ANDREAS POLLAK

Optimal Unemployment Insurance

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Preface

When I started working on this dissertation in August 2003, I did not anticipate that the topic I had chosen would continue to be among the most important issues in the political discussion in Germany throughout the following years. One year before, the labour market reform commission led by Peter Hartz had presented their suggestions on how the ongoing unemployment problem could and should be solved, and the government had decided to implement these recommendations. Between December 2002 and December 2003, several laws were enacted to this end. The "Fourth Law for Modern Services in the Labour Market", usually referred to as "Hartz IV", was probably both the most important and the most controversial of these laws. It was passed on Christmas Eve 2003.

Starting in 2005, Hartz IV replaced the generous unemployment benefits available to long-term unemployed persons by usually much lower benefits at the level of social assistance. This measure stirred protests and resistance to an unexpected extent. Throughout the year 2004 and far into 2005, on almost every Monday afternoon, I could hear demonstrations against this labour market reform pass by outside my window while I was sitting inside working on the computer programs I would use to analyse this very policy.

By today, the public opposition against the reform has almost disappeared, probably because in an increasingly friendly macroeconomic and with dropping unemployment rates, the issue of unemployment insurance does not remain on top of the political agenda. Whether the reform will deliver the benefits that have been promised when it was put into place remains to be seen. In the light of what I have learned about this topic over the past three years, I am quite optimistic, though.

The completion of this dissertation was made possible through the support and cooperation of many people. First of all, I would like to thank my supervisor Oliver Landmann, who provided thoughtful guidance and encouragement throughout this process and beyond. I am also deeply grateful for the friendly and supportive atmosphere I found at the Department of Economics at the University of Freiburg, and I am indebted to my colleagues and fellow PhD students who created this environment.

I had the opportunity to present my work at various occasions, the annual meetings of the Verein für Socialpolitik in 2004 in Dresden and 2005 in Bonn, the CEF 2005 in Washington, and at the ZEW labour market seminar, to name just a few. I would like to thank everybody who provided me with feedback and suggestions and helped me to detect errors and improve the exposition of my thoughts.

Throughout my work on this project, I heavily relied on resources provided by the University of Freiburg. Most of the numerical computations were performed on the university's compute servers. The IT service has always been very supportive and helpful, even after I had crashed most of their servers by accident. I am also grateful for a very generous grant from the University of Freiburg, which enabled me to devote most of my time to research over a period of two years. In this context, I should probably thank the German taxpayer, who eventually paid for this grant and also subsidised most of my education.

I would not be where I am today without the great personal support and encouragement of my family and friends. Particularly crucial were my parents, who have always supported me and my interests and ideas, and Hanna, who has not lost her patience with me in all these years.

Freiburg i. Br., March 2007 Andreas Pollak

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Abbreviations

AGI	Adjusted Gross Income
AIME	Average Indexed Monthly Earnings
APW	Average Annual Production Wage
BHPS	British Household Panel Study
cdf	cumulative distribution function
CNEF	Cross-National Equivalent File
CRRA	constant relative risk aversion
DIW	Deutsches Institut für Wirtschaftsforschung
EIC	Earned Income Credit
GDP	gross domestic product
GMM	generalized method of moments
GSOEP	German Socio-Economic Panel
HI	Hospital Insurance
MSM	method of simulated moments
OASDI	Old Age, Survivors and Disability Insurance
OECD	Organisation for Economic Co-operation and Development
OLS	ordinary least square
pdf	probability density function
PSID	Panel Study of Income Dynamics
RP	remunaeration point
SERPS	State Earnings-Related Pension Scheme
SSI	Supplemental Security Income
UA	unemployment assistance
UC	unemployment compensation, Arbeitslosengeld
UC 2	unemployment compensation 2, Arbeitslosengeld II
UI	unemployment insurance

Chapter 1

Introduction

Modern welfare states provide their citizens with a variety of social services. In many countries, the various branches of the social insurance system, which usually include a pension scheme, health insurance and unemployment compensation as major parts, account for a large and growing share of the public budget. After World War II, new social programmes were initiated in many western countries and existing services were extended. Over the following decades, social security systems grew in complexity and generosity. By today, the rapid expansion of social programmes in the post-war era has been slowed down or stopped, in some countries even reversed. The increasing costs of welfare programmes have now been felt for decades and perceived as an increasing burden, particularly as, at the same time, the services provided are often considered inadequate.

This may be a reason why in most western economies the public debate has more and more been directed to the efficiency and the macroeconomic effects of the social insurance system. In some countries, this has already led to considerable reform efforts, while in others major changes are yet to be implemented.

There are at least two reasons that make unemployment compensation a particularly interesting object of economic study among the various social insurances. First, it simply matters to the people. The consequences associated with involuntary unemployment are usually considered to be among the biggest risks to individual well-being in developed countries. For example, in a recent German survey, 54% of interviewees reported the economic consequences of unemployment as a major threat, ranking them third behind insufficient retirement funding and international terrorism.[1] This makes the issue of whether and how this risk can be reduced or insured effectively an important question for policy-makers.

Second, to a higher degree than in other branches of the social insurance system, the existence of an unemployment insurance system itself affects the scale of the risk it is designed to alleviate. While a more generous pension system need not per se lead to earlier retirement and a

[1] See Bulmahn (2004).

comprehensive coverage of health risks is unlikely to bring about more illness, open-handed unemployment insurance schemes regularly lead to high unemployment. This adverse effect is not necessarily solely caused by moral hazard effects at the individual level, as one might expect for a social insurance. The vast literature on the relationship between unemployment and insurance has found many potential channels through which generous benefits can lead to reduced employment. Besides the public insurance and the insured individual, other players have been identified whose behaviour may be influenced by the existence and the properties of an unemployment insurance programme, which in turn affects the labour market outcome. Two very obvious examples are trade unions and employers. Yet, as individual decisions are always the basis for employment relationships, the incentives that an unemployment insurance creates for the individual are most likely to be an important part of the story.

1.1 Unemployment and Unemployment Insurance

This work is concerned with the design of unemployment insurance systems and its consequences for the unemployment rate and welfare in an economy. Over at least the last two decades, a lot of research has been devoted to this issue.[2] Originally, the amount of the unemployment benefit and its duration were at the heart of the discussion. Popular models predicted that the unemployment rate would increase with the level of the benefit.[3] This theoretical result has been widely supported by empirical studies. In their survey of the relevant literature, Layard, Nickell, and

[2] A recent survey of the literature on optimal unemployment insurance is provided by Karni (1999).

Unemployment insurance has been the subject of economic discussion for a long time. Pigou (1933) argues that the existence of government run unemployment insurance has led to excessively high wages by strengthening union bargaining power (ibid., p. 254). Hicks (1932) blames the policy that unemployed workers are allowed to turn down offers that are less favourable than those negotiated between unions and employers, without losing the benefit for persistently high unemployment rates (ibid., p. 177). Both arguments remain topical until the present day.

[3] The three model families most widely used to study equilibrium unemployment, models of unionised wage bargaining, efficiency wage models and job search models usually exhibit unemployment rates that are positively related to unemployment benefits, the reason for this being that benefits decrease the individual cost associated with being unemployed. For a discussion of the different modelling approaches see e.g. Layard, Nickell, and Jackman (1991).

Jackman (1991) conclude that "the elasticity of expected duration [of unemployment] is usually in the range 0.2-0.9".[4]

A theoretical framework that turned out to be very well suited for the study of unemployment insurance is search theory. Its main strength is that it explicitly models the behaviour of an unemployed worker and thus derives the decision of whether or not to accept a job as an individually optimal choice. Among the first who employed this approach was Mortensen (1977), who showed that more generous unemployment insurance schemes lead to longer expected unemployment spells among those eligible for benefits, whereas it has the opposite effect on individuals who are not covered.[5] More recently, the literature has increasingly focused on more subtle aspects of the insurance system, such as the evolution of the benefit level over time or monitoring issues.[6] Other issues like retraining, which are not directly related to the insurance aspect of unemployment policy, have also been analysed. Some authors have criticised that current unemployment insurance schemes are too generous;[7] others have suggested alternatives to the well-known policies, like for example individual unemployment insurance accounts.[8]

The discussion in this work, however, will be limited to the parts of unemployment policy immediately related to the insurance aspects. The concept of unemployment insurance, as used in what follows, not only encompasses the level and evolution of the actual unemployment compensation, but all taxes and benefits that affect the individual risks associated with unemployment. It does not include, for example, measures taken to improve the matching between employers and workers, for instance through jobcentres run by the government or mandatory retraining programmes.

Western countries have found very different practical solutions to the problem of designing unemployment compensation schemes. Many

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[4] Ibid., p. 255.

[5] This eligibility effect is due to the fact that those not eligible for unemployment compensation must first find a job in order to qualify for the benefit. Thus, as unemployment insurance becomes more attractive, the incentive for this group to accept work increases.

[6] For a good exposition of these concepts and a survey of the literature see Fredriksson and Holmlund (2003, 2005).

[7] It has been argued that the insurance effect of unemployment compensation is rather small or that moral hazard problems are too important. See for example Gruber (1997), Browning and Crossley (2001), or Costain (1999). For an opposing view see Chetty (2004) and Lentz (2005).

[8] See Orszag and Snower (2002) and Altman and Feldstein (1998). Stiglitz and Yun (2002) suggest integrating unemployment insurance and the pension system to allow individuals to borrow during unemployment, using their retirement savings as collateral.

countries have created unemployment insurance (UI) systems that are – more or less – based on the equivalence of (mandatory) contributions and benefits. They usually pay benefits to qualifying unemployed at a certain replacement rate, subject to upper and lower limits. These replacement rates vary within a wide range among OECD countries, from 50% (United States) to 90% (Finland). In other systems, for example those in Ireland and the United Kingdom, the benefit is paid at a flat rate. The time period for which unemployment insurance benefits are available also differs among countries. While the benefit duration is only six months in Britain, the Belgian unemployed can in principle claim unemployment benefits for an infinite time. Other countries, such as Australia, solely rely on unemployment assistance (UA), providing means-tested benefits usually paid out of the general tax revenue. While some countries, for example the US and Japan, do not run UA programmes, most of them combine UI and UA schemes, with unemployment assistance usually covering those who are not eligible for UI benefits. In addition to unemployment compensation, unemployed workers may also be able to claim further benefits, such as housing subsidies.

However, generous unemployment compensation schemes tend to reduce the incentive to make an effort to keep a job or find a new one when unemployed. In many counties, policy makers have reacted to this problem by introducing waiting periods between job loss and the beginning of benefit payment, by excluding workers who resign from their job and by making eligibility to the full benefit conditional on demonstrating one's willingness to accept a new job.

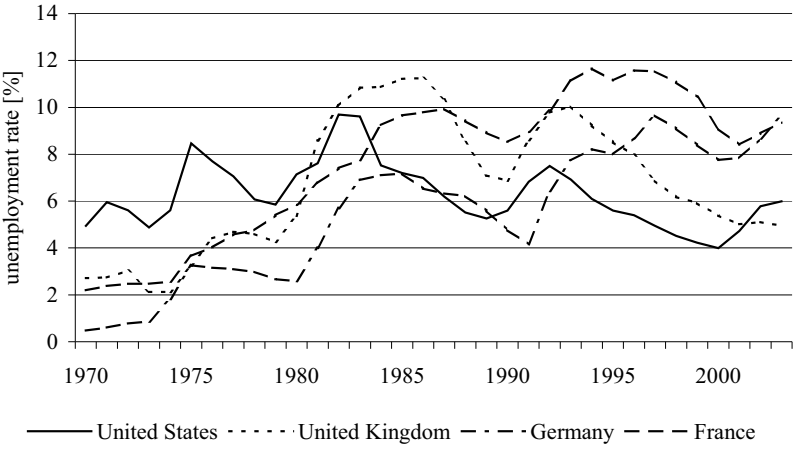
Different countries have also made widely different experiences with unemployment. In the United States, the unemployment rate has been fluctuating between 3% and 10% ever since the 1950s. However, in many Western European countries, but also in Australia, unemployment has risen sharply from almost zero before the early 1970s to relatively high levels in the 1990s. At the same time, Japan and a few smaller European countries like Austria, Norway and Switzerland have been able to maintain relatively low unemployment rates throughout.

Among those economies that experienced stark increases of unemployment in the seventies, several have managed to reverse the trend. The UK and the Netherlands, for example, have been able to bring down unemployment rates from their peak levels of 10% and more, to less than 5% today. The most extreme example is probably Spain, where the unemployment rate peaked at 20% in 1994 and has since then been reduced to about 10%.

There is also a large group of countries that have not yet found the right way to deal with the significant stock of unemployment that has built up

over the last three decades. In France and Germany, the unemployment rate reached new heights during the mid nineties and so far has shown no sign of a sustainable decrease.[9]

Figure 1.1: Unemployment rates since 1970.



Source: United States and United Kingdom: OECD, Germany: 1970-1977 Deutsche Bundesbank, chained to OECD, France: 1970-1981 ILO, chained to OECD.

Figure 1.1 compares the evolution of the unemployment rate in France, Germany, the UK and the US. The US rate fluctuates within a wide range over the business cycle, but with no obvious trend. The three European economies have all seen a rise from very low levels of unemployment in 1970 until the mid eighties. But while in France and Germany the unemployment rates have reached new heights during every business cycle, the UK was able to reverse this trend by the late 1980s and has now enjoyed a continuous fall in the unemployment rate for a decade.

High unemployment rates are often accompanied by high levels of long-term unemployment. Table 1.1 shows the unemployment rates and the share of long-term unemployment for 22 OECD countries in the years 1983, 1993, and 2003. Economies where the share of long-term unemployed is relatively low, like for example Japan and the US, tend to have moderate levels of unemployment as well. During the 1980s Canada was an exception in this respect. On the other hand, unemployment spells

[9] In the case of Germany, however, one should note that unemployment is starkly concentrated in the so called Neue Länder, whereas in the western part, standardised unemployment rates have been around 7% since the mid nineties.

are often longer in countries that have severe unemployment problems, like Italy or Spain. The reduction of the unemployment rate in Ireland and Britain during the 1990s coincided with a significant decrease in long-term unemployment. For the 2003 sample presented in Table 1.1, the correlation coefficient between the unemployment rate and long-term unemployment is 57%.

Table 1.1: Unemployment rates and long-term unemployment in OECD countries.

	unemployment rate[a]			long-term unemployment[b]		
	1983	1993	2003	1983	1993	2003
Australia	10.0	10.6	6.1	25.4	36.5	22.5
Austria		4.0	4.4			24.5
Belgium	10.8	8.6	8.1	64.2	53.0	46.3
Canada	12.0	11.4	7.6	9.5	13.8	10.1
Denmark	8.4	9.6	5.6	43.4	25.1	19.9
Finland	6.0	16.4	9.0	19.2	30.6	24.7
France	7.8	11.3	9.4	42.2	34.6	33.8[c]
Germany	6.9	7.7	9.3	41.6	40.0	50.0
Greece	7.0	8.6	9.3	33.1	50.6	56.5
Ireland	13.9	15.6	4.6	36.0	57.8	35.4
Italy	7.4	10.1	8.6	57.1	57.3	58.2
Japan	2.7	2.5	5.3	13.3	15.1	33.5
Luxemburg	3.4	2.6	3.7	34.7	30.8	27.4[c]
Netherlands	9.2	6.2	3.8	47.8	45.4	29.2
New Zealand	5.7	9.5	4.7		30.6	13.3
Norway	3.5	6.6	4.5	4.8	27.2	6.4
Portugal	8.2	5.7	6.4		35.2	32.0
Spain	14.1	18.6	11.3	52.4	50.1	39.8
Sweden	3.7	9.1	5.6	10.3	10.9	17.8
Switzerland		3.9	4.1		19.4	27.0
UK	10.8	10.0	5.0	45.2	42.5	23.0
US	9.6	6.9	6.0	13.3	11.5	11.8

Source: OECD (1996), OECD (2004).
[a] in percent
[b] unemployment spells longer than one year as percentage of total unemployment
[a] 2002 figures

As can be seen in Table 1.2, unemployment rates differ vastly between age groups in some countries. In France, Greece and Italy, for example, youth unemployment is a severe problem, but in all countries listed, the incidence is greater among 15 to 25 year old people. The figures in Table 1.2 also suggest that the unemployment risk is smaller in most countries

for older people aged 55 to 60. Yet, it might be the case that early retirement schemes for the older unemployed or similar policies disguise some of the problems this age group might have in the labour market by offering an attractive exit option.

Table 1.2: Unemployment rates by age and educational attainment.

	unemployment rate[e]					
	by age (2003)			by educational attainment (2002)		
	15-24	25-54	55-64	low[b]	medium[c]	high[d]
Australia	11.6	4.5	3.9	7.5	4.3	3.3
Austria	7.5	4.2	6.2	6.9	3.4	1.9
Belgium	19.0	7.0	1.7	10.3	6.0	3.5
Canada	13.8	6.5	6.3	11.0	6.7	5.1
Denmark	9.6	5.0	3.9	6.2	3.4	3.5
Finland	21.6	7.3	7.7	12.2	8.8	4.5
France[a]	20.2	8.1	5.8	11.8	6.8	5.2
Germany	10.6	9.1	9.7	15.3	9.0	4.5
Greece	25.1	8.0	3.0	7.3	9.6	6.4
Ireland	7.6	3.9	2.4	5.9	2.8	1.8
Italy	26.3	7.2	3.8	9.0	6.4	5.3
Japan	10.2	4.7	5.5	6.6	5.3	3.9
Luxemburg[e]	7.0	2.4	0.2	3.8	1.2	1.8
Netherlands	6.6	3.1	2.2	3.8	2.2	2.1
New Zealand	10.2	3.5	3.6	5.6	3.3	3.4
Norway	11.7	3.8	1.4	3.4	2.9	2.1
Portugal	14.6	5.7	4.3	4.4	4.3	3.9
Spain	22.7	10.2	6.9	11.2	9.5	7.7
Sweden	13.8	4.9	4.8	5.8	4.6	3.0
Switzerland	8.6	3.6	2.5	4.7	2.3	2.1
UK	11.5	3.8	3.3	8.5	4.1	2.4
US	12.4	5.0	4.1	10.2	5.7	3.0

Source: OECD (1996), OECD (2004).
[a] in percent
[b] less than upper secondary education
[c] upper secondary education
[d] tertiary education
[e] 2002 figures

A common feature of the labour markets in almost all developed countries is that unemployment is higher – usually much higher – among the lower skilled. Table 1.2 also reports the unemployment rates by educational attainment for 22 OECD countries. In some countries, for example Germany and the US, the unemployment rates among the least skilled