemmployment.

In none of the three countries under examination is it possible to conduct a good experiment which would allow us to establish the impact of UI on unemployment. It is also not simple to compare countries with unemployment benefit programmes, like the FRG and UK with countries without comprehensive programmes, since the latter always provides something as a substitute for UI; like in Italy the short-time compensation programme. But a comparative analysis of the three countries in respect to their systems of social security and the labour market performance evidences some of the relations between UI and unemployment.

International comparisons of unemployment figures require adjustments of definition and measurement. However, differences in the calculation of unemployment rates also indicate how important unemployment is for the economic policies of the respective countries and in what ways government have dealt with the problem. Labour market regulations and, particularly, the system of social security for the unemployed have a significant impact on measurement, level and distribution of unemployment. Different developments of employment in the three countries may, to some extent, be explained by differences in the UI schemes.

Table 17 and Figures 11 and 12 show the variations of employment and unemployment in the three countries. Since 1974, all three countries have been experiencing substantial increases in unemployment, while during the same period, employment has been decreasing only in the FRG. The reduction of the labour force can be explained mainly by re-migration of foreign workers but, to some extent, it has also resulted from a growing idleness that is not registered with the labour offices. In good times in the labour market, the potential and the actual labour force tend to be identical, but in times of cyclical downswings they tend to be different. In all three countries a rise in the population of working age has led to large entries into the work force, which in recent years could not entirely be absorbed by the labour market. Unemployment has risen but the extent to which it is reflected in official statistics differs. British Supplementary Benefits consisting of a flat-rate which is paid without previous employment records has for most population groups provided sufficient incentive to register as unemployed. The FRG and Italy do not provide unemployment payments to people searching first employment. This explains their higher levels of unregistered unemployment particularly among the youth. There is little incentive to register with the labour offices when unemployment compensation cannot be claimed, and there is still less if registering does not provide opportunities for finding employment. 'Hidden' unemployment has increased in the FRG mainly because youth unemployment has recently become a more serious problem. Due to its entirely insufficient social security schemes for the unemployed - as well as because of other labour market characteristics - Italy has always experienced a higher level of unregistered and illegal employment.

The availability of UI benefits may induce people to register as unemployed even when they are not seriously searching employment. This is especially the case when the period of unemployment is regarded as a transitional phase to another role, such as pensioner, military service, or housewife. The latter group may be more relevant among registered unemployed in the FRG as in the UK a greater portion of married women is not eligible for benefits. Therefore, the introduction of ERS in the UK did not increase unemployment registering of women to the same extent as of men. However, in spite of a more generous provision of UI

TABLE 17: EMPLOYMENT AND UNEMPLOYMENT IN THE FRG, ITALY AND THE UK

	CIVILIAN EMPLOYMENT			UNEMPLOYED		
	FRG	ITALY	U.K.	FRG	ITALY	U.K.
1960	26518	21404	23980	271	1546	377.2
1961	26772	21373	24265	181	1407	346.5
1962	26845	21137	24591	155	1162	467.4
1963	26930	20690	24726	186	1069	558.0
1964	26922	20669	24871	169	1087	404.0
1965	27034	20415	25075	147	1180	347.1
1966	26962	20183	25215	161	1115	361.0
1967	26409	20313	25073	459	1024	556.6
1968	26291	20352	24978	323	961	583.3
1969	26535	20167	24990	179	887.2	576.3
1970	26817	20248	24928	149	887.6	612.0
1971	26910	20204	24755	185	1038.1	792.1
1972	26901	20092	24823	246	1047.8	875.6
1973	26985	20290	25184	273	1004.8	618.8
1974	26797	20522	25257	582	997.2	615.1
1975	26397	20759	25459	1074	1106.9	977.6
1976	26148	21079	25757	1060	1181.7	1358.8
1977	26074	21392	26000	1030	1379.6	1483.6
1978	26223	21503	25998	993	1528.6	1475.0
1979	26424	21985	26146	876	1642.0	1391.0

SOURCE : EUROSTAT

FIGURE 11: EMPLOYMENT IN THE FRG, ITALY AND THE UK

CIVILIAN EMPLOYMENT FRG PLOTTED WITH (+)
CIVILIAN EMPLOYMENT ITALY PLOTTED WITH (*)
CIVILIAN EMPLOYMENT U.K. PLOTTED WITH (o)

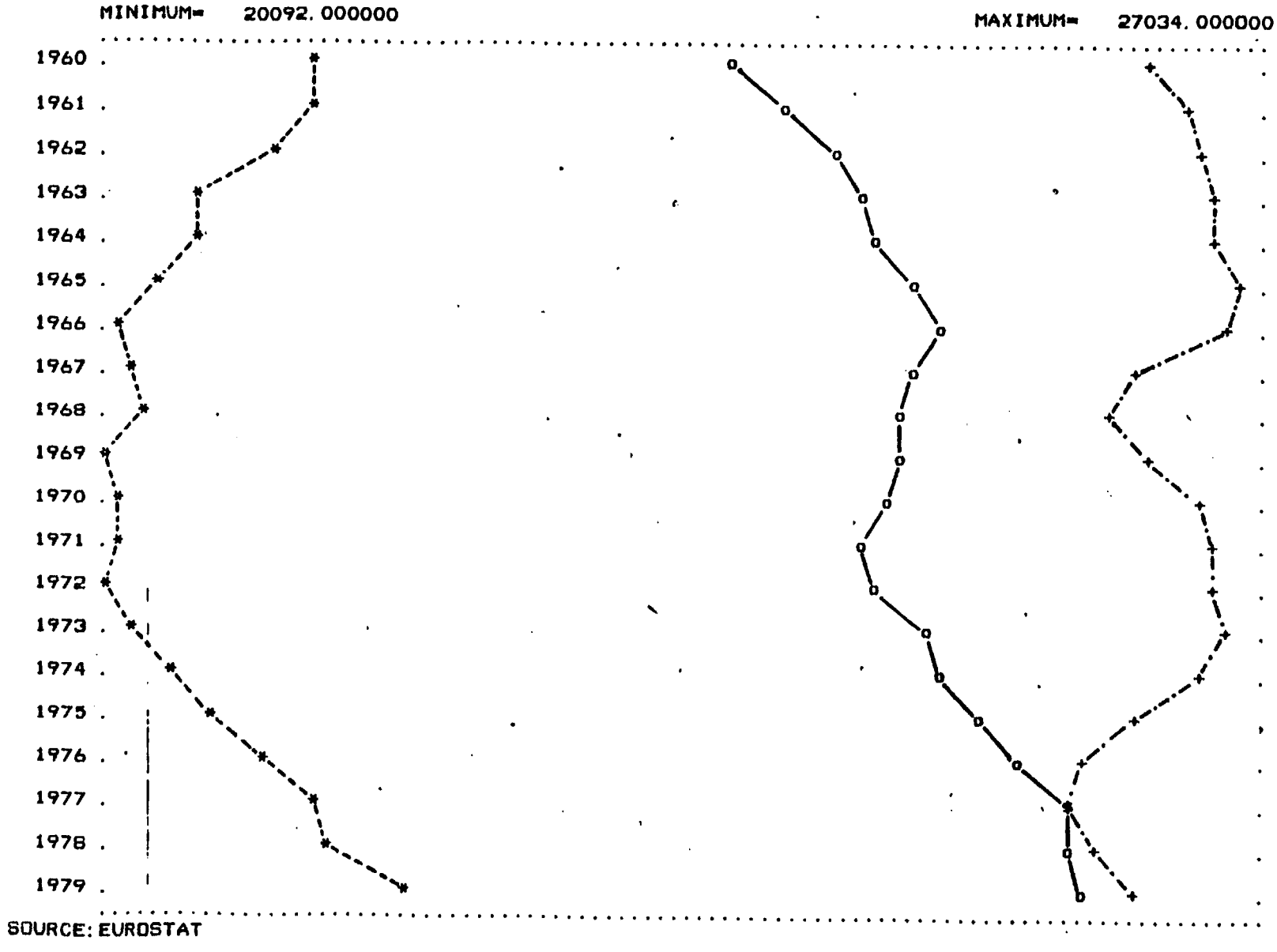
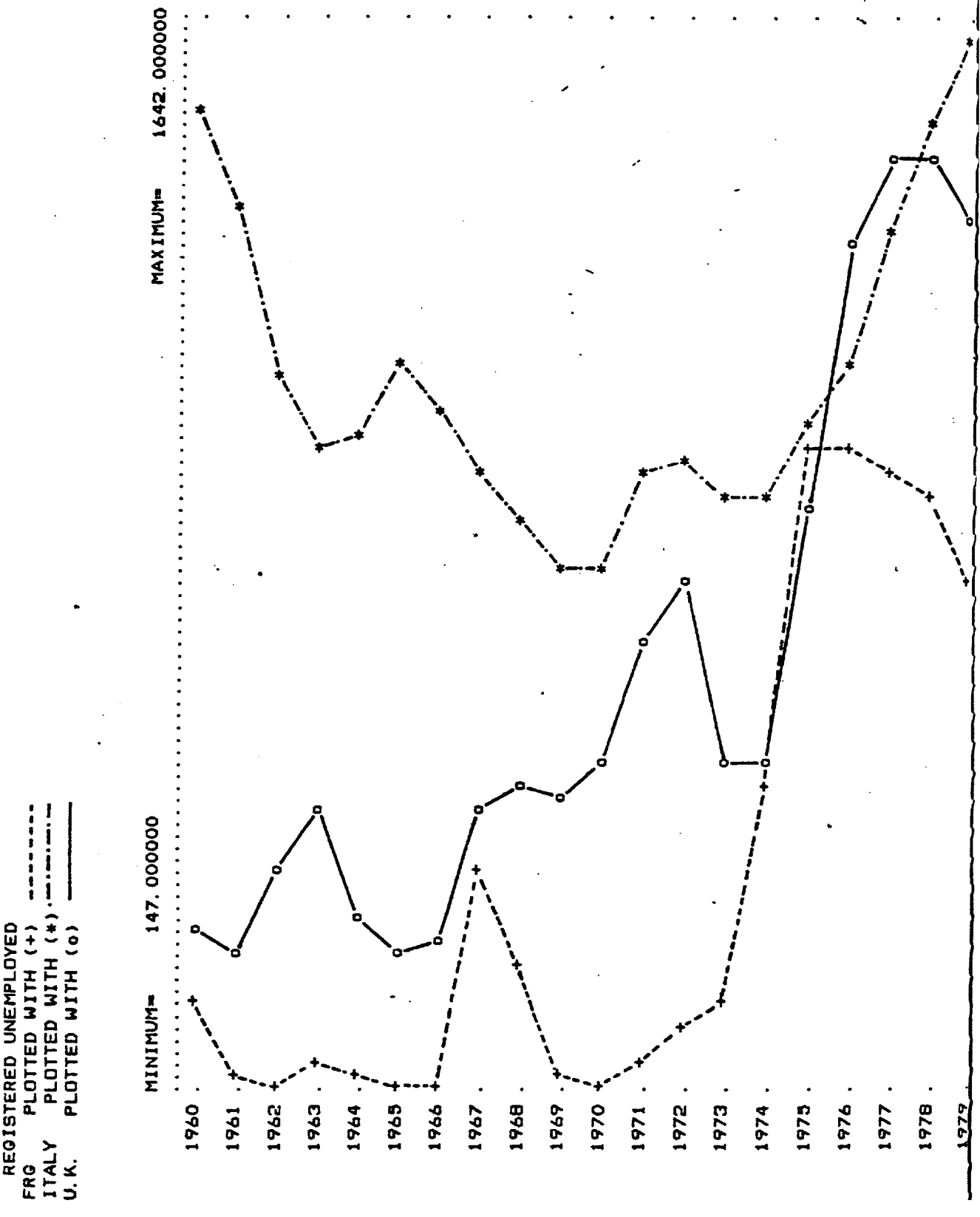


FIGURE 12: UNEMPLOYMENT IN THE FRG, ITALY AND THE UK



benefits in the UK a substantial number of unemployed do not register as comparisons between the registered unemployed and those who regard themselves as unemployed in the General Household Survey show. In the UK Supplementary Benefits are also paid to persons who are unable or explicitly unwilling to work. In the FRG they would normally qualify for some other type of welfare programme and thus not be counted among the unemployed.

The relatively liberal British system of unemployment compensation in which the work test is merely applied can be assumed to induce relatively higher registering of unemployment. There is, however, no evidence that the UI scheme really induces unemployment in the sense of voluntary quittings and of prolonged duration of unemployment. It is only that more people decide to join or stay in the unemployment register. Thus effects of UI are more a statistical phenomenon than a matter of the labour market. According to data on denial rates, the enforcement of eligibility rules appears to be stricter in the FRG. Persons who are unable and unwilling to accept jobs offered by the labour office are excluded from the unemployment register faster than in the UK. Thus the statistical phenomenon of higher registering due to UI although existing is less accentuated in the German labour market.

Since in Italy UI benefits can be claimed only by relatively few unemployed persons, there is little incentive for people who are out of work and who are not seriously searching employment to register. Thus, registered unemployment is lower and 'hidden' unemployment is more relevant than in the FRG or the UK.

Particularly in the UK and the FRG there exists a 'quasi fixed' number of unemployed workers aged 55 years and above, of disabled persons and of women seeking part-time work. If unemployment benefits are not available or when UI payments cease these groups will withdraw from the labour market. They may still be willing to take up employment and will again appear on the labour market when economic recovery starts. But without a claim on UI benefits they may not take the trouble to register as unemployed. These secondary labour market groups are hardly

represented in Italian unemployment statistics. When UI benefits are not available many unemployed persons withdraw from the labour market and will often assume alternative roles like housewives and in home production or seek compensation from other social security schemes, such as old age or invalidity pensions.

Many differences in registered and 'hidden' unemployment which exist among countries can be expected to disappear when social security schemes for the unemployed are more equalized. In Italy registered unemployment can be assumed to rise considerably if a comprehensive UI system is introduced. But this effect would rise from a higher registering and not because of unemployment that is induced by UI.

It is misleading to look only at unemployment rates to judge how well labour markets are functioning. Other factors must be considered such as variations in the labour supply and the under-utilization of labour through short-time working. Italy has not experienced a similarly rapid increase in employment as other Western European countries whereas the rise in the number of hours compensated for short-time working has been considerable. Employment did not decrease in the past since, instead of dismissals, short-time working was applied. The Italian labour market has practically been closed for new entrants and, therefore, is faced with high youth unemployment. People in search of first employment constitute the majority among the unemployed. According to ISTAT data, in 1979 little more than 16 percent of the persons seeking employment had been employed previous to unemployment. An under-utilization of labour has absorbed most of the decrease in employment. This development has been the result of the opposition of the labour unions to dismissals of any kind due to the absence of an adequate social security system. The impact of unemployment subsidies is quite irrevalant in Italy. The welfare programme which has been the main tool in assisting the unemployed is represented by the compensation subsidies for short-time working. The worker is not laid off, he remains part of the personnel of the firm and will be fully employed again as soon as demand recovers. In recent years the unions have played a vital role by introducing factors of rigidity into the labour market. They have

made it more difficult for employers to dismiss workers and social insurance contributions and labour regulations in respect to short-time working have been implemented. The low mobility and the high protection of jobs in the Italian labour market, coupled with insufficient income compensation in unemployment have led to increasing inequalities in the labour market to the disadvantage of new entrants. Employment has to be protected because financial security in unemployment is not provided. The Italian social security schemes have a considerable impact on the way unemployment is distributed among the labour force. The decrease in demand for labour in the presence of demographic changes has produced high youth unemployment. The burden of lower economic activity has been shifted to the group of people who are seeking employment and particularly to the youth who are not eligible for UI benefits.

Different types of social security for the unemployed have resulted in different degrees of labour market segmentation in the three countries. In the FRG unemployment has been concentrated on marginal groups of the labour market, mainly unskilled workers, old people and married women because they have been the first to be dismissed when production decreased. They are, to some extent, and for some time, protected by UI. But many of them become long-term unemployed and may withdraw from the labour merket when UI payments cease. In Italy labour market legislation and compensation for short-time working have placed the burden of diminished economic growth on those who have never been employed. Members of this labour market group can find income possibilities only in unstable employment which is not protected by normal labour legislation. They will either assume temporary jobs or join the illegal 'black' labour market (the 'economia sommersa'). While the FRG has managed to export a part of her unemployment through a reduction in the number of migrant workers until the late 1970s, the UK has experienced an unprecendented increase in unemployment in all labour market groups. Unemployment compensation is provided theoretically to all who are in need, although the Government has more and more cut benefits in reaction to the massive increase in welfare expenditures.

In general, employers can be assumed to be less reluctant to dismissals if a comprehensive UI system exists. Correspondingly also the

labour unions' strategy in respect to job protection will be influenced by the availability of unemployment benefits. In the FRG income replacement is sufficiently high to make unemployment - at least short spells - acceptable from a social point of view. The British social security system is more comprehensive but payments are low and often merely reach the subsistence level. In both countries unemployment is concentrated on the secondary labour force, as less productive workers are, in most cases, the first to be laid off. In Italy the absence of an adequate social security scheme for the unemployed has brought about lower labour market mobility. In order to match growing demand enterprises tend to hoard labour when demand falls. The cost of labour hoarding is, however, reduced by short-time working subsidies while the economy as a whole bears the burden of an inefficient production structure. Lay offs are unacceptable for labour unions because income losses in unemployment are not compensated. Consequently, unemployed workers face great difficulties in finding new job openings because of labour market rigidities and extremely low turnover rates. Youth unemployment has not become a similarly serious problem in the FRG as it is in Italy, since duration of unemployment among young workers has been lower than average. But in both countries the fast rise of unemployment among young labour market participants is of increasing concern, particularly because in most cases income maintenance has to be provided by their families.

West German and British unemployment rates react more quickly to output fluctuations than Italian rates because of a smaller incidence of economic, moral and legal sanctions against lay offs and discharges. The immediate response to macro-economic disturbances appears to be much greater in countries where legal and traditional sanctions against temporary and permanent lay offs are prevailing. In the United States the unemployment rate reacts rapidly to disturbances in GNP while in the FRG, labour force response is small. Contrary to the Italian economy, the comprehensive UI system of the US results in high fluctuations in employment being socially acceptable. In the FRG the flexibility of labour supply has acted as a cyclical shock absorber, helping to keep unemployment rates low during recession. The reduction in foreign employees has been due for the most part to a re-migration, but to some extent also to

an increasing number of unemployed foreigners who do not register often because of ignorance and lack of information on how to claim UI benefits. Recently the outflow of workers has not been as great as in the previous recession. As migrant workers became progressively aware of being eligible for UI, unemployment benefits exceed any wage they can hope to receive at home. The growing tendency for unemployed foreign workers to remain in the host country has contributed to the sharp rise in unemployment rates recorded recently in the FRG. Foreign workers now present a significant unemployment problem. The UK had less possibilities of exporting unemployment. As Figure 11 shows, civilian employment has shown lower fluctuations than in the FRG and the decrease in demand for labour had less effect on the supply side. In spite of the economic downswing Italian labour force and employment have continued to rise. To some extent the importation of unemployment occurred as quite a number of migrant workers have returned to Italy. Subsidies from the state for short-time working have enabled numerous enterprises to maintain their employment levels and limit dismissals. The lack of an appropriate UI scheme in Italy has led to inefficiencies and immobility in the labour market. Different levels and structures of unemployment in the three countries can be traced back to different economic factors and different features of the labour market. But the main reasons for the actual increases in unemployment in most industrialized countries lie in lower demand for labour due to the considerable decrease in the demand for commodities and services and hence a lower production level. Demand deficiency coupled with structural factors appear to be the main causes for lower levels of employment. Increases in unemployment benefits and the number of secondary earners for instance may increase search activity and possibly increase the rate of unemployment independently of any changes in labour demand. But when unemployment levels are high, the availability of UI benefits cannot be considered as an important contribution to the explanation of unemployment. UI compensation may have a small impact on individual search unemployment, but the impact on aggregate unemployment appears to be insignificant. The UK, the FRG and also to a lesser extent Italy, have recently experienced an unprecedented increase in unemployment although UI benefits have not risen in real terms, but in some instances have even undergone cuts.

A comparison of the three countries evidences that Italy has had high unemployment over long periods in spite of fundamental insufficiencies in its social security schemes for the unemployed, whereas countries with far more generous UI provisions managed for quite some time to keep unemployment low.

It can be concluded that UI benefits have only minor effects on unemployment through prolonged job search while the initiation of spells is an exception because of waiting periods previous to benefit receipt. The empirical analysis on the impact of UI on unemployment in this thesis does not confirm findings from studies of the Grubel/Maki type which put forward that a significant portion of labour unemployment arises from the withholding of supply rather than from a lack of demand. Cross-country comparisons indicate that the availability and the type of unemployment compensation, rather than having an effect on the supply of labour, determine the distribution of unemployment among different segments of the labour market . The extension of coverage by the UI system determines what portions and which groups among the unemployed will register when out of work. When vacancies are scarce few unemployed persons will be able to shorten unemployment in response to a denial of benefits. But many will end registering if no income compensation can be claimed and thus they will appear with shorter duration in unemployment statistics. The prevailing types of social security scheme, combined with other labour market legislations determine which labour market segments are mainly affected by unemployment. In countries which have enacted comprehensive UI schemes unemployment appears to be more equally distributed among labour market participants, while in the absence of an adequate UI system, unemployment is concentrated on marginal groups with low bargaining power. This in turn indicates that job turnover rates are higher when UI benefits are made available. Without unemployment compensation fluctuations in employment would be lower due to more reluctance to layoffs.

Although only briefly mentioned in this thesis, the role of UI as demand stabilizer appears to be an important one which may offset any negative effect of UI benefits on labour supply.

8.3 Conclusions

When unemployment rates are rising to such levels as we are experiencing now in Western European countries, the effect of UI on aggregate unemployment can be assumed to be negligible. Empirical findings lead to the conclusion that unemployment levels in the UK and the FRG would at present be approximately the same if UI benefits were not available. The main difference can be expected in the proportion of unemployed persons registering with the labour offices. 'Hidden' unemployment and the 'discouraged workers effect' would become more accentuated. Since people out of work would in some way have to bring up the means for living, a lack of social security for the unemployed would result in various forms of under-employment and unofficial labour, similar to that observed in Italy. In the discussion on disincentive effects of unemployment compensation, we should not forget that the explicit objective of the UI system is to provide temporary income maintenance for unemployed workers, which keeps them from poverty and allows them to engage in productive job search. As there is no satisfactory way of drawing a distinction between the voluntary and involuntary unemployed, any attempt to do so within the current social security policies would only maximize the impact of sanctions on those who are, anyway, in the weakest position in the labour market. If a country's policy aims at a tight network of social security for the unemployed it has also to accept a certain part of unemployment which is not entirely involuntary.

Public discussion has placed emphasis on disincentive effects of UI benefits particularly when unemployment rates and consequently, expenditures on social security for the unemployed are high. Even in the presence of a rapidly increasing army of jobless workers, the argument of unemployment inducing effects of UI has remained a widely discussed issue. But empirical evidence shows that significant effects of UI benefits on labour supply can be expected mainly during periods of low unemployment. In recessions duration of unemployment appears to be far more affected by different risks and chances on the labour market than by the availability of UI benefits.

UI schemes and the level of benefits are a highly political issue. Unemployment has remained on high levels in all industrialized countries and in response to these developments, more restrictions have been imposed on compensation payments in unemployment. Although the main scope behind these saving measures has been the financial shortage of UI schemes, to some extent, they also reflect the discussion on disincentive effects of UI benefits. Table 1 indicates that expenditures by UI schemes in relation to GDP have fallen in spite of rising levels of unemployment.

In terms of the problem of unemployment in a recession one could also argue that the unemployed play a crucial role in bringing about the type of adjustment required to stimulate recovery. The cost of employment fluctuations should not be paid disproportionately by those who are unlucky enough to be unemployed. Thus society could rationally choose to bear part of the costs of unemployment as a matter of equity. It has been postulated that in the absence of UI benefits real wages would fall in the presence of high unemployment rates. But more recent developments have shown that cuts in real income are possible also when unemployment compensation is available. UI may lessen the pressure to reduce wages but it can stimulate consumer demand sufficiently to offset that effect.

A discussion of the effects of social security for the unemployed should not neglect the fact that UI schemes also provide for a 'social mollifier'. As long as the system of social security compensation for the total loss of income or for short-time working works to counteract the negative consequences of the economic crisis, those directly affected are not compelled to seek radical solutions for their problems. Experiences of the late twenties and early thirties have shown that the armies of unemployed deprived of any income sources are a serious political factor. 1/

1/ The rise of Fascism in Europe was certainly favoured by the desperation of the millions of unemployed. In Spring 1930 the Great Coalition in the Weimar Republic fell apart on the issue of financing the unemployment insurance, marking the end of the parliamentary republic in Germany.

High unemployment is not so much any more of public concern, even at such levels as we are presently experiencing, because social security provisions are so generous that great part of the unemployment is now considered as voluntary. Theoretical or empirical analysis which finds that unemployment is of voluntary nature or induced by UI benefits, will recommend passive or negative economic policies, i.e. the absence of fiscal and governmental interventions and reduction of UI benefits. If one accepts theories on deficient demand as the cause for unemployment, UI can, however, not be found to have any important impact on unemployment. UI benefits may rather be regarded in view of their demand creating effects. But empirical findings on the impact of UI on unemployment are still too ambiguous to justify decisions which intend to reduce unemployment by cutting UI compensation or by denying it to certain groups. More research in respect to voluntary unemployment and disincentive effects of UI is needed in order to formulate appropriate policies on social security schemes for the unemployed.

APPENDIX A

Calculation of Replacement Ratios

REPL1 has been calculated as the total monthly expenditures on UI benefits per registered unemployed divided by the average monthly net income of all employed persons.

REPL2 has been calculated in the same way but with the average income of all unemployed persons before unemployment (AVWUNM) in the denominator. The only data available on income before unemployment are distributions of the weekly income of the registered unemployed. The statistics are classified according to income groups which are generally quite large (in some cases more than 30 percent of all observations are included in one group). The amounts are very much approximated. Upper income classes are open, but often high percentages of the observations are in this group. Because of the quite limited exactness of available data and open marginal groups, a median rather than the means was chosen for the computation of average incomes before unemployment. Income distributions are separate for recipients of unemployment aid and benefit (Arbeitslosenhilfe and -geld) and for males and females. The incomes before unemployment of recipients of UI benefits (AVWBEN) and of UI aid (AVWAID) are weighted averages of the salaries of male and female recipients. AVWUNM then has been calculated as a weighted average of the income that UI benefit and aid recipients had previous to unemployment.

REPL3 is the ratio of average UI benefit per UI recipient in relation to average income of all employed persons.

In REPL4, half of the contributions to health insurance paid by the UI scheme has been subtracted from the total expenditures on UI. Since benefits are related to net income, they should not include those contributions to social security that normally have to be paid by the employer.

REPL5 is similar to REPL4 but UI benefit is an average calculated for all recipients.

REPL6 has the same nominator as REPL5 but the average income before unemployment is in the denominator.

REPL7 and REPL8 are calculated for a hypothetical average UI benefit. The incomes of UI recipients previous to unemployment are multiplied with the potential income replacement by UI and weighted according to the distribution of aid and benefit recipients. REPL7 is the ratio of this hypothetical average benefit to average income of the employed, REPL8 to average income before unemployment.

REPL9 is a ratio of the hypothetical UI benefit for all unemployed people (including non-recipients) to average income.

The first six ratios show very similar variations, although at different levels. Reasons for the smaller fluctuations of the ratios which have been calculated from hypothetical benefits lie in the changing composition of the unemployed in respect to income level, eligibility and family support, as has been described in Chapter 6.1. A considerable number of UI recipients does not obtain the full potential percentage of income compensation.

```
SMPL 55 79 ;
MAKEID 1955 ;
GENR REPL1=(((EXBEN+EXAID)*1000)/12)/UNEMP)/AMINC ;
GENR BEN1=(((EXBEN+EXAID)*1000)/12)/UNEMP) ;
GENR AVWBEN=(AVW1*(MUNEMP/UNEMP))+(AVW2*(FUNEMP/UNEMP)) $
GENR AVWAID=(AVW3*(MUNEMP/UNEMP))+(AVW4*(FUNEMP/UNEMP)) $
GENR REC=REBEN+READ $
GENR AVWUNM=((AVWAID*(READ/REC))+(AVWBEN*(REBEN/REC)))*4 $
GENR REPL2=BEN1/AVWUNM $
GENR REPL3=(((EXBEN+EXAID)*1000)/12)/REC)/AMINC $
GENR BEN4=(((EXBEN+EXAID)-(KVERS/2))*1000)/12)/UNEMP $
GENR REPL4=BEN4/AMINC $
GENR BEN5=(((EXBEN+EXAID)-(KVERS/2))*1000)/12)/REC $
GENR REPL5=BEN5/AMINC $
GENR REPL6=BEN5/AVWUNM $
GENR REPBEN=(((EXBEN*1000)/12)/REBEN)/(AVWBEN*4) $
GENR REPAID=(((EXAID*1000)/12)/READ)/(AVWAID*4) $
GENR BEN6=(((0.68*(AVWBEN*4))*(REBEN/REC))+((0.58*(AVWAID*4))*(READ/REC)))$
GENR REPL7=BEN6/AVWUNM $
GENR REPL8=BEN6/AMINC $
GENR REPL9=(BEN6*(REC/UNEMP))/AMINC $
```

	[illegible]	0. 327875	0. 339711	0. 257320	0. 308557	0. 357104
1961	0. 409575	0. 471408	0. 518413	0. 373407	0. 472634	0. 543987
1962	0. 420949	0. 472615	0. 534685	0. 371399	0. 471859	0. 529900
1963	0. 428911	0. 462366	0. 561812	0. 366984	0. 480698	0. 518193
1964	0. 380991	0. 423497	0. 532128	0. 333367	0. 465612	0. 517559
1965	0. 372051	0. 429245	0. 501757	0. 324884	0. 438146	0. 505500
1966	0. 341006	0. 383993	0. 513102	0. 303328	0. 456409	0. 513944
1967	0. 463106	0. 559541	0. 597094	0. 420639	0. 542341	0. 655277
1968	0. 489041	0. 559068	0. 644735	0. 434256	0. 572508	0. 654488
1969	0. 463198	0. 554214	0. 623402	0. 391779	0. 527281	0. 630888
1970	0. 454733	0. 573142	0. 599604	0. 380414	0. 501608	0. 632222
1971	0. 435666	0. 551667	0. 597024	0. 363825	0. 498575	0. 631326
1972	0. 445510	0. 537816	0. 619183	0. 375242	0. 521522	0. 629577
1973	0. 408504	0. 493950	0. 630066	0. 341482	0. 526693	0. 636859
1974	0. 439330	0. 526955	0. 652567	0. 375306	0. 557215	0. 668050
1975	0. 500766	0. 574422	0. 658290	0. 430962	0. 566528	0. 649857
1976	0. 469697	0. 529755	0. 639125	0. 414376	0. 563849	0. 635947
1977	0. 426626	0. 472308	0. 610312	0. 376614	0. 538768	0. 596459
1978	0. 419181	0. 480576	0. 618494	0. 369738	0. 545542	0. 625445
1979	0. 412586	0. 479155	0. 621006	0. 363917	0. 547751	0. 636128
	1	2	3	4	5	6

	REPL7	REPL8	REPL9
1960	0. 658911	0. 569334	0. 474795
1961	0. 664655	0. 577475	0. 456237
1962	0. 667407	0. 594304	0. 467775
1963	0. 669730	0. 621270	0. 474303
1964	0. 668818	0. 601689	0. 430795
1965	0. 670292	0. 580981	0. 430795
1966	0. 671185	0. 596048	0. 396131
1967	0. 670331	0. 554801	0. 430303
1968	0. 660321	0. 577611	0. 438126
1969	0. 660951	0. 552406	0. 410447
1970	0. 666860	0. 529090	0. 401256
1971	0. 670058	0. 529163	0. 386146
1972	0. 669893	0. 554919	0. 399271
1973	0. 668987	0. 553263	0. 358709
1974	0. 671329	0. 559950	0. 377149
1975	0. 667891	0. 582250	0. 442922
1976	0. 659905	0. 585091	0. 429986
1977	0. 657984	0. 594342	0. 415462
1978	0. 657504	0. 573505	0. 388690
1979	0. 658469	0. 566988	0. 376697

APPENDIX B

Box-Cox Transformation

The following relation shall be transformed in order to find out whether UNR or lnUNR should be chosen as dependent variable,

$$\frac{y_\alpha^{\lambda} - 1}{\lambda} = \beta_o + \beta_1 \; x_{\alpha 1} \cdots \beta_k \; x_{\alpha \; k} + \varepsilon_\alpha$$

where y_α is the dependent variable in a regression model with $y_\alpha > 0$, $\alpha = 1,2, \ldots n$. The β's and λ are unknown parameters, the x's are observations on the independent variables and ε_α is the error term. For $\lambda = 1$ $(y_\alpha^{\lambda} - 1)/\lambda = y_\alpha - 1$ and the model is linear in the y. For $\lambda = 0$ $(y_\alpha^{\lambda} - 1)/\lambda = \ln y_\alpha$. [+)] In this case the model has ln y as the dependent variable. For other values of λ powers of y appear as the dependent variable. Since λ is an unknown parameter it is estimated along with the other unknown parameters β and the variance σ^2. Information in the data is used to determine the appropriate transformation of y. This estimation problem can be solved by using the maximum likelihood method.

$$L_{max}(\lambda) = \text{const.} + (\lambda - 1) \sum_{\alpha=1}^{n} \ln y_\alpha - \frac{n}{2} \ln \hat{\sigma}^2 \; (\lambda)$$

$$= (\lambda - 1) - \frac{\ln \hat{\sigma}}{2} \quad .$$

$L_{max}(\lambda)$ can now be calculated for various values of λ until we find the value, say $\tilde{\lambda}$ for which the equation attains its maximum value. The calculations have been carried out for the equation

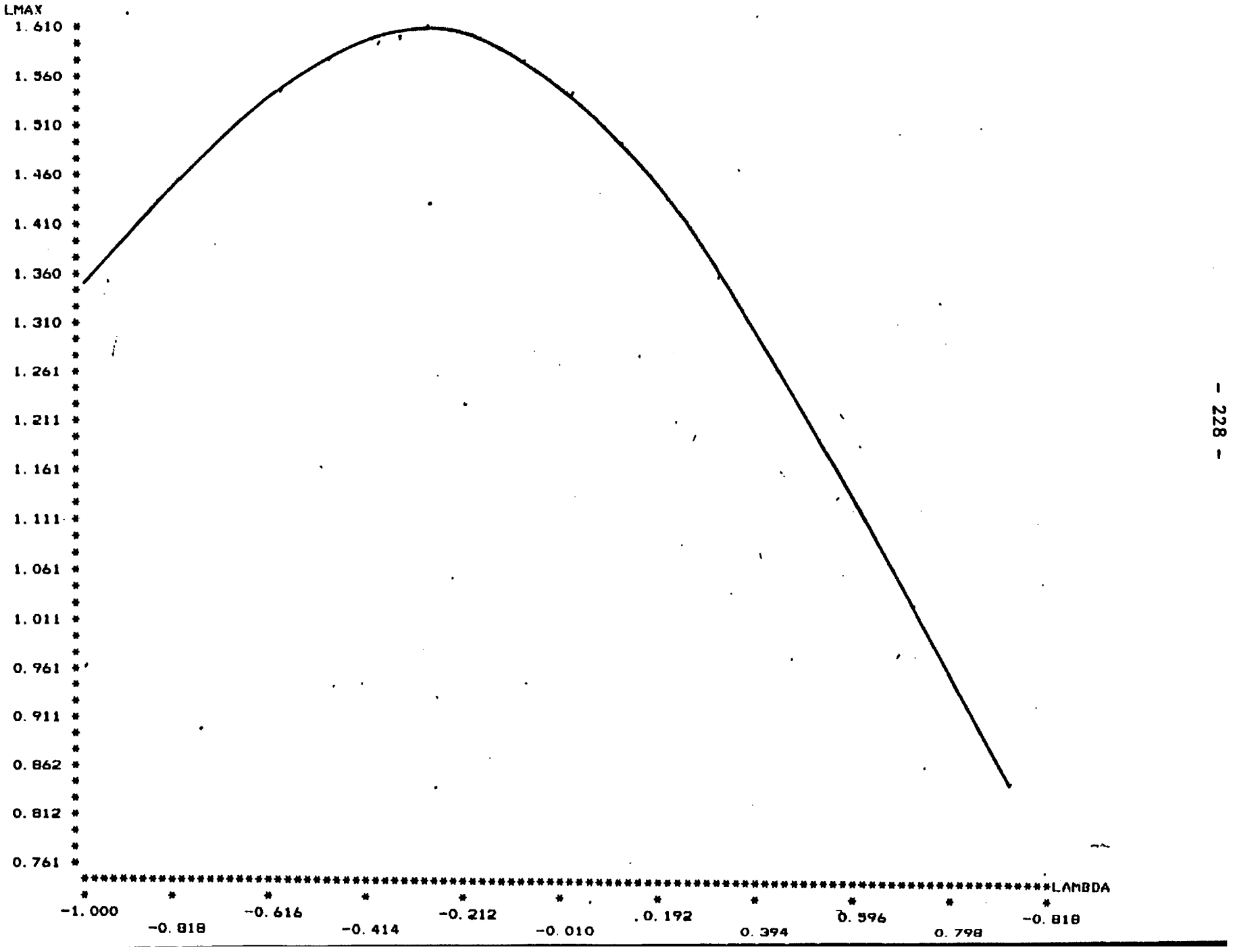
---

+) $\lim_{x \to o} \frac{a^x - 1}{x} = \ln a$

$$UNR = \beta_o + \beta_1 REPL + \beta_2 DENI\ \beta_3 PCOV + \beta_4 PCGNP + \beta_5 PCGNP_{-1}$$

The figures and the plot of the λ's against $L_{max}(\lambda)$ show that the maximum value is close to $\lambda = 0$. Thus the choice of $\ln y_\alpha$ as dependent variable is justified.

	LMAX	LAMBDA	$\hat{\sigma}$
1	0.971816	-1.00000	0.564400
2	1.41236	-0.900000	0.252980
3	1.46527	-0.800000	0.246200
4	1.51327	-0.700000	0.241960
5	1.55466	-0.600000	0.240960
6	1.58737	-0.500000	0.244170
7	1.60914	-0.400000	0.252890
8	1.61801	-0.300000	0.268770
9	1.61243	-0.200000	0.294020
10	1.59176	-0.100000	0.331500
11	1.55620	0.000000	0.385060
12	1.50713	0.100000	0.459520
13	1.44639	0.200000	0.561318
14	1.37618	0.300000	0.698796
15	1.29861	0.400000	0.882830
16	1.21559	0.500000	1.12756
17	1.12868	0.600000	1.45140
18	1.03905	0.700000	1.87839
19	0.947640	0.800000	2.43971
20	0.855077	0.900000	3.17607
21	0.761819	1.00000	4.14044
	1	2	3


LMAX
1.610
1.560
1.510
1.460
1.410
1.360
1.310
1.261
1.211
1.161
1.111
1.061
1.011
0.961
0.911
0.862
0.812
0.761
LAMBDA
-1.000
-0.818
-0.616
-0.414
-0.212
-0.010
0.192
0.394
0.596
0.798
-0.818

APPENDIX C

List of Variables and Sources of Data

ADUR - Average duration of spells of unemployment in months, in September (ANBA, various issues, and calculations by the IAB).

AMINC - Monthly net income per average employed worker, in DM (Statistisches Jahrbuch der Bundesrepublik Deutschland, various volumes)

AVWUMN - Average monthly income of UI recipients before unemployment, in DM (ANBA, own calculations)

BEN - Average UI benefit of all unemployed persons, in DM

CDUR - Duration of completed spells of unemployment in months, in September (calculations by the IAB)

COV - Employees covered by the UI scheme, in '000 (ANBA, various issues)

DENI - Denial rates, waiting periods because of voluntary quitting and refusals of job offers as percentage of flows into unemployment (Egle, F. (1979) and ANBA, various issues, own calculations)

EMP - Employed persons, in '000 (Statistisches Jahrbuch der Bundesrepublik Deutschland, various volumes)

EXAID - Yearly expenditures on unemployment aid, in million DM (ANBA, various issues, own calculations)

EXBEN - Yearly expenditures on unemployment benefits, in million DM (ANBA, various issues)

GNP - Gross national product, actual prices, in billion DM (Statistisches Jahrbuch der Bundesrepublik Deutschland, various volumes)

ILSET - Labour force index multiplied by productivity, (TOTLA/TOTLA $_{1960}$) X PROD

INEL - Ineligibility for UI benefits, residual from an equation with the denial rates as the dependent variable and the current and one-period lagged percentage change in real GNP as the independent variables

KVERS - Contributions to the health insurance schemes by UI, in million DM (ANBA, various issues)

MGSAL - Monthly gross salary per average employed worker, in DM (Sachverständigenrat, Jahresgutachten, various issues)

NPOP - Population bot atrributable to the primary segment of the labour market - population excluding males between 25 and 55 years in '000 (Statistisches Jahrbuch der Bundesrepublik Deutschland, various volumes)

P - Activity rate (TOTLA/POP)

PCGNP - Percentage changes in gross national product in 1970 prices; before 1960 GNP in 1962 prices, excluding West Berlin and the Saarland (Sachverständigenrat, Jahresgutachten,various issues)

PCOV - Percentage of total labour force covered by UI

PI - Price index for a four person household, 1970 = 100 (Sachverständigenrat, Jahresgutachten, various issues)

POP - Total population, in '000 (Statistisches Jahrbuch der Bundesrepublik Deutschland, various volumes)

PROD - Productivity, output per person in 1970 prices (Sachver ständigenrat, Jahresgutachten, various issues)

READ - Recipients of unemployment aid, in '000 (ANBA, various issues)

REBEN - Recipients of unemployment benefit, in '000 (ANBA, various issues)

REC - UI recipients, in '000 (ANBA, various issues)

REPL - Replacement ratio; average UI benefit in relation to average income (own calculations, see above)

TOTLA - Total labour force in '000 (OECD, Labour Force Statistics, various volumes)

UNEMP - Registered unemployed, in '000 (ANBA, various issues)

UNF - Persons entering unemployment, in '000 (ANBA, various issues)

UNR - Unemployment rate, UNEMP/(EMP + UNEMP) x 100

VAC - Notified vacancies in '000 (ANBA, various issues)

VACPEMP - Vacancies per employed persons, VAC/EMP

		UNEMP	EMP	TOTLA	UNR	UNF
1955	.	928.000	16840.0	23758.0	5.22287	0.000000
1956	.	761.000	17483.0	24196.0	4.17123	0.000000
1957	.	662.000	17992.0	24602.0	3.54884	0.000000
1958	.	764.000	18188.0	24807.0	4.03124	0.000000
1959	.	540.000	18508.0	24857.0	2.83494	0.000000
1960	.	271.000	20257.0	26518.0	1.32015	0.000000
1961	.	181.000	20730.0	26772.0	0.865573	2148.00
1962	.	155.000	21032.0	26845.0	0.731581	1894.00
1963	.	186.000	21261.0	26930.0	0.867254	2002.00
1964	.	169.000	21484.0	26922.0	0.780492	1578.00
1965	.	147.000	21757.0	27034.0	0.671110	1422.00
1966	.	161.000	21765.0	26962.0	0.734288	1694.00
1967	.	459.000	21054.0	26409.0	2.13359	2545.00
1968	.	323.000	21183.0	26291.0	1.50191	1790.00
1969	.	179.000	21752.0	26535.0	0.816196	1369.00
1970	.	149.000	22246.0	26817.0	0.665327	1296.00
1971	.	185.000	22414.0	26910.0	0.818620	1563.00
1972	.	246.000	22435.0	26901.0	1.08461	1662.00
1973	.	273.000	22564.0	26985.0	1.19543	1877.00
1974	.	582.000	22152.0	26797.0	2.56004	2795.00
1975	.	1074.00	21386.0	26397.0	4.78183	3450.00
1976	.	1060.00	21288.0	26148.0	4.74315	3256.00
1977	.	1030.00	21347.0	26074.0	4.60294	3315.00
1978	.	993.000	21605.0	26223.0	4.39419	3081.00
1979	.	876.000	21978.0	26424.0	3.83303	2844.00
		1	2	3	4	5

	ADUR	CDUR	EXBEN	EXAID	BEN	COV
1955	0.000000	0.000000	899.000	538.000	129.041	13555.0
1956	0.000000	0.000000	816.000	387.000	131.735	14015.0
1957	0.000000	0.000000	1056.00	344.000	176.234	14581.0
1958	0.000000	0.000000	1142.00	306.000	157.941	14743.0
1959	0.000000	0.000000	713.000	181.000	137.963	15951.0
1960	0.000000	0.000000	295.000	103.000	122.386	16239.0
1961	0.000000	0.000000	370.000	49.0000	192.910	16447.0
1962	0.000000	0.000000	365.000	35.0000	215.054	16693.0
1963	0.000000	0.000000	480.000	36.0000	231.183	16638.0
1964	0.000000	0.000000	416.000	36.0000	222.880	16713.0
1965	0.000000	0.000000	391.000	31.0000	239.229	17448.0
1966	3.91000	0.000000	401.000	47.0000	231.884	17418.0
1967	4.64000	1.66000	1642.00	141.000	323.711	16988.0
1968	7.58000	2.17000	1179.00	218.000	360.423	17452.0
1969	6.61000	1.99000	674.000	114.000	366.853	18981.0
1970	4.92000	1.52000	651.000	71.0000	403.803	20147.0
1971	4.25000	1.32000	868.000	75.0000	424.775	20484.0
1972	4.55000	1.59000	1284.00	114.000	473.577	20562.0
1973	4.95000	1.71000	1395.00	144.000	469.780	20957.0
1974	4.46000	1.96000	3557.00	320.000	555.126	20611.0
1975	5.96000	2.79000	7766.00	979.000	678.538	20139.0
1976	7.44000	3.66000	6906.00	1542.00	664.151	20121.0
1977	7.94000	3.54000	6283.00	1595.00	637.379	20192.0
1978	8.55000	3.73000	6270.00	1657.00	665.240	20474.0
1979	8.29000	4.01000	5820.00	1462.00	692.732	21044.0
	1	2	3	4	5	6

45 COMPLETE MODEL

	GNP	PCGNP	POP	NPOP	P
1955	1783.00	0.000000	0.000000	0.000000	0.000000
1956	1964.00	6.78000	53008.0	0.000000	0.456459
1957	2136.00	5.37000	53656.0	0.000000	0.458513
1958	2285.00	3.73000	54292.0	44772.0	0.456918
1959	2479.00	7.30000	54876.0	45322.0	0.452967
1960	3030.00	9.02000	55433.0	45775.0	0.478379
1961	3314.00	4.87000	56185.0	46337.0	0.476497
1962	3605.00	4.42000	56837.0	46460.0	0.472316
1963	3821.00	2.98000	57389.0	46836.0	0.469254
1964	4196.00	6.63000	57971.0	47209.0	0.464405
1965	4582.00	5.54000	58619.0	47570.0	0.461182
1966	4874.00	2.53000	59148.0	47872.0	0.455840
1967	4937.00	-0.130000	59286.0	48014.0	0.445451
1968	5352.00	6.50000	59500.0	48204.0	0.441866
1969	5977.00	7.89000	60067.0	48537.0	0.441757
1970	6790.00	5.89000	60651.0	49059.0	0.442153
1971	7560.00	3.34000	61302.0	49570.0	0.438974
1972	8272.00	3.65000	61672.0	49689.0	0.436195
1973	9201.00	4.91000	61976.0	49707.0	0.435410
1974	9869.00	0.350000	62054.0	49600.0	0.431834
1975	10349.0	-1.75000	61829.0	49365.0	0.426936
1976	11250.0	5.28000	61531.0	49105.0	0.424957
1977	11972.0	2.84000	61400.0	48957.0	0.424658
1978	12875.0	3.56000	61327.0	48826.0	0.427593
1979	13950.0	4.52000	61359.0	48839.0	0.430646
	1	2	3	4	5

	AMINC	AVWUNM	MGSAL	VAC	VACPEMP1
1955	314.000	0.000000	0.000000	200.000	1.18765
1956	338.000	0.000000	0.000000	219.000	1.25265
1957	356.000	0.000000	0.000000	217.000	1.20609
1958	376.000	333.575	0.000000	216.000	1.18760
1959	396.000	362.286	0.000000	280.000	1.51286
1960	432.000	373.271	512.333	465.000	2.29550
1961	471.000	409.220	564.583	552.000	2.66281
1962	511.000	455.029	616.250	574.000	2.72917
1963	539.000	499.999	654.167	555.000	2.61041
1964	585.000	526.284	713.000	609.000	2.83467
1965	643.000	557.325	778.000	649.000	2.98295
1966	680.000	603.876	834.500	540.000	2.48105
1967	699.000	578.529	862.417	302.000	1.43441
1968	737.000	644.685	915.667	488.000	2.30373
1969	792.000	661.934	1000.25	747.000	3.43417
1970	888.000	704.543	1147.75	795.000	3.57368
1971	975.000	769.984	1282.67	648.000	2.89105
1972	1063.00	880.556	1397.50	546.000	2.43370
1973	1150.00	951.068	1565.17	572.000	2.53501
1974	1263.00	1053.46	1744.00	315.000	1.42199
1975	1355.00	1181.25	1868.83	236.000	1.10353
1976	1414.00	1253.69	1998.75	235.000	1.10391
1977	1494.00	1349.50	2135.75	231.000	1.08212
1978	1587.00	1384.25	2246.00	246.000	1.13863
1979	1679.00	1445.74	2370.17	304.000	1.38320
	1	2	3	4	5

	DENI	INEL	PROD	ILSET
1955	0.000000	0.000000	0.000000	0.000000
1956	0.000000	0.000000	0.000000	0.000000
1957	0.000000	0.000000	0.000000	0.000000
1958	0.000000	0.000000	0.000000	0.000000
1959	0.000000	0.000000	0.000000	0.000000
1960	0.000000	0.000000	16133.0	161.330
1961	2.22000	0.563459	16719.0	168.791
1962	1.82000	-2.10877	17366.0	175.801
1963	1.85000	-2.70399	17853.0	181.304
1964	2.04000	-2.26601	19000.0	192.895
1965	1.76000	-0.952119	19928.0	203.158
1966	2.31000	-1.78636	20505.0	208.483
1967	5.90000	-0.479858	21172.0	210.850
1968	4.58000	-1.37239	22456.0	222.638
1969	2.75000	0.610446	23801.0	238.163
1970	1.80000	-0.164135	24846.0	251.261
1971	2.44000	-1.25450	25554.0	259.317
1972	3.29000	-1.64098	26503.0	268.858
1973	3.14000	-1.28731	27747.0	282.356
1974	5.20000	0.183685	28450.0	287.493
1975	6.95000	-1.00022	28837.0	287.054
1976	8.04000	0.916245	30513.0	300.873
1977	8.79000	4.64337	31459.0	309.323
1978	9.93000	4.71551	32205.0	318.467
1979	9.96000	5.37988	33262.0	331.441
	1	2	3	4

DEPENDENT VARIABLE → / INDEPENDENT ↓	UNR	UNR	InUNR	InUNR	InUNR	InUNR	InUNR	InUNR
REPL	2.187 (0.55)	2.017 (0.64)	1.735 (1.44)	2.051 (3.4)	-0.103 (0.03)	1.806 (2.0)	-1.070 (0.39)	2.121 (4.7)
DENI	0.4538 (6.9)	0.0958 (0.65)	0.214 (10.6)	0.0484 (1.71)				
INEL *					0.0213 (0.16)	-0.0184 (0.70)		
ILSET							0.0240 (2.67)	0.0035 (7.1)
PCOV	0.655 (0.29)	3.931 (1.66)	0.144 (0.21)	1.535 (3.37)	5.10 (2.7)	2.32 (6.2)	-11.95 (1.82)	
PCGNP	-0.0835 (1.43)		-0.0503 (2.8)		-0.0932 (1.83)	-0.0416 (0.94)		
$PCGNP_{-1}$	-0.0467 (0.74)		-0.0291 (1.51)		-0.126 (2.5)	-0.0550 (1.02)		
VAC/EMP		-0.8803 (2.8)		-0.504 (8.3)		-0.590 (13.2)		-0.545 (14.0)
VAC/EMP_{-1}		-0.548 (1.70)		-0.181 (2.9)		-0.244 (5.5)		-0.226 (7.73)
CONSTANT	-0.925 (0.44	1.107 (0.58)	-1.096 (1.71)	-0.264 (0.72)	-2.303 (1.23)	-0.172 (0.47)	3.858 (1.70)	0.338 (1.56)
R-SQUARED (F)	0.9155 (26.79)	0.9380 (39.05)	0.9638 (69.15)	0.9898 (253.4)	0.6914 (5.825)	0.9890 (234.1)	0.7460 (8.237)	0.9897 (361.4)
D W	0.8609	1.203	0.9219	1.697	0.645	1.859	0.7008	1.9419

* Calculated with the rate of unemployment

APPENDIX D: TABLE b

DEPENDENT VARIABLE → / INDEPENDENT ↓	61-69 InUNR	61-75 InUNR	61-79 InUNR	61-75 InUNR
REPL	-0.103 (0.03)	0.402 (1.88)	1.806 (2.92)	2.667 (3.05)
INEL *	0.0231 (0.16)	-0.0257 (0.25)	-0.0184 (0.70)	-0.0477 (1.15)
PCOV	5.10 (2.7)	0.911 (0.71)	2.32 (6.2)	1.37 (3.7)
PCGNP	-0.0932 (1.83)	-0.118 (3.9)		
$PCGNP_{-1}$	-0.126 (2.5)	-0.0721 (2.04)		
VAC/EMP			-0.590 (13.2)	-0.604 (11.6)
VAC/EMP_{-1}			-0.244 (5.5)	-0.168 (2.42)
CONSTANT	-2.303 (1.23)	-1.474 (1.40)	-0.172 (0.47)	-0.394 (0.94)
R-SQUARED	0.6914	0.8484	0.9890	0.9800
D W	0.645	1.384	1.859	1.872

* Calculated with the rate of unemployment

APPENDIX D: TABLE c

DEPENDENT VARIABLE → / INDEPENDENT ↓	CDUR	CDUR	CDUR	CDUR
REPL	3.789 (1.75)	6.021 (1.79)	7.977 (5.5)	-6.56 (0.54)
DENI	0.326 (6.1)			
INEL *		0.180 (4.0)	0.342 (25.5)	
PCOV	5.10 (4.3)	5.198 (3.2)	5.459 (7.2)	8.99 (1.33)
PCGNP			0.0187 (1.80)	0.031 (0.33)
PCGNP			-0.157 (13.3)	-0.208 (1.98)
VAC/EMP	0.466 (4.2)	-0.0686 (0.69)		
VAC/EMP_{-1}	-0.368 (3.2)	-0.550 (4.2)		
CONSTANT	-5.073 (2.7)	-3.01 (1.25)	-4.996 (4.7)	-0.746 (0.08)
R-SQUARED (F)	0.9860 (98.73)	0.9735 (5.15)	0.9943 (243.3)	0.4603 (1.7)
D W	2.5269	2.446	2.990	0.603

* Calculated with PCGNP

	FEDERAL REPUBLIC OF GERMANY	ITALY	UNITED KINGDOM
Existing Schemes	a) Unemployment Insurance (benefits) b) Unemployment assistance (aid)	a) Unemployment Insurance b) Exceptional unemployment allowance	Unemployment Insurance
Coverage	a) All employees. Persons receiving transitional allowances after undergoing rehabilitation measures b) All employees	a) All employees b) Workers in certain categories and areas who do not fulfil the conditions required for a)	Flat rate benefits: All employed persons (except married women who chose before April 1977 not to be insured) ERS: All employees under minimum pension age
Contributions	50% employer, 50% employee	employer	State, employer, employee
Total (involuntary) Unemployment Conditions	a) + b) to have registered at the employment exchange as unemployed and to have applied for benefits	a) + b) to have registered at the employment exchange	- be capable of work - be available for work with employer - have signed on at the employment office
Qualifying period	a) at least 6 months employment under insurance cover during the last 3 years. b) during the last year at least 10 weeks employment under insurance cover or having received unemployment benefits before	a) at least 2 years of insurance and 52 weeks contribution during the last 2 years. b) at least one month during the last 2 years.	flat rate benefits: contributions paid in any tax yeer amounting to at laast 25 times the minimum contribution for that year. ERS: entitlement to flat rate benefit and have paid contributions of at least an amount that is annually fixed by law.
Waiting period	none	a) 7 days b) 1 day	flat rate benefits: 3 days ERS: 12 days
Benefits - duration of payment	a) proportionate to periods of employment during last 3 years b) no limit	a) 180 days a year (extended to 360 days in the building sector under transitional arrangements) b) 90 days with possibility of extension until 180 days	flat rate benefits: limited to 312 days excluding Sundays in any period of interruption of employment ERS: limited to 156 days (excluding Sundays)

	FEDERAL REPUBLIC OF GERMANY	ITALY	UNITED KINGDOM
Compensation payments	a) 68% of net earnings b) 58% of net aarnings up to a ceiling (1979 4,000 DM)	a) + b) Standard rate 800 lire per day in cases of unemployment due to redundancy because of cessation of the enterprise, a special unemployment allowance, in industry 80% of earnings, in agriculture 66.7%	flat rate benefit: 1979 £18.50 per week ERS: one third of average weekly earnings between £19.50 and £30.00 plus 15% of earnings above £30.00 (1979). The sum of flat rate benefits and ERS is limited to 85% of average weekly earnings.
Partial Unemployment definition	Unavoidable short-time working	reduction or cessation of enterprises activities - because of reasons of its oown or temporarily (ordinary) - because of sectoral or local economic situation, restructuring or reconversion of the plant (ordinary)	-
Compensation	per hour of unemployment proportional rate as for total unemployment	80% of total remuneration for unworked hours between 0 to 40 hours for 3 months (ordinary) or 5 months (extraordinary) extensions are possible	-

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