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**THE ECONOMICS OF UNEMPLOYMENT IN-
SURANCE: THE CASE OF SWEDEN**

by

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This is a preliminary paper. Com-
ments are welcome.

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1 INTRODUCTION

The government in Sweden has, for a long time, actively contributed to various forms of unemployment compensation. In 1935, the government began to subsidize those unemployment insurance funds (UI funds), which satisfied certain requirements, known as the certified unemployment funds. Although the funds are formally associated with labor unions, it is the government which has determined the most important regulations, including rules for the benefit levels and criteria for receiving benefits. Furthermore, the proportion of the payments made by these funds which is covered by government contributions has increased significantly over time (to approximately 93 percent in 1984), which means that the government plays a very important financial role in this field.

Outside of the UI system administered by the labor unions, the government carries the responsibility for a secondary compensation system which is designed largely for new entrants in the labor market who are not usually covered by the unemployment funds' operations. This program is called cash benefit assistance (kontant arbetsmarknadsstöd, KAS).

In the area between the system of unemployment compensation and that of pension lies a government program for "early retirement motivated by labor market objectives". Unemployed workers above 60 years old may under certain conditions receive early retirement benefits if there is lack of job opportunities.

Gross government expenditure with respect to UI funds, KAS and early retirement for labor market reasons, are given in Table 1. Since 1974 the expenditure as a fraction of GNP has risen markedly, reflecting in part the rising unemployment but also higher government share of total paid-out benefits. In the peak years 1982 and 1983, the fraction was 0.9 percent of GNP.

Table 1 **Gross government expenditure for unemployment benefits**
(in million SEK)

Year	UI Funds	Cash benefits	Early retirement for labor market reasons	Total	Percent of GNP
1974	543	64	-	607	0.2
1975	524	67	-	591	0.2
1976	628	105	-	733	0.2
1977	905	181	-	1 086	0.3
1978	1 412	255	-	1 667	0.4
1979	1 559	283	-	1 842	0.4
1980	1 593	321	-	1 914	0.4
1981	2 423	409	240	3 072	0.5
1982	3 486	521	280	4 287	0.9
1983	5 057	797	310	6 165	0.9
1984	5 587	557	420	6 564	0.8
1985	5 765	389	720	6 874	0.8

Note: All compensations are taxable and the net expenditure is therefore lower.

Source: Labor Market Board (AMS), insurance unit, and National Social Insurance Board (Riksförsäkringsverket).

In this study, we will examine the Swedish system of unemployment compensation and, in particular, the role played by the government. Economic welfare theory regarding uncertainty and insurance has served as one frame of reference in the analysis.

Unfortunately, welfare theory with respect to insurance is not so well developed that one may easily deduce what the optimal system for unemployment compensation should look like and then compare this to the existing Swedish system. Nor is this very surprising considering the large number of policy parameters that

may exist in the UI system. To what extent should the government bear the cost of the system? How high should the benefit levels be? What time profile for benefit payments should be chosen - a lump sum payment in the form of a severance benefit or continuing periodic payments? To what extent should resources be devoted to means of monitoring search and to work tests? How should government subsidies be differentiated according to differences in risk of unemployment across industries or across individuals?

Even though we regard these normative issues as central ones, the available literature give only limited guidance for policy in this field. One reason for this is that most research has focussed on positive issues, namely how unemployment benefits affect the economy. The bulk of articles have been empirical studies of the effect of UI benefits on the size of unemployment. Results from positive analysis do not inform about how the government should intervene in the market for unemployed insurance.

Another characteristic of the literature is that it has been limited to partial treatments of various aspects of unemployment insurance. Integrated theories of unemployment insurance, capturing both the micro- and macroeconomic aspects, are much less frequent in the literature. The existing literature has of course affected the presentation in this study. We start in Chapter 2 by discussing some central problems relevant for all insurance markets, but particularly for that of unemployment insurance. The chapter focuses primarily on the rationale for government intervention. In the following chapter we proceed to review the way in which the problems have been handled within the Swedish system. We describe the institutional framework, and look at how well the benefits cover the loss of income for different groups of unemployed.

Chapter 4 deals with incentive effects. We offer a brief survey of relevant theoretical and empirical literature and explore the consequences of a generous treatment of seasonal unemployment. In Chapter 5 we attempt to make a tentative evaluation concerning the effects on income distribution. In Chapter 6 we return to the normative issues and offer a discussion of the properties of an optimal UI system. Chapter 7 concludes the study.

2 PROBLEMS IN INSURANCE MARKETS

Underlying the demand for unemployment insurance, as for all other kinds of insurance, is risk aversion. The presence of risk aversion implies that a certain income stream is preferred to an uncertain income stream even if the average or expected income is equal in both cases. The term "uncertain income stream" refers not to an uneven flow but rather to one that cannot be predicted with certainty due, for example, to the risk of being laid off. Thus, a person with risk aversion who runs a certain risk of becoming unemployed would willingly pay some regular insurance premium in order to receive compensation for lost income in the event of unemployment, as long as the premium does not exceed the expected compensation by too great an amount.

Such an insurance solution is normally preferable to other methods, such as private savings, for smoothing a risky stream of income. This has been shown by Baily (1978). The intuitive explanation is as follows. With insurance, there is a guaranteed income regardless of whether the person happens to become unemployed or not. If the expected unemployment is estimated at one percent of the work time, a premium of one percent of the income will guarantee an even stream of income. Suppose instead that the person saves one percent of his income to have at his disposal in case of unemployment. This choice gives the same outcome as that of insurance only if the person is unemployed exactly one percent of the time. If he manages to avoid unemployment totally he would be much better off, while the reverse is true if he suffers an unexpectedly high amount of unemployment. Consequently the savings alternative is an uncertain one.

Risk aversion implies that the certain insurance alternative is preferred to the uncertain savings alternative. It also follows that in the matter of an income stream which is uneven but predictable with certainty, for example certain types of seasonal work, the insurance alternative is no longer preferable.

The demand side of the market for unemployment insurance is thus far relatively straightforward. Problems occur, however, in devising methods to meet this demand. One problem arises when the insured can affect the probability that the event, against which he is insured, will occur. This problem, generally called moral hazard, clearly exists in this field. A person can affect the probability of becoming unemployed in several ways. A worker can voluntarily quit, or he can affect the probability of getting a new job once he has become unemployed, even if his entry into unemployment is totally involuntary. The probability of becoming reemployed normally depends on the intensity of search and the criteria set by the worker for accepting a job offer. Both search intensity and acceptance criteria are obviously affected by the job seeker.

The problem of moral hazard is commonly treated in at least two different ways, which are not mutually exclusive. The first is to choose a type of insurance which gives only partial coverage for the loss in income. Complete coverage may require prohibitively high insurance premiums.

The best solution for both the buyer and the seller of insurance in such markets is therefore one in which the buyer shares part of any fall in income but, in return, pays significantly lower insurance premiums than what would otherwise be the case. The partial coverage also creates an incentive to try to avoid and prevent unemployment on the part of the insured, which then leads to the lower premiums.

The second approach is to set certain requirements for the behavior of the insured and then try to enforce these requirements. The cheaper the means of enforcement are, of course, the more enforcement one will choose, and the higher will be the optimal level of coverage. The control mechanism in the Swedish unemployment insurance system consists of the requirement that the unemployed person who wishes to receive compensation must apply at the employment office and accept "suitable work".

The problem of moral hazard faces a public as well as a private insurance system, and by itself constitutes no strong argument for government provided UI. On the other hand, Pauly (1974) has pointed out that in a private system with many insurance companies it would be possible to obtain full insurance by purchasing from several companies. In this way, the incentive to prevent unemployment disappears and the optimal ratio between "prevention protection" and "insurance protection" would not be reached. This misuse would not occur in the case of state monopoly. However, as Shavell (1979) points out, such a phenomenon could probably be avoided even in a system of private companies. Nor is there anything which prevents private insurance companies using a public employment office as a mechanism of enforcement.

Another important obstacle in meeting the demand for unemployment insurance is that of adverse selection. This problem arises if individuals differ markedly with respect to risk of unemployment. It further requires that those potentially insured are conscious of their own risk while the insurance companies can only estimate the average risk in the market. It is thus a problem of information.

In such circumstances the insurance company cannot differentiate premiums according to each person's risk but rather must charge according to the average risk of the group. In this case insurance is very advantageous for those with high risk and to the same degree disadvantageous for those with low risk. The latter group can very well choose not to buy insurance or to significantly reduce the amount of insurance purchased. It is this exit of potential insurance buyers which is called adverse selection. As a consequence of this, the opportunity for the high risk group to insure itself will obviously be reduced or disappear. In extreme cases of this kind of information problem, the private market may cease to exist.

Since adverse selection is based on an information problem, it affects private as well as public markets. There is no reason to be-

lieve a priori that a public system is preferable to a private one with respect to treating the information problem itself. But this problem has motivated state intervention to assure that unemployment insurance can be obtained at all. This can be accomplished if the government provides unemployment insurance. It then becomes a matter of obligatory insurance. The premiums may, however, be differentially applied in various ways. The government may also intervene via subsidies to support UI schemes run by private firms or organisations.

Is there reason to believe that an obligatory system is superior to the system, or lack of a system, that a "free market" would result in? This question has been discussed somewhat in the theoretical literature on insurance. This literature indicates that it is possible to achieve welfare gains with an obligatory system if the adverse selection problem exists. However, the necessary and sufficient conditions underlying this conclusion have, to our knowledge, not yet been shown.

Akerlof (1970) has formulated a model which leads to adverse selection. Diamond and Rothschild (1978) claim that social welfare (the sum of utilities or welfare for all individuals) increases if an obligatory insurance scheme is introduced in Akerlof's model. The winners' gains are thus larger than the losers' losses. Akerlof's model is, however, rather special and it is difficult to conclude how general this result is.

Pauly (1974) has constructed an example in which an obligatory system, with a premium based on the average risk, results in an improved situation for both low and high risk groups. A presumption for this noteworthy result is, however, that the low risk group will demand some amount of insurance even in the absence of the obligatory system.

A third problem in the market for insurance is that the insurance company may have difficulties offering insurance on reasonable terms since unemployment often occurs at the same time for

many of the insured, i.e. during economic recessions. An insurance company's opportunity to pool risks across subscribers is reduced if the risks are positively correlated.¹ A private unemployment insurance company would face large problems during a recession. The company's commitments will therefore be smaller, the larger the uncertainty is regarding the recession's depth and length.

Because the government's stabilization policies affect the business cycle, the opportunities of insuring oneself against unemployment are affected by the government's actions. It is thus reasonable to argue that the government should take a more comprehensive responsibility regarding unemployment insurance.

In addition to the efficiency arguments for government contribution to unemployment compensation, equity arguments may also be made. The risk of unemployment is in general highest among those who have a weak position in the labor market due to poor schooling or training or lack of work experience. Government support of unemployment insurance should therefore function as a subsidy for a good which is particularly demanded by people in lower earnings categories. Broadway and Oswald (1983) have shown that when redistribution of income cannot be achieved by means of lump sum taxes and transfers the optimal solution in terms of equity and efficiency might be a combination of progressive income taxation and subsidized unemployment insurance schemes.

One might then offer efficiency as well as equity arguments for government intervention. But, paradoxically enough, it is doubtful if such arguments are consistent. If the risk of unemployment is strongly related to, for example, poor schooling, there exists no problem of adverse selection. The insurance premiums could then be related to the variables that capture the unemployment risk.

Unemployment risks can probably be quite well detected for groups which have been active on the labor market a relatively

¹ See Hirschleifer and Riley (1979).

long time. Conversely, the problem of adverse selection is likely to be greater among entrants to the labor market. They have not had the opportunity to reveal the strength of their position in the labor market and thus their risk of unemployment.

In conclusion, we have seen that unemployment insurance which protects against an uncertain stream of income is demanded by everyone who is risk averse. Private markets cannot always meet this demand. One reason is adverse selection; people with low risk may withdraw from the market, leading eventually to the disappearance of the entire market. Thus, a public obligatory system or government support to a private system may result in welfare gains. Another reason that a private insurance solution may not always be feasible is that unemployment is concentrated to recessions and the depth and length of these cannot be forecast well enough.

3 THE SWEDISH SYSTEM

3.1 Different forms of compensation

Unemployment insurance

The most important unemployment compensation system in Sweden is unemployment insurance. This is, in principle, voluntary for individual employees. For certain labor unions, however, membership in the UI fund is obligatory for union members, so that the voluntary nature is to some extent circumscribed. Currently, the majority of the Swedish labor force (16-64 years old) belongs to some unemployment fund. Approximately 78 percent were members as of July 1, 1985, while the membership statistics for 1980, 1975 and 1970 were 72 percent, 64 percent and 56 percent respectively.¹

The first permanent UI funds appeared in the beginning of the 1890s; the typographers' union established the first in 1892. During the following decades, and particularly during the years 1912-20, many new funds were created. However, requests for government assistance to the UI system became common quite early. After a long debate (which is analyzed in an economic history dissertation by Edebalk (1975)), the parliament voted for a system, in which the government would contribute to voluntary unemployment insurance funds, to begin in 1935. Such funds must, however, be certified in order to be qualified for government contributions; this has implied that the parliament to a large extent decides the system of regulation for this insurance. The unemployment funds themselves retained primarily overseeing and administrative functions.

Since 1935 the government's share of the UI funds expenses have had an increasing trend, as shown in Table 2.

¹ Sources: Labor Market Board (AMS), insurance unit and Statistics Sweden (SCB), Labor Force Surveys (AKU).

Table 2 **Income and expenses of the UI funds**
(Million SEK)

		Income		Expenses			Government share of expenses
	Members	Government	Interest	Compensation	Administration	Surplus	
1935-39	-	-	-	-	-	-	0.39
1940-44	-	-	-	-	-	-	0.46
1945-49	-	-	-	-	-	-	0.46
1950-54	-	-	-	-	-	-	0.46
1955-59	-	-	-	-	-	-	0.57
1959/60- 63/64	-	-	-	-	-	-	0.53
1964/65- 68/69	-	-	-	-	-	-	0.62
1969/70- 73	-	-	-	-	-	-	0.67
1974	226	543	60	678	44	107	0.75
1975	243	524	46	653	48	112	0.75
1976	263	628	55	763	53	131	0.77
1977	253	905	67	1 015	56	154	0.85
1978	251	1 559	85	1 542	69	138	0.88
1979	241	1 559	85	1 690	87	108	0.88
1980	245	1 593	125	1 730	94	138	0.87
1981	251	2 423	145	2 595	108	115	0.90
1982	319	3 486	138	3 880	132	-68	0.87
1983	431	5 058	113	5 328	157	118	0.92
1984	459	5 587	117	5 863	169	130	0.93
1985	551	5 765	169	6 066	196	222	0.92

Source: Labor Market Board (AMS), insurance unit.

UI compensation is paid according to a daily benefit level (dagpenning), which, since 1974, has been considered as taxable income. Compensation is made for five days per week. There is, however, a mandatory five day waiting period for which no compensation is made. Thereafter, an individual may receive benefits

for 300 days, i.e. 60 weeks; persons over 55 years of age may collect benefits for 450 days, i.e. 90 weeks. The potential benefit period was extended 1968 and 1974. Individuals below 55 had benefits periods of 150 days until 1974, whereas workers aged 55 or more had this benefit period until 1968.

The qualification requirements for receiving benefits are numerous, complicated and difficult to evaluate without a thorough study of how they are applied in practice. Part of the requirements aim at excluding groups with a temporary attachment to the labor market. If compensation should be made in case of temporary "visits" to the labor market, the total level of payments could obviously be very high. To avoid this problem, a "membership requirement" is imposed. In order to qualify for benefits, the claimant must have paid membership dues to the UI fund for at least 12 months prior to the claim. Furthermore, there is a minimum requirement of 5 months gainful employment during the 12 months preceding the period of unemployment. This is referred to as the "work requirement".

Another group of conditions depend on the unemployed person's search intensity and work requirements. The first of these is that the person must be registered as seeking work at the employment office. The unemployed individual is in general required to personally contact the employment office within four weeks. During these visits he (or she) has to show up a special card and get it signed in order to receive benefits.

Secondly, an offer of "suitable" work must be accepted. This is of course very difficult to define operationally. However, the following sentences from the law and the handbook for the employment office servants can be used to illustrate the nature of this requirement:

"The job offer shall be considered suitable if, within the bounds of existing job opportunities, adequate consideration is taken of: 1) the person's work background and suitability for the particular kind of work as well as personal

aspects of the job, 2) whether the wages and benefits are comparable to those determined by a collective agreement, or, if no collective agreement applies, are reasonable in comparison to those earned in equivalent jobs at comparable firms, 3) that no legal conflict (strike or lock-out) is ongoing at the workplace, 4) and that the working conditions meet the requirements set in law and by the authorities."

If a claimant turns down a suitable offer, he can be denied benefits for 4 weeks. (From July 1, to December 31, 1982, the denial period was 6 weeks.) Violations of other conditions lead to shorter denial periods. If it becomes clear that the unemployed person will not accept offers of suitable employment, for example by repeatedly turning down offers, the UI fund may deny further benefits until the person has worked for a period of 30 days (prior to July 1, 1982, 20 days). Special job training programs may, in certain cases, be regarded as "suitable work", as well as temporary jobs (relief works) provided by the Labor Market Board.

There is no easily obtainable information regarding the practical application of these rules and how the requirements have varied over time. However, the Labor Market Board presents statistics in regarding the number of benefit denials which have occurred during the year.¹ These are presented in Table 3. It appears that the number of yearly benefit denials have been between 1 750 and 4 530 since 1970. As a fraction of all who receive UI benefits during a year, this amounts to approximately one and two percent. This indicates that the rules about job refusals are not only formalities. This risk of losing benefits cannot be neglected for UI recipients who refuse to accept "suitable work" or abstain from active search efforts.

¹ Christensen (1980) presents a number of case studies.

Table 3 Number of benefit denials

	Unemployment insurance		Cash benefits (KAS)		Number of vacancies (thousands)
	Number of denials	Percent of all who receive benefits during a year	Number of denials	Percent of all who receive benefits during a year	
1970/71	2 920	-	-	-	
1971/72	3 670	-	-	-	
1972(Sept)/ 1973(Aug)	4 530	-	-	-	
1974	4 210	-	1 900	3.4	49
1975	2 670	-	1 550	2.9	50
1976	2 340	-	1 310	2.1	46
1977	1 750	1.3	1 370	1.7	38
1978	2 240	1.3	1 490	1.5	35
1979	3 620	2.1	1 950	1.9	49
1980	4 180	2.3	1 860	1.8	54
1981	3 600	1.4	1 550	1.3	30
1982	2 850	0.9	1 110	0.8	20
1983	2 890	0.9	1 100	0.7	21
1984	2 890	0.8	560	0.4	29
1985	3 000*	0.9*	360	0.4	36

Source: Labor Market Board (AMS), insurance unit.

* Approximate figure.

The time pattern reveals two interesting features. First, the number of denials increases during cyclical upturns 1972-74 and 1977-80. The most likely explanation is that the work test is difficult to implement during recessions when the availability of jobs is scarce. The second feature is that the fraction of denials displays a trend decline. The reasons for this decline are unclear. The employment offices might have enforced the work test less strictly. A completely different explanation is that the unemployed have become more willing to accept job offers.

Similar disqualification rules apply to workers who are dismissed for failure to perform their job and those who leave their jobs voluntarily. For those who quit in connection with migration due to a spouse's change of job, a less stringent rule may be applied.

Cash Benefits (KAS)

The rules which apply to unemployment insurance mean that a large number of unemployed persons are not entitled to benefits. Therefore, a complementary system, called cash benefits (KAS), has been created. This system is financed entirely by the government. KAS was set up in 1974, replacing two other kinds of unemployment support. The annual expenses for KAS have amounted to about 10-15 percent of the total government expenditure on unemployment compensation (see Table 1 on page 6).

To qualify for cash benefits either a work or a schooling requirement must be fulfilled. The former requires 5 months of work within the last 12 months. The schooling requirement means that those who have completed 12 months full time studies above the compulsory level or 5 months in the labor market training system (arbetsmarknadsutbildning) are eligible for benefits. A special qualifying period of 3 months is required for school leavers.

In addition to those groups, persons over 60 years who have exhausted their UI benefits are eligible for KAS compensation.

The maximum benefit period for KAS is 150 days (30 weeks). Those who are older than 55 years (60 years) can receive payments for 300 days (450 days).

Like UI benefits, KAS compensation is made by awarding taxable daily benefits, but the level of benefits are much lower than those of the funds. The same requirements regarding registration at the employment office and acceptance of suitable work applies to KAS as well as for insurance. The number of benefit denials are presented in Table 3 above. The cyclical and secular developments are similar to those for UI benefits.

Early retirement

The early retirement program is a government compensation system which is related to unemployment in several respects. Since July 1, 1972, early retirement benefits can be paid to all unemployed persons over 60 years old who have collected benefits from either the insurance funds or KAS for the maximum allowable time. This program includes both general pension benefits and supplementary pensions (ATP).

This kind of early retirement is usually entitled "early retirement based on purely labor market considerations" (förtidspension på rent arbetsmarknadsmässiga grunder). During the eighties the number of early retirees has increased rapidly. As shown in Table 4, there were almost as many retirees as unemployed aged 60-64 during the mid-eighties.

Table 4 Number of unemployed, number of new retirees for labor market reasons and the stock of retirees, 60-64 years of age

	Number of unemployed	Number of new retirees	Stock of ^a retirees
1977	4 900	1 700	n.a.
1978	7 200	2 050	n.a.
1979	7 300	2 600	n.a.
1980	5 800	3 600	5 000
1981	8 100	3 500	5 500
1982	12 700	3 700	5 900
1983	16 800	5 500	7 600
1984	20 400	9 100	12 000
1985	16 900	10 500	15 800

^a As of December 31.

Source: Statistics Sweden (SCB) and National Social Insurance Board (Riksförsäkringsverket).

Even though the formal requirement for this kind of early retirement is that the individual has collected UI-benefits - and hence been registered at the employment office as a job searcher - during 90 weeks, it has become common that informal agreements about early retirement are reached already at the time of the layoff. Such informal agreements are reached between the laid-off individual, the firm and the officers at the employment offices. Because of the length of the benefit period, 58.3 years is the critical age, when decisions about early retirement can be taken.

Because of the possibilities to reach such agreements, early retirement has in practice become an alternative when a firm wishes to reduce its personnel.¹

For other kinds of early retirement, the general rule determining the right to benefits is that the claimants working capacity must be permanently reduced by at least one half. However, it is a common opinion that labor market considerations are taken to some extent even for claimants who do not fulfill the formal requirement for early retirement for labor market reasons. The general type of early retirement - which is one of the major measures to help disabled persons - has expanded rapidly too (see Wadensjö (1984)). It is not possible to get statistics on the number of "labor market cases" among this group.

Severance Pay

Outside of the government administered and government supported compensation systems, the labor market organizations have made certain agreements to compensate the older unemployed. Through agreement between SAF (Swedish Employers's Federation) and LO (Swedish Trade Union Confederation), special severance allowances have existed since 1965 and a benefit system was established in 1967 (the AGB system, avgångsbidrag), administered by the Labor Market Insurance Company (AFA).²

Severance pay can be claimed by persons 40 to 64 years of age. It is furthermore required that the person's employment is terminated due to personnel reduction and that he has been employed

¹ See Nilsson-Stenkula (1977) and Hellberg-Wrethem (1979).

² More detailed information about AGB is found in publications from AFA, Arbetsmarknadens Försäkringsaktiebolag.

by the dismissing employer for at least 5 years. Exceptions from this last requirement are made for certain groups, for example construction workers, painters, and seamen, where the requirement is a minimum of 5 years within the industry.

Compensation can be made in two stages. The first, an "A" payment, made upon dismissal in the form of a lump-sum payment of 5 200 kronor plus 250 kronor for each year of age exceeding 40 (applies to 1985). This means that a 50 year old worker receives approximately one monthly salary in severance pay. The payment is taxable, but is paid in addition to regular UI benefits.

Those who remain unemployed for a longer time and are "actively searching" for a new job or have gone through retraining can receive an additional amount (the "B" payment) which varies from 6 000 to 27 000 kronor. Half a year of unemployment is required for the highest amount. AGB may also be paid to those who had to leave jobs due to reasons of health. The minimum age limit in this case is 50 years. An additional requirement is that the claimant either obtains new work or begins searching through the employment office. Only "A" payments are made in such cases.

From 1979 to 1985, between 4 000 and 13 000 insurance claimants have received AGB payments each year. More than half of these cases have also received "B" payments. The total payments have reached 45 to 320 million SEK. For employers covered by the SAF-LO agreement, the fees for the insurance are determined as a proportion of the wage bill (0.3 percent in 1985).

Agreements regarding severance compensation (AGE) covering white-collar workers have been in operation since the end of the 60s. A 1974 employment security agreement between SAF (Swedish Employers' Federation) and PTK (Private White-collar Workers Unions) has resulted in the majority of the white-collar workers in

the private sector being included. The operation set up by the agreement is administered by a board called Trygghetsrådet. (The information presented here is based on the board's publications and annual reports.)

In order to obtain benefits, the reason for the employment termination must be a permanent layoff. On the other hand, severance pay may be made without prior termination notification if the firm, local union and the employee have agreed upon early retirement. In such cases, compensation can be made to the firm as partial financing for early retirement. Furthermore, it is required that the employee is at least 40 years old and has been employed within the firm for 5 years or more.

These severance benefits are made in several installments. The first is paid at the day of job termination and amounts to one monthly salary. It is taxable and is paid even to those who can get a new job immediately. If the period of unemployment becomes extended, further payments can be made. These are based partially on the local labor market situation, and are tax free up to a certain level.

During the 1978-81 period, between 1 400 and 4 600 white-collar workers received severance benefits. Between 30 and 65 million SEK in payments were made. In addition, between 36 and 370 million SEK in early retirement benefits were accorded annually to between 300 and 2 300 white-collar workers. The payments were financed by a levy on the wage bill for white-collar workers (0.9 percent in 1984), which is paid by the employers.

Taken together these two types of severance pay were paid to between 6 000 and 18 000 blue- and white-collar workers during 1979-85. A crude estimate of the yearly inflow into unemployment indicates that between 10 and 20 percent of all above 40 years who became unemployed received severance pay in addition to the

regular unemployment benefits. The total payments - including the early retirements of white-collar workers - were between 140 and 760 million SEK. In the peak year (1983), these payments amounted to around 12 percent of the government's expenditure on UI, KAS and early retirement.

Besides the forms of severance compensation discussed so far, the rules about advance notification of layoffs should also be mentioned. According to the law on employment protection (Lagen om anställningsskydd, LAS), notice of termination from an employer must be given at least one month in advance. This required notification period increases with the age of the employee; for example, it is 2 months for persons 25-30 years old and 6 months for persons 45 years or older. During the notification period, the employee has the right to draw his normal salary, regardless of the extent to which the job still exists. In the case that the firm declares bankruptcy, the notification salary is protected by a government guarantee.

The regulations regarding notification salaries and "regular" unemployment benefits taken together can sometimes lead to a maximum compensation period of considerable length. It should also be observed that the employee has the right visit the employment office, or in other ways search for work, during the notification period.

3.2 Compensated and Uncompensated Unemployment

All of the conditions which must be satisfied in order to receive some form of unemployment compensation obviously imply that many unemployed do not qualify for benefits. It is therefore important to identify the coverage of each of the various forms of compensation. What fractions of the unemployed collect what types of compensation?

Detailed information about this is obtainable from the unemployment statistics produced by the employment exchange offices ("registered" unemployment). Even though there is a slight discrepancy between the registered unemployment and the more widely used unemployment data from the surveys conducted by Statistics Sweden, the two data sources reveal the similar cyclical and structural pattern.

The data are given in Table 5. It appears that among all unemployed, 30-41 percent have not received any compensation at all during 1978-85. Even though there is a clear decline in the percentage without compensation, a substantial number of unemployed obviously lack economic compensation. Furthermore, it appears that 9-16 percent of the unemployed have received KAS and 45-61 percent have received unemployment compensation.

The other parts of Table 5 give some breakdowns by sex, age groups and duration of unemployment. Unemployed women have been slightly less likely to receive unemployment compensation and more likely to receive KAS or lack compensation compared to men. The share of unemployed without compensation is falling with age. Similarly, KAS has been more frequent among the young. Finally, the short-term unemployed are more likely to lack compensation than the long-term unemployed.

The period before 1978 is not covered equally well in terms of compensated and uncompensated unemployment. However, in the Labor Force Survey a question to the unemployed about membership of a certified UI fund has been included since the early sixties. Most of the members are probably receiving unemployment compensation. The exceptions would be mostly those who do not satisfy the membership and work requirements, those affected by the waiting period rules and those who have exhausted their benefits. Therefore a crude estimate of the coverage of this type of compensation can be obtained.

Table 5 Proportion of unemployed who receive UI compensation, KAS and no compensation. By sex, age group and duration of unemployment

Year	All				Women			
	UI	KAS	No compensation	No. of unemployed (thousands)	UI	KAS	No compensation	No. of unemployed (thousands)
1978	0.45	0.14	0.41	102.6	0.39	0.17	0.44	51.8
1980	0.46	0.16	0.38	94.6	0.42	0.18	0.40	51.7
1982	0.50	0.14	0.36	161.3	0.45	0.17	0.38	81.8
1983	0.51	0.15	0.34	178.3	0.47	0.17	0.64	87.5
1984	0.58	0.11	0.31	159.3	0.55	0.13	0.32	79.1
1985	0.61	0.09	0.30	139.4	0.60	0.10	0.30	70.7
	<u>- 19 years</u>				<u>20 - 24 years</u>			
1978	0.09	0.26	0.65	18.5	0.37	0.19	0.44	19.6
1980	0.08	0.31	0.61	18.0	0.40	0.21	0.39	18.5
1982	0.12	0.27	0.62	26.7	0.47	0.20	0.33	31.8
1983	0.10	0.32	0.58	28.0	0.47	0.22	0.31	35.4
1984	0.09	0.11	0.80	10.4	0.49	0.22	0.30	34.5
1985	0.09	0.04	0.87	7.7	0.54	0.17	0.29	31.6
	<u>25-54 years</u>				<u>55 years and over</u>			
1978	0.49	0.10	0.41	46.8	0.77	0.09	0.14	17.7
1980	0.51	0.10	0.39	39.8	0.79	0.08	0.13	18.2
1982	0.56	0.10	0.34	76.1	0.76	0.07	0.17	26.7
1983	0.56	0.10	0.34	79.9	0.78	0.06	0.16	34.9
1984	0.57	0.10	0.33	75.0	0.80	0.05	0.13	39.4
1985	0.61	0.09	0.30	65.5	0.78	0.05	0.17	34.5
	<u>Unemployed 1-3 months</u>				<u>Unemployed > 3 months</u>			
1978	0.38	0.15	0.46	33.4	0.47	0.14	0.39	69.2
1980	0.40	0.17	0.43	30.9	0.49	0.15	0.36	63.7
1982	0.45	0.15	0.40	52.7	0.52	0.14	0.34	108.6
1983	0.47	0.16	0.37	57.8	0.54	0.14	0.32	120.5
1984	0.53	0.13	0.34	46.4	0.60	0.11	0.29	112.9
1985	0.57	0.10	0.33	40.5	0.62	0.09	0.29	98.9

Source: Labor Market Board (AMS). Officers from the Board report that some of those who are reported as UI recipients might not actually receive benefits because of the waiting periods which exist in the system. Hence the fraction of unemployed which do not receive any compensation is underestimated.

The data are presented in Table 6. The proportion which are members - and hence probably receive compensation - has risen sharply during the last decades. During the mid-sixties around 25 percent of the unemployed were members of certified funds. In 1985 the figure had increased to 63 percent. At the same time 78 percent of all labor force participants were members of a fund.

It is reasonable to ask whether any of the other forms of compensation mentioned above are collected by groups not covered by the insurance funds or KAS. First of all, it is not likely that early retirees remain among the unemployed. Most indications suggest that these people have left the labor force. Nor is it likely that those who collect severance benefits under either AGB or AGE remain among the group of unemployed who receive neither insurance benefits nor KAS.

Unfortunately, we do not know to what degree those who lack unemployment compensation receive public welfare payment. Our empirical knowledge about the income situation of the unemployed is consequently rather deficient.

It is important to understand which types of unemployment are covered by compensation and which are not. As shown above, UI benefits may be paid for radically different kinds of unemployment, for example, involuntary dismissal, short term lay-offs and voluntary quits. Information of this kind would be valuable for an analysis of the distributional and incentive effects of unemployment insurance.

However, the statistical information available on this matter is deficient, in spite of the fact that the unemployment funds should be able to collect and publish such data. This is, in fact, done only by a few white-collar insurance funds. Table 7 presents some of these data. Among the industrial white-collar workers nearly one half of the unemployed persons had their employment terminated by the employer. Note that roughly 20-30 percent of unemployed white-collar workers have quitted voluntarily.

Table 6 Proportion of unemployed persons who are members of UI funds. By sex and age group

	<u>Both sexes</u>		<u>Men</u>	<u>Women</u>
	Age 16-74	Age 16-24	Age 16-74	Age 16-74
1963	0.21	-	0.34	0.07
1964	0.28	-	0.42	0.08
1965	0.25	-	0.40	0.08
1966	0.31	-	0.48	0.11
1967	0.33	-	0.45	0.18
1968	0.36	-	0.46	0.19
1969	0.37	-	0.49	0.21
1970	0.41	-	0.52	0.27
1971	0.41	-	0.52	0.27
1972	0.40	-	0.49	0.29
1973	0.40	-	0.50	0.28
1974	0.39	-	0.46	0.32
1975	0.40	-	0.50	0.31
1976	0.41	-	0.47	0.35
1977	0.43	-	0.49	0.39
1978	0.50	-	0.53	0.45
1979	0.48	0.32	0.52	0.44
1980	0.48	0.36	0.53	0.43
1981	0.54	0.41	0.60	0.48
1982	0.55	0.39	0.60	0.50
1983	0.57	0.42	0.62	0.50
1984	0.63	0.50	0.65	0.60
1985	0.63	0.50	0.64	0.62

Source: Statistics Sweden (SCB), Labor Force Surveys (AKU).

Table 7 Reasons for unemployment within some white-collar UI funds

	1979	1980	1981
<u>Industrial White-Collar Workers</u> (Industritjänstemännen)			
Number of persons	2 292	2 045	2 582
Fraction job losers (reorganization, personell reduction)	0.47	0.40	0.44
Voluntary quits	0.30	0.30	0.30
Other	0.23	0.30	0.26
<u>Government White-Collar Workers</u> (Statstjänstemännen)			
Number of persons	1 187	1 490	2 035
Fraction job losers (reorganization, personell reduction)	0.10	0.12	0.09
Termination of a temporary job	0.56	0.58	0.66
Fraction who quit voluntarily and moved with spouse	0.13	0.11	0.09
Other voluntary quits	0.21	0.19	0.16
<u>Local Government White-Collar Workers</u> (Kommunaltjänstemännen)			
Number of persons	3 369	4 246	5 635
Fraction who quit voluntarily and moved with spouse	0.11	0.12	0.12
Other voluntary quits	0.19	0.15	0.10
Termination of a temporary job	0.67	0.70	0.76
Other	0.03	0.03	0.02

Sources: Information from the UI funds.

3.3 Rules Affecting Temporary Layoffs¹

Special rules pertain to "permitteringar" which are temporary layoffs, in general lasting a couple of weeks. The formal job contract between the employer and the employee is not broken by a temporary layoff.

Some groups, such as all white-collar workers and some LO groups, have reached agreements with the employers, which do not allow temporary layoffs at all. For most blue-collar workers though, temporary layoffs are allowed. The rules which affect these layoffs are determined both by law and by agreements.

The laws have changed several times during the last decades. The general trend has been that the employers successively have been forced to pay "temporary layoff wages" during longer periods of the layoffs. In turn, the government - via subsidized UI benefits - has covered successively shorter periods. The term "experience rating" is often used about a system which forces the individual firm to pay the costs of the layoffs it causes. The degree of experience rating has consequently increased in Sweden during the last decades.

The laws which were in effect during the period 1974 to 1984 made a distinction between continuous and recurrent temporary layoffs. In case of a continuous layoff the law forced the employer to pay temporary layoff wages, almost equal to the ordinary wage, from the third week onwards. UI benefits were allowed during the second week but not during the first due to the one week waiting period. Instead an agreement between unions and employers forced the employer to pay temporary layoff wage during this week.

¹ This section draws heavily on Edebalk and Wadensjö (1986).

In case of a recurrent layoff (e.g. every other week, a couple of days per week or reduced length of the work day) UI benefits were allowed to be paid during 5 effective weeks per calendar year. The first effective week and all periods of temporary layoff in excess of 6 weeks (30 days) should be covered by temporary layoff wages paid by the employer.

Consequently UI benefits could be used for longer periods in case of recurrent layoffs. Hence the degree of experience rating was lower for recurrent layoffs during 1974-1984.

The new rules from 1985 onwards are slightly more complicated. The distinction between continuous and recurrent temporary layoffs is no longer made though. Furthermore, UI benefits cannot any longer be paid to temporarily laid off workers.

The new laws require that the employer pays temporary layoff wages during the whole period. However, the government compensates the employer for parts of his costs. Figure 1 describes the division of costs between the employer and the government. As seen, the government covers most of the costs for the following effective days of temporary layoffs: 3-10, 13-20 and 23-30. The rest is paid by the individual firm.

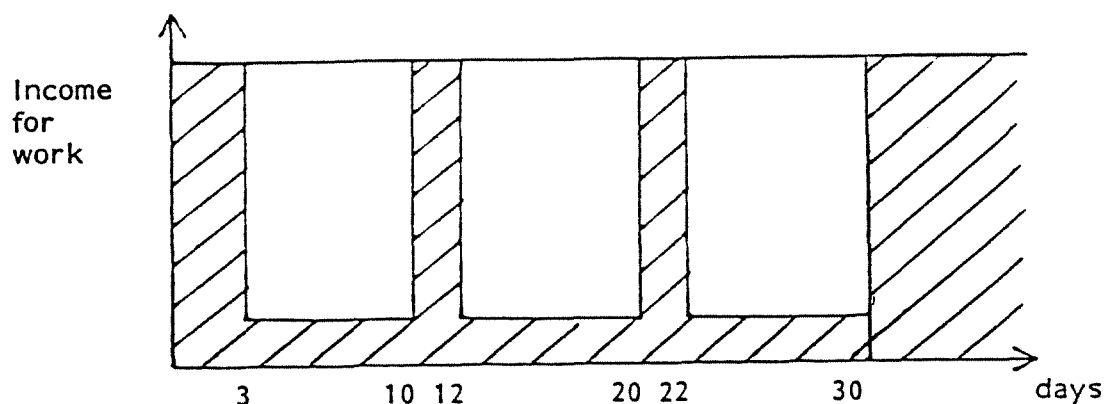
It is hard to say how the degree of experience rating has been affected by this change in the rules. However, it is clear that the relatively generous treatment of recurrent layoffs in comparison with continuous layoffs was removed.

Unfortunately the statistical information about the number of temporary layoffs in the Swedish labor market is very meager. The available information, which must be treated as "indicative", shows that temporary layoffs have decreased in magnitude during the period when the degree of experience rating increased.¹

¹ The available indicative information can be found in Edebalk and Wadensjö (1986).

In the early eighties the total number of temporary layoffs was low by international standards. The total number of temporary layoffs - including part-time (recurrent) layoffs - probably amounted to a couple of percent of total unemployment.

Figure 1 The employer's and the government's share of costs for temporary layoffs according to the new rules from 1985



Note: The areas with diagonal lines indicate what is compensated by the employer. The empty areas indicate what the government pays. By days is meant effective work days.

Source: Edebalk and Wadensjö (1986).

3.4 Benefit Levels and Replacement Ratios

Unemployment benefits are typically related to the unemployed worker's alternative income as employed, and thus specifies a replacement ratio, the ratio of net income if unemployed to that in work. Measures of replacement ratios are widely used in empirical studies of the effects of unemployment compensation.

Calculations of replacement ratios involve a number of different problems. One is how a worker's expected income if employed should be specified. The answers differ depending on which labor force category we focus on. For instance, unemployed individuals have in general lower potential earnings than those in work, women have lower earnings than men, and young workers face lower expected wages than adult employees.

Replacement ratios are also affected by the duration of the unemployment spell. This is partly due to the one week "waiting period", during which no benefits are paid out; it is also a consequence of the interaction between the UI system and the progressive income tax system. The waiting period causes the replacement ratio for the spell, referred to as the "average" replacement ratio, to increase with the duration of the spell.

Progressive income taxes causes the average tax rate to fall as the duration of unemployment increases. The after tax replacement ratio is therefore greater than the replacement ratio before taxes. However, for short spells the difference between replacement ratios calculated before and after tax are negligible; the reason is simply that short spells entail little loss in yearly income and therefore a negligible reduction in the average tax rate.¹

The average replacement ratio gives a measure of the relative income compensation during an unemployment spell of a given length. The "marginal" replacement ratio is based on a different

¹ The after-tax average replacement ratio is given by the expression

$$R = \frac{B(D - 1)(1 - t')}{D \cdot W (1 - t)}$$

where B is the weekly benefit level, D is unemployment duration in weeks, W is weekly earnings, t' is the average income tax rate if unemployed D weeks, and t is the tax rate if not unemployed. For short spells of unemployment, t is approximately equal to t'.

concept. It relates income if unemployed one additional week to potential income if employed during this week. For a worker who just has passed his one week waiting period, the marginal replacement ratio is (roughly) given by the ratio between benefits and earnings. (Income tax effects are not important, since the marginal tax rate if unemployed one extra week will be roughly the same as the marginal tax rate if employed.) For a worker who has exhausted his benefits, the marginal replacement ratio is obviously zero.

Marginal and average replacement ratios are linked to different theoretical frameworks. The marginal replacement ratio has its orientation towards search theory, where job acceptance decisions are made on the basis of a comparison between the value of an offer and the value of continued search. The average replacement ratio, on the other hand, has links to classical "labor supply models" of voluntary unemployment. The average replacement ratio shows a worker's incentive to take, or retain, a job instead of spending a given number of weeks in unemployment. In some models, including models of union wage setting, the benefit level, rather than the replacement ratio, appears as a crucial variable that influences unemployment.

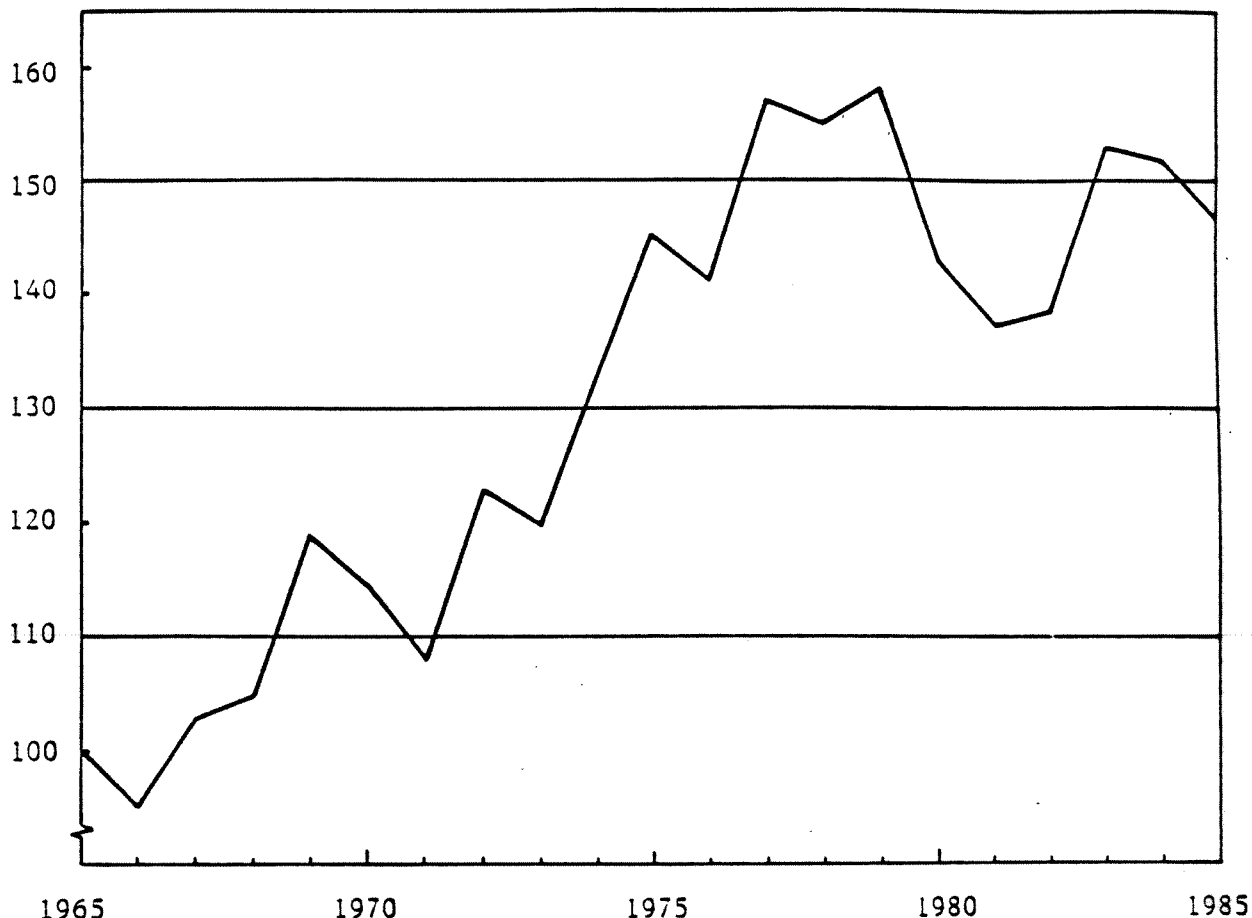
It is obvious that a tax system which is tied to the calendar year causes the rate of compensation to depend on how a certain period of unemployment is distributed across the year. Compare, for example, the situation of two, otherwise identical, individuals who each experience a period of unemployment of one year, but the first becomes unemployed at the beginning of the year and the other in the middle of the year. The average replacement ratio for the spell will be higher for the former individual, simply because income tax rates will be lower.

Trends in Benefit Levels and Replacement Ratios

Real benefits for insured workers (i.e., members of UI funds) have increased substantially since the mid-60s. Figure 2 shows the development of real, after tax, benefit levels for a worker receiving the average granted amount of UI compensation. The purchasing power of benefits was around 50 percent higher than it was in the mid 60s. The upward trend from 1965 is, however, broken in the late 70s.

Figure 2 **The development of real benefits for insured workers, 1965-85**

Index: 1965 = 100



Note: The benefit level is the average granted benefit (tillförsäkrad dagpenning). The income tax rate applied presupposes three months of unemployment. Benefits were not taxable before 1974.

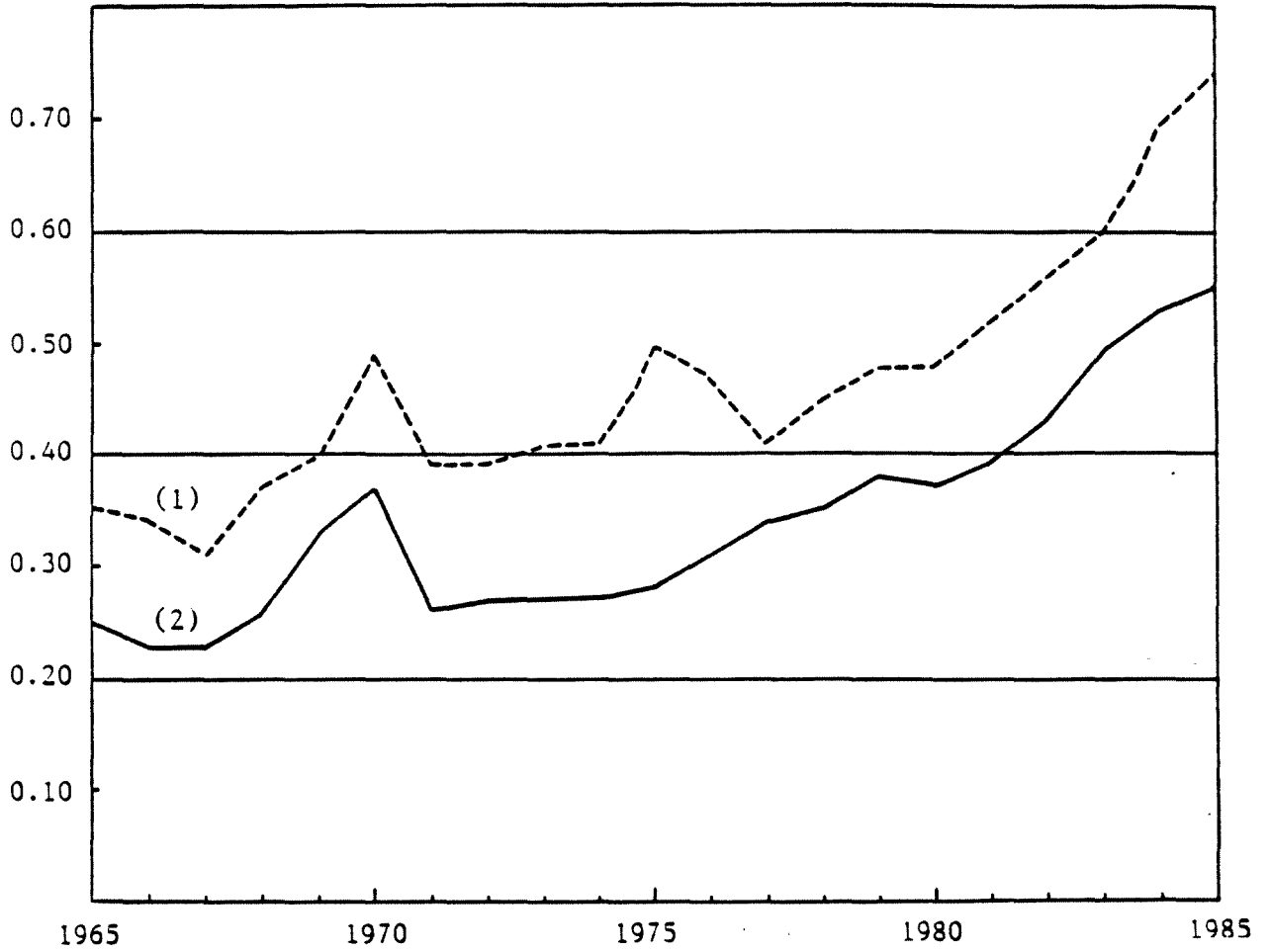
Replacement ratios for "average unemployed workers" are displayed in Figure 3. The calculations recognize the trend increase in UI coverage; unemployed workers are much more likely to receive some compensation in the 80s compared to the 60s, partly due to the introduction of KAS in 1974 and partly due to the growing membership in UI funds.

Figure 3 shows replacement ratios for spells of average lengths. The strong upward trend is notable and is caused primarily by the growing membership in UI funds. Around 30 percent of weeks spent in unemployment were covered by UI compensation in the mid-60s, and the coverage had risen to above 60 percent 20 years later. On average, unemployed workers could expect to receive 20-30 percent of lost income in the late 60s, but more than 50 percent in the mid-80s.

Average replacement ratios for insured workers are displayed in Figure 4. Female replacement ratios are above those of males because of lower female earnings. Because male wage rates have grown slower than female wages, male replacement ratios have increased faster than replacement ratios for women.

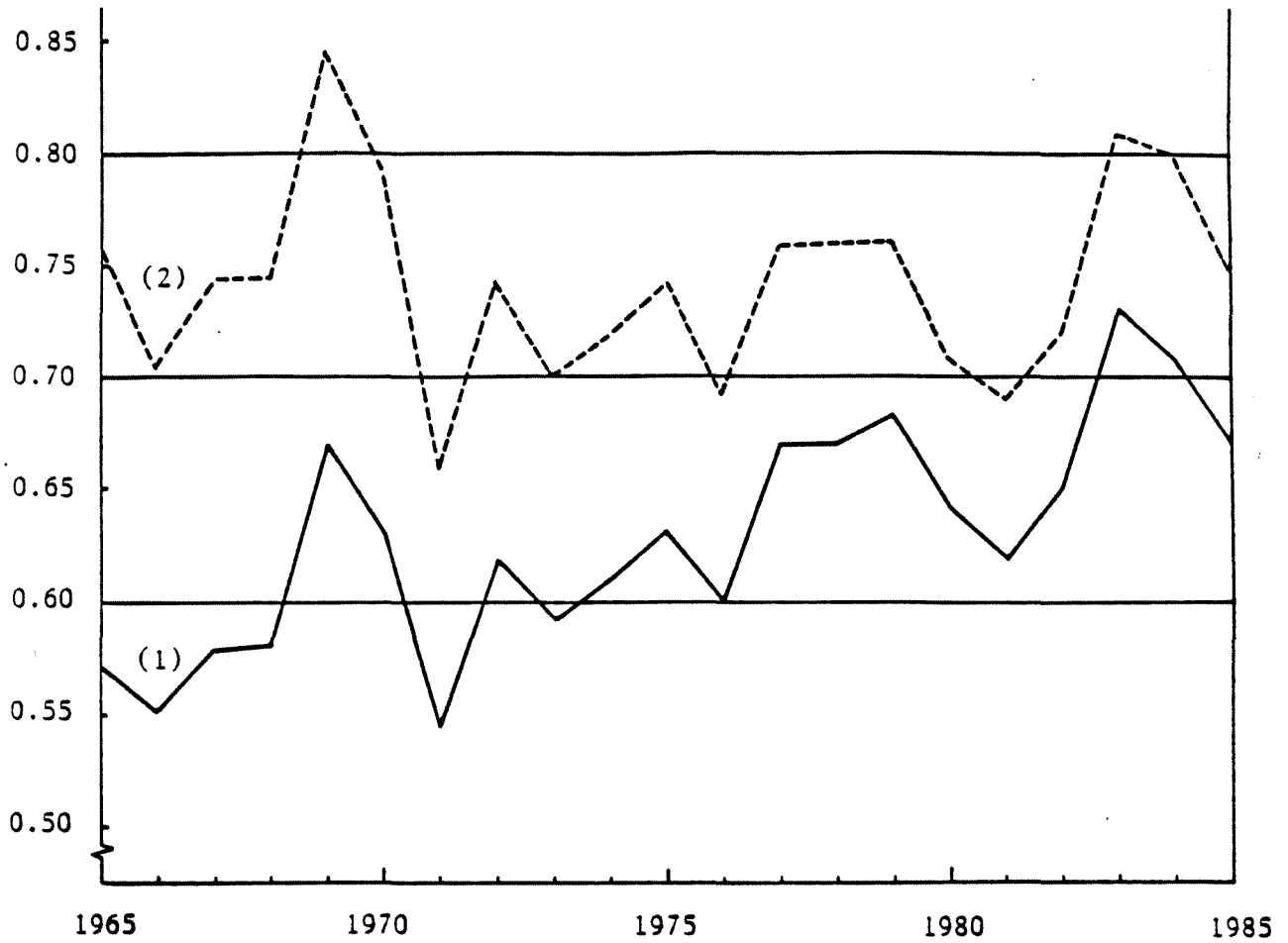
Benefit levels have an upper limit in nominal terms, with the restriction that no more than 91.7 percent of previous income can be covered. Replacement ratios are therefore falling with a worker's expected income if employed. Consider a worker who has passed his waiting period of one week and who compares his income next week if unemployed to his prospective income in work during this week. Figure 5 shows how this marginal replacement ratio vary with potential earnings for workers with UI compensation and KAS. A male blue-collar worker with average earnings faces a marginal replacement ratio of 75-80 percent. A male white-collar worker with the average manufacturing salary faces a marginal replacement ratio of around 50-60 percent. Workers with KAS experiences much lower marginal (and average) replacement ratios.

Figure 3 Fraction of unemployment days per year covered by UI compensation (1), and average (after-tax) replacement ratios for unemployed workers (2), 1965-85



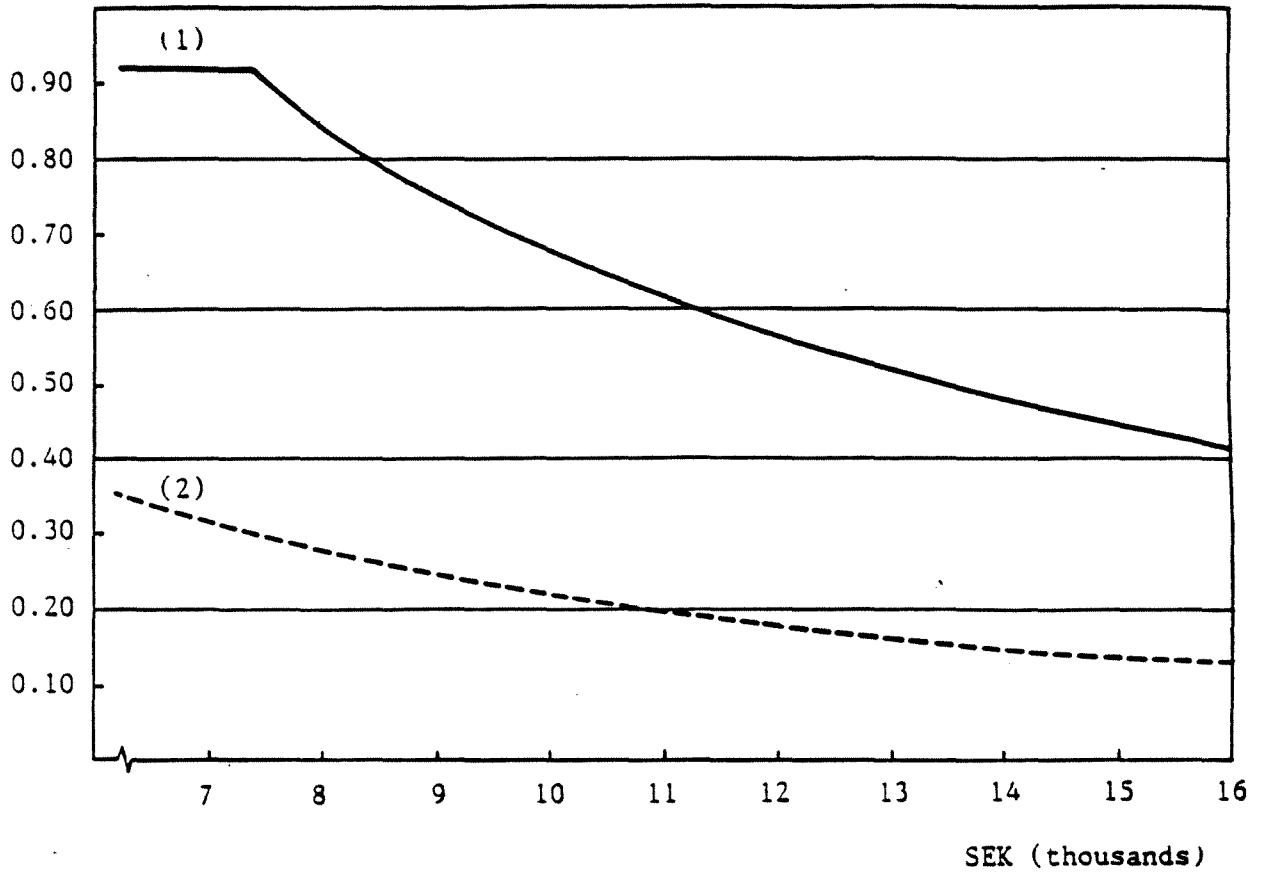
Note: Unemployment spells of average lengths are assumed. Details regarding the calculations are given in Appendix.

Figure 4 Average replacement ratios among insured male (1) and female (2) blue-collar workers, 1965-85



Note: Unemployment spells of 3 months are assumed.

Figure 5 Marginal replacement ratios 1985 by monthly income for workers with UI compensation (1) and KAS (2)



Note: The calculations are based on daily benefits of 315 SEK (UI compensation) and 100 SEK (KAS), respectively.

In conclusion, the Swedish UI system has become successively more generous over the last two decades. The maximum benefit periods have increased substantially, and there is also a marked trend increase in UI coverage, partly due to the introduction of KAS and partly due to the growing membership in UI funds. Real net benefits for insured workers have increased by 50 percent since 1965; real wages have increased at a slightly slower pace, and replacement ratios for insured workers have thus risen.

As noted in Chapter 3, other improvements for unemployment threatened workers have also taken place. Older workers can receive severance pay on terms set in agreements between the labor market organizations. And the legislation on employment protection, involving, inter alia, advance notification rules, has facilitated on-the-job search before the job loss actually occurs.

A caveat is in order, however, regarding the calculations presented above. They are based on various hypothetical characteristics of unemployed individuals. Unfortunately, we do not have much information from household survey data on actual replacement ratios. The diversity of the circumstances of the unemployed, stressed by, for example, Atkinson and Micklewright (1985), can of course not be illuminated without access to such data.

4 UNEMPLOYMENT INSURANCE AND INCENTIVES

4.1 Theoretical Issues

The design of the unemployment compensation system can affect labor market behavior via several different mechanisms. Some effects are intuitively obvious, while other effects can barely be discerned without theoretical analysis. In this section, we shall primarily discuss how unemployment compensation affects individuals' labor force behavior, but we offer also a brief discussion of the response of firms and trade unions to the structure of the unemployment compensation system.

Job Search Behavior¹

A substantial number of theoretical and empirical studies have focused on how the individual unemployed job searcher responds to changes in the level of UI benefits. The overall labor market impact of changes in benefits has been addressed less often, and issues pertaining to the financing of benefits are likewise not often analyzed in a search theory framework. Our discussion also reflects this, perhaps somewhat excessive, emphasis on micro-behavior.

Consider, then, the problem facing an unemployed job searcher. The chances of obtaining a job depends on the opportunities of getting job offers as well as the reservation conditions the worker sets for accepting a job. The chances of getting offers depend on, for example, the availability of job vacancies and on the conditions the employer sets on applicants.

¹ A number of theoretical studies have examined the relationships between job search behavior and unemployment compensation. Important contributions include Mortensen (1977) and Burdett (1979).

The willingness to accept an offer depends on, inter alia, the wage, the working conditions, or the geographical location of the job. It is reasonable to assume that an improvement of the labor market situation, such as a rise in the number of job vacancies, would lead to increased reservation conditions.

Unemployment implies a certain cost for the individual. These are related to the fall in income accompanying unemployment, but also psychic costs may be involved. In addition, active job search implies expenses for travel and the like in order to make contact with potential employers.

How then does a higher benefit level affect the behavior or the unemployed individual? This depends on, among other things, to what degree the individual has the opportunity to reject offers without its affecting benefits. In practice, the unemployed person in Sweden has some ability to reject offers, for example, if he is "overqualified" for a certain job or is regarded being "locationally tied". Besides this, offers may be received and rejected outside of the Public Employment Office. Consequently, there is some scope for job rejection without the removal or postponement of benefits.

A higher level of benefits is like a reduction in the individual's search costs. The unemployed person therefore raises his reservation wage, and the duration of unemployment increases. A higher level of benefits may also affect the unemployed worker's search intensity and thereby the number of offers he comes into contact with. Search theory predicts that a higher benefit level tends to reduce search intensity and, consequently, to increase duration.

Unemployment compensation is also affected by the maximum benefit period; a longer period leads to effects which are essentially similar to those resulting from an increase in the benefit level. The unemployed person adjusts his acceptance wage upwards and duration increases.

There are cases, however, where a higher benefit level causes certain unemployed persons to become more likely to accept job offers? This is partly due to the fact that every job carries a risk of termination, and partly to the fact that not all groups of unemployed are entitled to unemployment benefits.

Most job offers involve a risk of future involuntary termination. Unemployed individuals are aware of this, and they also realize that such termination would lead to unemployment compensation (to the extent that the termination results in unemployment). Consequently, with a higher benefit level, it becomes more advantageous to have a job. Thus the individual's reservation wage falls.

A higher benefit level at the same time reduces the cost of unemployment, which tends to raise the reservation wage. This effect works against the above mentioned effect. Which influence predominates? It can be shown that the net result is higher reservation wages for those unemployed for a relatively short period of time and lower for those unemployed a relatively long period. A reduction in the costs of unemployment, implied by a higher level of compensation, can be insignificant to persons who run an acute risk of exhausting their benefits. For those who have just entered unemployment, the situation is different; they know that the higher benefits will be relevant for a longer period of time and consequently it is less important to accept job offers. How the length of the average unemployment spell is affected is no longer obvious, since the effects on workers unemployed long term and short term go in opposite directions.

So far we have examined the behavior of unemployed persons who are entitled to unemployment compensation. How does a raised level of unemployment benefits affect the behavior of unemployed individuals for whom unemployment compensation is not available? The higher benefit levels make it more attractive to accept offers and thereby qualify for benefits in the future. Unemployment duration should then be reduced if benefit levels are raised. In Sweden, this may be relevant for new entrants to the labor mar-

ket who are outside the UI funds and who have not satisfied the three months qualifying period to obtain KAS. It can also be a question of unemployed who are new members of insurance funds and have not yet satisfied the membership and work requirements.

In Sweden, a large part of the available jobs are temporary in the sense that the termination date is fixed in advance. The job-seeker knows in such cases that the work will cease after, say, six months. A higher benefit level makes the uninsured worker more inclined to accept such temporary jobs and thereby qualify for future benefits.

The discussion so far has focused on workers' behavior, ignoring that UI may also influence the distribution of wage offers. However, higher reservation wages among workers may well influence firms' wage setting. Few papers have addressed these issues within a search equilibrium framework; the exceptions include Albrecht and Axell (1984), Lang (1985) and Axell and Lang (1986). A general result in these papers is that the UI induced increase in equilibrium unemployment is less than what partial "supply side" models suggest; in fact the effect of UI on unemployment is, in general, ambiguous in these equilibrium search models. One mechanism driving this result is that a higher benefit level brings about a reallocation of firms in the wage structure. Low-wage firms find it more difficult to recruit workers when reservation wages increase and they therefore raise their wage offers. But when the frequency of low-wage firms decline, it may take a shorter time for job-seekers to find acceptable offers.

Labor Supply

Unemployment compensation can be perceived as a subsidy of market work. Since labor force participation is associated with certain risks of unemployment, the reduction in the cost of unemployment will raise the relative earnings from work in the

labor market. Changes in the benefit system may therefore increase labor force participation.¹

UI benefits are to some extent tied to previous income; the daily benefit rate rises with a shift from part-time to full-time work. By working more weeks (or more hours per week) the employed person can affect the level of his future hypothetical unemployment benefits. Higher replacement ratios may then increase labor supply among employed workers.²

It should be noted that our discussion has been partial. We have noted the possibility that an increase in labor supply results from increased benefits, but not dealt with the financing of the increased payments. Financing UI benefits by income or payroll taxes is likely to reduce the worker's net real wage, and additional labor supply effects may occur. However, this more realistic general equilibrium analysis of the problem barely exists in the literature.

Trade Union Behavior

Unemployment benefits play a significant role in the rapidly growing literature on trade union behavior. A popular approach portrays the union as attempting to maximize the individual worker's expected income (or expected utility). A prediction from standard models is that higher benefits will raise the union's desired wage rate by reducing the marginal cost of a wage increase. Since higher benefits reduces the income (or utility) differential between employment and unemployment, the union becomes more inclined to push for higher wages, thereby moving up on firms labor demand curve and reducing employment. This result follows from models of a monopoly union, where the wage rate is unilaterally

¹ Hamermesh (1979) and (1980).

² Yaniv (1982).

set by the union, but also from models with bargaining over wages.¹

Like most search models, union models have typically ignored how an increase in benefits is financed. An exception is Oswald (1982), who explicitly deals with how a rise in the benefit level affects wages if it is financed by taxes on workers or firms. It is shown that, under reasonable assumptions, higher benefits still tend to raise wages. This result, however, does not necessarily carry over to the case where unions engage in income redistribution between employed and unemployed members.² This occurs to some extent in Sweden, where the union-determined UI premiums often differ between employed and unemployed workers.

Temporary Layoffs

The discussion about UI effects on temporary layoffs has been based largely on the U.S. experience, where temporary layoffs are much more frequent than in Sweden. There have been studies of the extent to which the system leads to an increased tendency of firms to layoff workers rather than decreasing working hours per worker (or initiating direct wage cuts).³

Consider a firm that is small in relation to the economy as a whole. The employees can choose between different firms, and they require a compensation which is at least as high as that offered by other firms. This compensation primarily takes the form of wage income.

¹ See, e.g., Oswald (1985) and Nickell and Andrews (1983).

² Holmlund and Lundborg (1986b).

³ See Feldstein (1976) and Baily (1977a) for formal analyses.

The firm can be assumed to attempt to maximize profits by offering employees a compensation package including wages and layoff rules in case of adverse shifts in demand. When product demand is reduced, a firm may choose between, for example, layoffs and a cut in wages. Both of these alternatives bear certain costs; for instance, the situation for employees may worsen such that they leave the firm. The relative costs of the alternatives facing the firm are affected by the way in which the UI system functions. Assume that it is not directly financed by the firms who "make use" of it. In this case, the tendency of the firm to choose layoffs in the event of a fall in demand is increased. The reason is that the employees are assumed to consider their disposable income, regardless of whether it is derived from wages or unemployment benefits. Thus the firm can, by using the subsidy which the UI system provides, secure their employees a higher disposable income than would be possible without the subsidy. Through this kind of mechanism UI contributes to a rise in layoffs and subsequent higher unemployment.

Allocational Effects

UI benefits and the way they are financed also have implications for resource allocation. Suppose that an individual has to choose between working in two different industries, A and B, which are differentiated with respect to wages and patterns of demand. The demand for labor in industry A is stable throughout the year and/or business cycle while employment in the other industry shows seasonal and/or business cycle fluctuations. An acceptance of a job offer in industry A implies a small risk of unemployment while the choice of industry B bears a larger probability of being unemployed during some period.

Suppose that the individual's decision depends on a comparison of the expected net incomes, which the alternatives offer. It is clear that a higher level of unemployment benefits makes the industry with fluctuating unemployment more attractive. Unemployment

benefits function as an industry specific wage subsidy in which the subsidy is paid to the employees instead of the employers. The labor supply facing industry A is reduced at the same time as that facing B increases.

In the above discussion we have assumed that the individual has complete knowledge of employment fluctuations between industries as well as about the way in which these affect his own chances of unemployment. We may also allow for the existence of uncertainty with regard to the income and employment outcomes in different industries. A higher level of unemployment benefits contributes to a reduction of uncertainty (through reduced dispersion of income). People with risk aversion will consequently be less unwilling to choose industries with stochastic demand for labor.

The connection between variations in the demand for labor and the risk of termination has been gradually weakened in the Swedish labor market by, among other things, the job security laws of the 70s. This does not mean that the argument outlined is irrelevant for the Swedish labor market. First of all, it is likely that most of the decisions regarding the choice of occupations and industries are made relatively early in the life cycle. For the new entrant in the labor market, the relation between employment fluctuations and risk of unemployment is much more obvious than to someone with a long period of employment.

Secondly, there exists a lot of short-term jobs in the labor market. Firms and industries with strong seasonal patterns in their need for labor may prefer to hire for a short period rather than an indeterminate period of employment with the difficulties in quick reductions of the number employed which that implies. Some of the employees may also prefer temporary, as opposed to permanent, positions. A UI system which covers seasonal unemployment obviously increases the incentive to take work in industries with seasonal fluctuations.

In summary, there is reason to suppose that an unemployment insurance system of the Swedish type with liberal rules applying to seasonal unemployment, leads to distortions of resource allocation of the kind that direct industry specific subsidies would imply. It is not possible here to state on what order of magnitude these effects would be; that would require information on the wage elasticities of the demand for labor across industries as well as labor supply elasticities with regard to the expected income differences between industries. Some estimates of the current systems implicit wage subsidies are given in a following section.

4.2 The Empirical Evidence

Micro-Econometrics versus Macro-Econometrics

The last decade has witnessed a growing number of econometric studies attempting to assess the impact of UI benefits on unemployment. Most of these studies are based on British and U.S. data, but a small number of Swedish studies are also available. Most US studies have been micro-econometric, using cross-sectional or longitudinal data pertaining to unemployed individuals with varying benefit levels. The British studies, on the other hand, have often used time-series data of aggregate unemployment (duration) and benefit levels.

The use of time-series modelling in this field has its pros and cons. We have already noted that it may be misleading to use partial, supply-side, models as a basis for strong conclusions about the impact of unemployment compensation. As mentioned above, recent theoretical work has demonstrated that results from partial models do not necessarily carry over to a general equilibrium framework. Micro-econometric studies have typically explored variations in duration among unemployed workers with varying benefit levels; these studies may therefore, at best, capture pure supply responses, but they do not inform about the total impact on unemployment.

Time-series models may, from this point of view, appear as more appropriate than models based on cross-sectional data. A macro-econometric model explaining, for example, labor demand, labor force participation and wage setting is conceivable; from such a model one might derive and compute the total effects of higher benefits. This approach has also been pursued in several British studies. Unfortunately, the effects estimated from time-series models appear extremely sensitive to the choice of sample period and the choice of exogenous variables.

The set of British time-series studies include Gujarati (1972), Maki and Spindler (1975), Sawyer (1979), Junankar (1981), Nickell and Andrews (1983), Minford (1983), Layard and Nickell (1985) and (1986). The time-series models have often been based on frameworks with union wage setting. The estimates of the elasticity of unemployment with respect to (real) benefits range from zero (or even negative numbers) to Minford's elasticity of 4.¹ The most recent study at our disposal - Layard and Nickell (1986) - produces a benefit elasticity of 0.7, using data for the period 1954-83. It seems safe to conclude that the time-series studies have so far not converged to anything similar to a consensus regarding the impact of benefits on unemployment.

Unemployment Duration and Benefits: Britain and the U.S.

A number of micro-econometric studies of the relationship between unemployment duration and benefits have been carried out in Britain and the U.S. Both of these countries have in common with Sweden a work test; an unemployed worker can be denied benefits if he refuses to accept a job offer. The extent to which this work test actually is enforced in the different countries is, however, by and large an open question.

¹ A critical review of Minford's model is given in Nickell (1984).

Two "early" micro-econometric British studies are those by Lancaster (1979) and Nickell (1979). Both studies found an elasticity of duration with respect to benefits of around 0.6.¹ Effects of a roughly similar magnitude have been estimated in U.S. studies from the 70s; evaluations and summaries of those studies are given by Welch (1977), Danziger et. al (1981), and Gustman (1982).²

A recent British study by Narendranathan et. al (1985) uses longitudinal data on the first unemployment spell experienced by a male sample from 1978-79, with direct observations on unemployment benefits receipts. (Earlier British studies used imputed rather than actual benefit levels.) The study finds an elasticity of expected duration with respect to benefits in the range of 0.30-0.35. This elasticity shows a marked age variation, ranging from 0.8 for teenage males, 0.4 for men aged 25-44, and zero for men over 45.

Narendranathan et. al also test whether the effects of unemployment benefits vary with elapsed duration, suggesting that because of the "small (or negative) increase in utility from prolonging unemployment for men already unemployed for some months, one might expect that the reservation wage for such men will have fallen sufficiently for the probability of accepting a job offer to approach unity". This conjecture is not rejected by the tests; benefits had no effect on expected duration for men unemployed over 6 months, except for teenagers. This finding is consistent with the theoretical predictions from search models incorporating a limited duration of UI benefits; recall that higher benefits may increase the probability of job acceptance as the worker approaches benefit exhaustion.

¹ But Atkinson et. al (1984) indicate that the estimates may not be well determined.

² Among U.S. studies are Classen (1977) and Classen (1979), Ehrenberg and Oaxaca (1976), Holen (1977), and Burgess and Kingston (1976).

UI benefit may prolong job search by raising reservation wages among insured workers. Feldstein and Poterba (1984) have shed light on this issue by using a sample of unemployed workers with reported reservation wages. They explore the determinants of a worker's reservation wage ratio, i.e., the ratio of the reported reservation wage to the wage in the worker's last job. They find that a rise in the net replacement rate - the ratio of benefits to net earnings - by one percentage point raises the reservation wage ratio by 0.1 points for workers on layoff, by 0.4 points for other job losers, and by 0.3 points for voluntary job leavers.

Standard search models predict that higher benefits will raise the worker's reemployment wage, since the induced rise in the reservation wage raises the worker's mean acceptable offer. Several empirical studies have examined this possible effect. Most studies have been undertaken in the U.S., and the typical, although not universal, finding is that higher UI benefits involve significant earnings gains for insured workers.¹

Other Issues: Temporary Layoffs and Labor Supply

A few U.S. studies have addressed how government subsidized UI benefits affect the frequency of temporary layoffs and the empirical evidence has, on the whole, supported the theoretical predictions. Feldstein (1978) used micro-data, and explained the probability of being on temporary layoff by, inter alia, the UI replacement ratio.² These estimates indicate very strong effects; UI benefits appear to cause around 50 percent of all temporary layoff unemployment in the U.S. However, the estimates capture

¹ Studies of UI effects on wages include Ehrenberg and Oaxaca (1976), Burgess and Kingston (1976), Holen (1976) and Classen (1977 and 1971).

² The study by Clark and Summers (1982) focus instead on the effects of UI benefits on the transitions between employment and layoff unemployment. The study finds effects that are qualitatively similar to Feldstein's.

the effects of higher benefits on firms' layoff behavior as well as workers' search behavior. Generous benefits may prolong unemployment among workers on layoff by reducing search efforts and raising reservation wages; by implication, the likelihood of finding a worker an temporary layoff at a point in time is increased.

Feldstein's study does not inform about the role of experience rating in affecting unemployment. This issue is addressed by Topel (1983), who measures the extent of UI subsidization across different states in the U.S. Topel's estimates imply that incomplete experience rating accounts for as much as 30 percent of all spells of temporary layoff unemployment. Nonsubsidized benefits appear to have negligible impact on layoffs.

While many studies have investigated the responses of insured workers to changes in benefits, very few papers deal with "entitlement" effects. For individuals currently out of the labor force, an increase in benefits raises the likelihood of labor force participation, and uninsured workers in the labor force will reduce reservation wages as a response to higher benefits, thereby reducing duration.

Two studies by Hamermesh (1978 and 1979) have addressed these issues, and lent empirical support in favor of the entitlement hypothesis. For example, easier UI eligibility requirement induce more weeks worked among adult women. The study by Clark and Summers (1982), using data on labor force transitions, finds similar results. The probability of moving from employment to non-participation is significantly reduced as a result of UI benefits. Taking all labor force transitions into account (i.e., transitions between unemployment, employment and non-participation), Clark and Summers find that total elimination of UI in 1978 would have reduced the unemployment rate by 0.6 percentage points but also reduced the employment/population ratio by 0.6 points. The study thus indicates that UI benefits tend to increase unemployment and employment, and reduce non-participation.

Evidence from Swedish Studies

Let us now turn to the relatively smaller number of Swedish studies. A time-series study by Ståhl (1978) explored whether variations in the average benefit level had influenced fluctuations in unemployment among members of UI funds during the period 1963-73. No such influence could be detected; the measures of business activity appeared as the important explanatory variables.

Björklund (1978) used time-series for unemployment outflow and investigated, whether the increase in the duration of unemployment during the period 1965-76 could be explained by the increases in benefits during that time. Björklund identified the extended benefit period beginning for older workers in 1968, and for other fund members in 1974, as well as the introduction of KAS in 1974, as the important changes during this period. An effect could be identified for the older workers (in 1968), but no corresponding effect could be found in 1974 for the other groups. The development of unemployment duration for older as well as younger workers were, however, dominated by a common trend covering the entire period.

Another study by Björklund (1981) has investigated the variations in unemployment duration in cross-sectional data of unemployed individuals with and without UI benefits. Individuals who collected benefits had neither longer spells of unemployment, nor higher wages in subsequent jobs, than the unemployed workers who were not covered, when controlling for other factors, such as age, sex and education. Again, the results must be interpreted cautiously since the data set used was not perfect.

Heikensten (1984) used micro-data from the Swedish labor force surveys (AKU), and explored whether transitions from unemployment was influenced by, inter alia, membership in UI funds. He

found that the probability of remaining unemployed one quarter after unemployment entry was higher for UI fund members; individuals with UI compensation thus experienced longer spells of unemployment. However, this effect was due to a lower probability of leaving the labor force, whereas the probability of moving from unemployment to employment was not significantly affected by UI fund membership. This study thus indicates that UI compensation tends to increase unemployment duration by reducing labor force withdrawals.

Holmlund (1986) has investigated transitions to employment among unemployed youth (age 16-24) in the Stockholm area. He uses a continuous time data set, where transitions between labor force states are recorded week-by-week. The conditional probability of leaving unemployment is explained by a number of personal and other characteristics, including income sources during unemployment. He finds that individuals with UI compensation experience significantly longer spells of unemployment; the estimated difference in duration between otherwise identical persons with and without UI compensation is 7 weeks. Individuals with KAS are not found to show significantly different behavior than those who do not receive KAS or UI compensation.

Seasonal Unemployment

The Swedish UI funds generally adhere to the traditional occupational and industrial classifications. Table 8 shows the average compensation per member for some of the funds, after deduction of employees' contributions, in terms of SEK per member. This net compensation is roughly equivalent to the government contribution per member. These numbers express the implicit wage subsidies of the UI system. It is clear that Swedish fishermen, above all, receive a considerable income supplement in the form of sub-

sidized unemployment benefits; it is equivalent to more than five percent of the average worker's income. Relatively high amounts of compensation are also to be noted for construction workers, as well as workers in agriculture and forestry.

Table 8 suggests that the current system treats seasonal unemployment rather generously; construction, agriculture, forestry, and fishing can be assumed to be especially prone to seasonal fluctuations in the demand for labor. This is supported by Table 9, which shows the variation in unemployment across a year for some UI funds. Seasonal swings are most apparent within the fishing; unemployment during the winter months is 10 to 15 times as high as during the summer. Seasonal variation is also strong within forestry and construction.

Edebalk and Wadensjö (1978) have studied the seasonal variation of unemployment mostly within the construction workers' UI fund. The availability of unemployment benefits to seasonal unemployment increased considerably in 1964, and Edebalk and Wadensjö investigated whether seasonal fluctuations in unemployment increased at this point in time. They found an effect in the expected direction, although the level of statistical significance was relatively low, so the results must be interpreted cautiously. Seasonal fluctuations in unemployment showed a trend decrease during the period under investigation (1956-75), which means that the new rules could, at most, have slowed up this development.

In summary, the indications are that seasonal unemployment is treated generously in the Swedish UI system. This means that industries which have predictable seasonal patterns in demand or production conditions are subsidized at the expense of industries which have a relatively stable level of activity across the year. The number of employed within, for example, fishing, forestry and construction is higher, and the number employed in the engineering industry is lower, than would be the case in a system which did not subsidize seasonal unemployment. Furthermore, the system probably raises the total level of unemployment in this way.

Table 8 Average UI subsidies per member and year for some UI funds, 1976-81

(in SEK after deduction of employees' contributions)

	1976	1977	1978	1979	1980	1981
Agricultural workers	806	909	1 374	1 096	1 869	2 302
Forestry workers	1 090	1 375	1 729	2 267	2 591	2 743
Clothing workers	547	991	1 611	1 835	1 319	1 873
Metal workers	219	349	96	615	551	1 013
Construction workers	839	1 251	2 113	1 855	1 519	2 789
Painters	384	465	875	903	700	1 010
Longshoremen	276	1 019	1 399	1 512	1 802	2 684
Seamen	115	492	975	888	699	1 485
Swedish fishermen	2 733	3 063	2 984	4 311	3 685	3 672
Total	180	266	434	478	479	742

Note: Numbers indicate amounts before tax.

Source: Labor Market Board (AMS), insurance unit.

Table 9 Index of seasonal variation of unemployment for some UI funds, 1976-79

(Index 100: yearly average)

	Forestry Workers	Metal Workers	Construction Workers	Swedish Fishermen	Total
January	143	109	161	196	122
February	138	102	162	280	118
March	133	103	147	227	112
April	121	100	116	92	99
May	75	91	75	38	88
June	54	95	55	26	85
July	67	101	55	21	88
August	57	100	61	28	89
September	59	96	61	43	89
October	90	98	72	43	91
November	123	99	90	78	101
December	139	105	143	123	118
Average unemployment 1976-79 (%)	5.0	1.5	4.4	2.7	1.4
Coefficient of vari- ation for monthly unemployment rates 1976-79	0.36	0.27	0.48	0.96	0.21

Note: Unemployment figures are published by AMS in their series Arbetsmarknadsstatistik (Labor Market Statistics).

5 UNEMPLOYMENT INSURANCE AND INCOME DISTRIBUTION

A fundamental argument for government intervention in the unemployment compensation system was that information costs and lack of opportunities for individuals to pool their unemployment risks restrict the supply of unemployment insurance on the private market. The insurance literature has thus pointed to the efficiency gains of various kinds by government support of the system.

It is unlikely that everyone profits by this intervention; that is, that the government's actions in this area are Pareto-efficient. The government's expenditures are financed primarily by pay-roll taxes paid by the employers. These contributions are probably paid by all workers in the form of lower wages in the long run. Since many employees today have decided not to pay the fee for membership in an unemployment insurance fund, they probably lose in the current situation. They are forced to contribute to the cost by way of foregone wages but do not have access to the benefits in case of unemployment.

Which groups win in the Swedish unemployment insurance system? Does the system contribute to a more even income distribution? In order to answer these questions, one must be able to compare the actual distribution of income with the hypothetical distribution which would result if the government subsidization were taken away or reduced. This is obviously a difficult task. It is likely that a number of changes would occur in the labor market if the government support were withdrawn. Certain private or organizationally based insurance systems would probably arise. The structure of contracts in the labor market might be changed, etc. This would, in turn, affect even those who would not encounter unemployment in the current system.

Without a developed model of these indirect effects, we can, as a first approximation, investigate the direct effects. We first postu-

late that each employee contributes to the financing of the government subsidies to unemployment compensation by sacrificing a fraction of the wage. This means that we assume backward shifting of the payroll tax. Second, we assume that the winners are those who actually receive the benefits.

What redistribution would be expected a priori? First of all, we can expect negligible transfers to high income earners, because we know the risk of unemployment is lower among the more highly skilled workers (see Björklund (1981) and Holmlund (1981)). On the other hand, we can also expect that an insignificant amount is distributed to individuals with very low incomes who probably have weak attachment to the labor force; those may include many handicapped people, those with long-term illnesses, but also youths and women who work on a temporary basis.

One can point to some arguments for part of the subsidy going to workers who lie relatively high on the wage scale. One argument is that unemployment benefits are paid for temporary layoffs which occur in industries with relatively high wages, such as the engineering, paper and steel industries. Here it is a matter of a relatively small loss of income which in the current situation is compensated partially by layoff supplements and partially by unemployment benefits. How large a part of insurance payments are made for layoffs is not known since the relevant data are lacking.

Another argument is that a large part of the transfers go to families with relatively high total incomes. A family with two income earners has a better chance to obtain benefits than a family with a single income. We also saw above that in the white collar workers funds, a not insignificant amount went to persons who had quit voluntarily to move with their spouses.

In the following, we present an empirical analysis of the distributional impact of unemployment compensation. It is based on data from the Level of Living Survey.¹

Table 10 gives a picture of the distribution of unemployment benefits across different income groups in 1980. In the first part of the table the recipients of KAS are located in the income distribution. Not surprisingly, they can mainly be found on the lower half of the income scale; 93 percent of the recipients of KAS belong to the lowest half (see the first row of the table). On the other hand the recipients are not highly concentrated to the lowest decile. Probably the lowest decile is dominated by persons who do not participate in the labor force at all.

The second row shows that benefits are more highly concentrated to the lower end of the income scale than the recipients. Whereas 49 percent of all persons who receive KAS belong to the first quartile, it appears that 59 percent of all benefits are paid to the individuals in the lowest quartile. This indicates that unemployment duration is longer among the KAS-recipients with low total income.

The third row reveals that the KAS-benefits amounts to 52 percent of total income for the recipients of KAS in the lowest decile, but to much lower fractions among high income earners.

The second part of Table 10 provides the equivalent information about unemployment insurance benefits. It appears that those benefits are paid to individuals at a higher level in the income scale compared to the KAS benefits. Still though, 67 percent of all benefits are paid to individuals at the lower half of the distribution. A negligible fraction of all benefits - 3 percent - is paid to the individuals in the lowest decile and 11 percent to those in the highest decile.

¹ This section is based on Björklund (1986).

Table 10 Unemployment benefits by income class 1980 and the distribution of earned income, age 18-65 years

	<u>Decile 1</u>	<u>Quartile 1</u>	<u>Quartile 2</u>	<u>Quartile 3</u>	<u>Quartile 4</u>
<u>Cash benefits</u>					
Proportion of all KAS-recipients	0.09	0.49	0.44	0.05	0.02
Proportion of total KAS-benefits paid	0.12	0.59	0.35	0.04	0.02
Benefits as a percentage of total income of claimant	0.52	0.17	0.06	0.04	0.03
<u>Unemployment insurance</u>					
Proportion of all UI-recipients	0.03	0.11	0.50	0.28	0.11
Proportion of total UI-benefits paid	0.03	0.10	0.57	0.22	0.11
Benefits as a percentage of total income of claimant	0.95	0.38	0.22	0.11	0.11
<u>Distribution of earned income</u>					
	0.002	0.05	0.17	0.30	0.48

Note: The income distribution has been estimated using total yearly income before taxes from all sources of taxable income (including unemployment benefits). Earned income exclude sick-pay and unemployment benefits.

Another difference between the two types of benefits is that UI benefits constitute a larger fraction of the recipients total income than KAS benefits do.

The third part of Table 10 describes how earned income is distributed among the income classes. Because of the assumption above that the pay-roll taxes used to finance the benefits are shifted backwards into lower wages, this row describes which income classes contribute most to the costs of unemployment benefits. By comparing the location of the "contributors" and the "recipients" of the benefits a clear redistributive effect from the high income classes to the lower income classes can be found. Unemployment compensation in Sweden is not only an insurance system within certain income classes but also redistribution between income classes.

However, it is important to emphasize that this conclusion relies on analysis of data for individuals during a single year. It is not obvious that the same pattern would emerge if the corresponding analysis is extended to household income, or income over a longer time period than one year. In particular, the low-income profile of the KAS benefits would probably be changed if such analyses were done. The reason is that the KAS recipients are quite young and in many cases still living at home with their parents. This can be seen in Table 11, which provides information about certain characteristics of the recipients of KAS, the recipients of UI benefits, unemployed without any compensation and all individuals in the sample for the distributional analysis in Table 10. The average age of the KAS-recipients is 24.5 years. 32 percent are living with their parents and their average total income is low compared to the total population.

We next turn to another distributional issue. In Chapter 3 we noted that around 30 percent of all unemployed in Sweden did not receive any unemployment compensation at all. It is then natural to ask the question whether this is to be considered a serious distributional problem.

Tables 11 and 12 provide information which sheds some light on the issue. In Table 11 it appears that the unemployed without any compensation are older than the recipients of KAS, but on average slightly younger than all individuals in the sample. Furthermore it can be seen that the duration of unemployment is not extremely short - indicating that the income losses can be substantial. Very few are living with their parents. The average total income during the year is far below the average.

The low incomes of this group of unemployed is also apparent from Table 12. 72 percent belong to the lower half of the income distribution. Therefore it cannot be ruled out that the incomplete coverage of the existing unemployment benefits system is a distributional problem.

Table 11 Characteristics of (i) the recipients of cash benefits (KAS), (ii) the recipients of UI benefits, (iii) those unemployed 1980 who did not receive any compensation and (iv) all between 16 and 65 years

	Recipients of cash benefits	Recipients of UI benefits	Unemployed without com- pensation	All
Age	24.5	36.1	32.2	39.8
Weeks of unemployment during 1980	14.2	18.2	16.0	17.2
Married	0.41	0.61	0.59	0.71
Proportion living with parents and paying less than 100 SEK as rent per month	0.22	0.04	0.06	0.04
Average total income during 1980	35 400	54 300	38 700	57 700

Source: Own computations from the Level of Living Survey.

Table 12 Unemployed without any compensation by income class 1980 and the distribution of earned income, age 18-65 years

	Decile 1	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Proportion of un- employed without com- pensation	0.22	0.50	0.22	0.19	0.09
Distribution of earned income	0.05	0.05	0.17	0.30	0.48

Note: See Table 10

6 ASPECTS OF OPTIMAL UNEMPLOYMENT INSURANCE

6.1 Alternative Modes of Financing Benefits

We have already shown that the Swedish UI funds are heavily subsidized by the government. The subsidies are of two kinds, a proportional "basic grant" (grundbidrag) as well as progressive grant (progressivbidrag). The basic grant amounts to 80 percent of total UI benefits paid out by the fund. The progressive grant applies to the difference between UI benefits and the basic grant, and is an increasing function of the unemployment rate in the UI fund.

Government subsidies are thus increasing, at an increasing rate, with unemployment in a UI fund. There is, however, an upper limit to the progressive grant; it is fixed at 0.9 if the number of yearly benefit days are 22 or more.

Government subsidies as share of the total amount of benefits vary between 80 percent and 98 percent. UI funds with low unemployment (e.g. white collar workers with higher education) typically face a subsidy rate of 80 percent; benefits to unemployed workers in construction, or unemployed forestry workers, are often subsidized at a rate of 98 percent.

Several alternative modes of financing benefits may be contemplated. First, we might consider schemes involving experience rating pertaining to individual firms; an employer would then have to pay a fraction of benefits received by workers laid off by his firm. This would be a change in the direction of the U.S. system.

Is a system of this kind desirable, taking effects on incentives and equity into account? We are not convinced that full experience rating should be recommended. Individual firms do not control the duration of unemployment for those terminated. Firms located in high unemployment areas, or with workers with unfavorable labor market prospects, would experience larger increases in costs than

employers whose former employees quickly can find new jobs. This will, in turn, affect recruiting behavior; incentives for careful screening of job applicants will increase and the firm will be less inclined to hire workers with unfavorable or uncertain labor market prospects (such as workers with low education or little work experience). Unemployment prone individuals may then experience even greater difficulties in job finding.

Another conceivable change involves a general reduction in government subsidies and a concomitant increase in premiums paid by members of the UI funds. Such a policy has sometimes been recommended as a device to influence wage setting. The argument goes as follows: A UI fund is an integral part of a union, and the union's wage demand has a decisive effect on the outcome of a wage negotiation. In the extreme case, the union simply picks its desired point on the labor demand curve. The optimal wage is determined through maximization of some well-defined objective function, with wages and employment as arguments.

Suppose that a union attempts to maximize the members' welfare, recognizing that a wage increase will reduce employment, but also raise the UI premiums paid by the members. The desired mix of wages and premiums is influenced by, *inter alia*, the subsidy system. If union members have to finance a larger share of increases in benefits paid out, the marginal cost of a wage increase is raised. It can be shown that an income-maximizing union will respond by reducing the wage; employment therefore increases since firms are on their labor demand curves.¹ This result, however, does not necessarily carry over to a model where workers have concave utility functions (a diminishing marginal utility of income), as is typically assumed to be the case. A union that is facing a reduced amount of subsidies to its UI fund may thus respond by raising its wage demand in order to offset the fall in net income.²

¹ Holmlund and Lundborg (1986a).

² Holmlund and Lundborg (1986b).

Suppose, alternatively, that benefits are in part financed by industry-specific UI taxes on firms' profits or value added. An industry-wide union then perceives a direct link between its own wage choice and the size of the tax base. A higher wage may increase wage income (depending on the elasticity of labor demand), but it always reduces profits (or value added). At a fixed UI tax rate, a wage hike involves higher premiums through a reduced size of the tax base. It can be shown that schemes with a higher degree of profit-sharing (or revenue-sharing)-involving a direct link between the UI fund's revenues and the taxes paid by employers - will raise employment by reducing wage rates. The policies raise employment by increasing the elasticity of workers' net income with respect to the wage.¹

It would be premature to draw strong policy conclusions from our current meagre knowledge in this field. Suffice it here to mention the possibility of influencing incentives in wage setting by reducing the amount of general government subsidies and introducing sector-specific UI taxes on firms. Of course, such taxes involve a number of considerations that have been ignored in our brief discussion. The existence of several unions within the same industry is one complication. Another issue is the relationships between the structure of wage bargaining and the structure of UI taxes. Wages in Sweden are typically negotiated at three levels - economy-wide, industry-wide and at the level of the firm - and it is not obvious how UI taxes should be designed so as to influence local wage setting.

In conclusion, there may be a case for reduced subsidies to the UI funds as a device to influence wage setting. There is clearly a case for more experience rating as a means to reduce allocational distortions associated with cross-subsidization of industries. But reduced government subsidies to the UI system is also likely to have adverse distributional consequences. As is often the case, a trade-off between efficiency and equity is involved.

¹ Holmlund and Lundborg, (1986a) and (1986b).

Issues pertaining to the financing of UI benefits have also been addressed by Pissarides (1983). His framework is an equilibrium matching model, where a non-degenerate wage distribution exists because of variations in the efficiency of job-worker matches. The model implies a positive relationship between unemployment and the benefit level, since higher benefits raise workers' reservation wages. (The wage offer distribution is not affected by changes in benefits in this model.) The unemployment increasing effect can, however, be completely eliminated by financing UI benefits by a progressive income tax. A more progressive tax reduces the rewards to prolonged search. Low-wage jobs become more attractive, and better-paying jobs become less rewarding to hold out for. The progressive tax reduces the dispersion in after-tax wage offers, and this implies weaker incentives to reject job offers.

6.2 Unemployment Benefits and Efficiency

The efficiency properties of search market equilibria are closely related to efficiency aspects of UI. If, for example, it can be shown that the "natural rate" of unemployment is too low from an efficiency viewpoint, there is a case for introducing a UI scheme as a device to increase unemployment!

These efficiency issues have been addressed in a number of papers.¹ Few clear-cut results have emerged, but the analyses have identified various externalities in economies where jobs are allocated through search.

In general, the equilibrium outcome may involve too little or too much job rejection. In the former case, UI may be introduced as a device to improve social efficiency by making workers more selective in their job acceptance decisions. An example of this mecha

¹ See, e.g., Pissarides (1984a and 1984b), Diamond (1981), Albrecht and Axell (1984), and Mortensen (1983).

nism is given in Albrecht and Axell (1984), where increases in UI benefits bring about a reallocation of workers to more productive firms. Too little job rejection may also occur when the contact probabilities of searching firms and workers depend on the aggregate number of unemployed and vacancies. A job match decision between a worker and a firm will negatively affect the probability that the remaining unemployed (vacancies) will find suitable matches with vacancies (unemployed).

6.3 Severance Pay versus Daily Benefits

As shown above, Swedish benefit payments are constant during the benefit period (with the exception of the initial waiting period). This is obviously not the only potential time profile for the level of compensation. The Ministry of Labor in Sweden has relatively recently proposed in 1981 a benefit level that rises with the duration of unemployment; according to this proposal, benefit levels would be substantially lower during the first 30 days of unemployment (DS A 1981:17). The response to this proposal was relatively critical, and it was dropped from the legislative proposal passed by the parliament in the spring of 1982.

The debate has, however, provided several quite different suggestions with respect to policy. Grassman et al. (1978) has, for example, proposed the opposite time profile, namely a single payment in the form of a lump sum severance payment instead of continuing benefits.

What are the consequences of these different payments profiles with respect to efficiency and distribution? During recent years, some attempts have been made to treat these questions more rigorously (see Baily (1977 and 1978), Shavell-Weiss (1979), Sampson (1979) and to some extent also Hamermesh (1977)). They have applied the same theoretical framework as the theory of optimal taxation in order to answer the question of the desired time profile for a given level of compensation.

The theoretical structure is basically the following: Assume that the government has a specified amount to spend on unemployment benefits. Assume further that the unemployed person chooses the search intensity and acceptance conditions which maximize his expected utility, given the existing rules governing compensation. What is the time profile of benefit payments which, under these assumptions and constraints, provides the maximum expected utility for workers who become unemployed? The focus is, then, solely on the duration of unemployment and ignores the question of whether the time profile affects the probability of becoming unemployed.

Such a formulation of the problem implies a comparison between two different desired goals. On the one hand, an employed person with risk aversion prefers a constant level of benefit payments, all else equal. On the other hand, it is important to create strong incentives to quickly find and accept an offer of employment. This reduces the duration of payments of unemployment benefits and makes it possible to be more generous per day spent in unemployment. The limited resources can, in this case, be used to provide higher benefit levels during the benefit period. This is an argument against an even time profile for benefits and in favor of a declining one, and in the extreme case a once and for all payment. As an incentive to find and accept work, it is the future benefits which are relevant. Since these are lower with a declining profile of payments (or a once and for all payment), the incentive to search more intensively and to accept offers rises. Thus it becomes possible to raise the benefit level per day spent unemployed.

Literature in this field gives some indication about which factors affect the choice problem. A first, and perhaps hardly surprising, result is that a constant level of benefit payments is optimal if the insurance systems' control function is so effective that the unemployed person himself cannot effect the probability of obtaining employment. But the more the claimant can influence this

probability, and the more sensitive this probability is to the benefit level, the more sharply declining the benefit profile should be (or, alternatively, the larger the proportion of benefits should be paid as a severance payment). However, it should be emphasized that the cost for maintaining a control system are not taken into account in the models.

So far in the discussion, most of the arguments have been against a benefit payment profile which increases over time. If, on the other hand, we introduce the possibility that unemployed workers use private savings or loans to adapt to the fall in income resulting from unemployment, the solution may, in fact, be different. Shavell and Weiss show that the optimal solution may be an introductory period with a rising benefit level, whereupon the level should fall. It should be noted, however, that this result is obtained using a model with particularly strong simplifying assumptions.

The literature which has been written so far in this area has without doubt contributed to the understanding of choice problems within the unemployment insurance system. But there are reasons to stress that different objections can be raised against the models which have so far been used. A primary objection has already been made; it ignores the possibility that the benefit level and the time profile of benefits can affect the probability of becoming unemployed. Generous severance benefits can also increase the incentive to search for firms (employers) where there is a high risk of unemployment. Therefore, certain limits on entitlement to severance benefits would probably need to be set, especially for persons who become unemployed after short periods of employment. Such rules apply for the Swedish severance payments (see Section 3.1).

A second objection is that certain factors which support a rising time profile of benefits have not been considered in the literature. Above all, it is reasonable to suppose that the psychic cost of unemployment increases with the length of the spell. Similarly,

various losses of human capital rise as the period becomes longer; professional and trade skills can be forgotten and new skills are not obtained. In order to compensate for this, benefit levels should rise over time. There are as well other kinds of capital losses which are relevant for the design of the unemployment compensation system. In certain cases those who lose their jobs incur a once and for all loss due to the fact that the market value on their skills suddenly falls. In order to compensate for this, some kind of severance benefit would be appropriate.

In the same vein, one may raise the objection that the models do not consider different advantageous aspects in a satisfactory manner. The models maximize expected utility for a person who becomes unemployed. In addition, all unemployed persons are assumed to be alike. But expected utility is of course not realized by all unemployed persons. There is an element of randomness in job search; some people may have luck and obtain a job very quickly, while others may be unlucky and be forced to search a long time. With a system of severance payments, everyone would get the same amount of benefits from the insurance system. This leads to significant inequality among those encountering unemployment. One can therefore ask how one should consider the distributional aspect in the analysis and how the result would be changed in this case. A relatively radical way would be to apply a Rawlsian framework, i.e., maximize the outcome for the "worst luck case" (Rawls, 1971). This would certainly suggest, *ceteris paribus*, a rising time profile of benefit payments, since a large part of the resources at the system's disposal would go to those with long durations of unemployment. But since this has adverse incentive effects, it is not certain that the optimal solution implies a rising benefit profile.

It is also possible that the optimal solution would be different if one dropped the assumption that all unemployed persons are identical. The duration of unemployment is not merely random, but depends on the individual's education, experience, etc. A rising benefit time profile can thus be a way to give a larger portion of

the resources to those who have a weak position in the labor market. The risk, however, might be that most of the resources are given to those who are most adversely affected by bad incentives.

In conclusion there remains much work, theoretical as well as empirical, in order to determine the best way to distribute a given amount of resources between lump sum and periodic benefits, as well as to determine the time profile of the periodic payments. Our evaluation of the currently available literature is the following: Efficiency considerations i.e. one wants to maximize the expected outcome for the unemployed - probably indicates the preferability of a declining time profile of benefits, possibly with a severance payment for those who have been employed for a long time with the same firm. Furthermore, the more adverse effects of unemployment benefits on work incentives are, the larger are the efficiency gains of a declining profile. On the other hand, if one puts more emphasis on distributional considerations and wishes to improve the outcome for those who encounter long periods of unemployment, a rising time profile might instead be preferable.

6.4 Labor Market Policy as Unemployment Insurance

So far our discussion has mainly focussed on cash benefits to unemployed. This reflects the current economic research into issues on unemployment insurance. However, a presentation and discussion of the Swedish system would be incomplete without mention of the labor market policy measures. Actually, some of the instruments in Swedish labor market policy can be regarded as a part of a "total" unemployment insurance system. First of all the unemployed can receive free services from the employment offices. These offices are available all over the country and provide nationwide information about vacancies as well as counselling of various sorts.

In addition all unemployed (plus those who run the risk of becoming unemployed) are eligible to mobility grants, which cover the direct mobility costs plus an extra amount which approximately equals two monthly salaries. Retraining courses are also available; the trainee receives a stipend which in general equals the unemployment benefit.

For many years more resources have been spent on subsidizing such activities than on cash payments. Some data are presented in Table 13.

It is also important to emphasize that the work test in the UI-system is enforced by the employment offices. Hence the employment offices are "simultaneously" providing labor market information, implementing labor market policy measures like training, mobility grants and certain wage subsidies and enforcing the work

Table 13 Expenditures on cash payments and various labor market policies in Sweden
(Millions SEK)

	Cash payments	Employment offices	Mobility grants	Retraining
1979/80 (cyclical peak)	1 870	832	165	3 714
1982/83 (cyclical downturn)	4 525	1 022	146	3 810

test. It is likely that the availability of such measures makes it easier to implement the work test.

Can it be argued that such labor market policy measures should be integrated in a UI-system? The available research has nothing to say about this, but we want to give some tentative arguments in favor of such arrangements.

One model of optimal unemployment insurance¹ levels yields the result that, in the absence of moral hazard, the optimal benefit should cover foregone income plus search costs. On the other hand the issue about the optimal level of search costs is not addressed. In most search models the search costs simply constitute the costs of finding a vacancy.

No doubt, the labor market policy instruments information, mobility grants and retraining are activities which increase the probability of getting a job offer. It is likely that many people have a high willingness to pay for an unemployment insurance which covers substantial costs for such instruments.

However, the Swedish approach is to provide these opportunities in kind rather than offering a very high benefit level which covers the costs for retraining etc. Is this reasonable? It might be, because the result above was obtained in a model without any moral hazard problems. When such problems are taken into account, the optimal solution may involve provision of search options (information, mobility grants and retraining) in kind, thereby reducing adverse incentive effects.

We are aware of the lack of scientific foundation of those speculations but we want to emphasize that the role of search costs has been neglected in the literature on optimal unemployment insurance.

¹ Mortensen (1983)

7 SUMMARY AND CONCLUSIONS

Our evaluation of the government's programs in the area of unemployment insurance has been based on two different motivations for government intervention. The first was that efficiency gains may be achieved through government intervention in some form. The second was that government subsidies to unemployment compensation may be appropriate for reasons of equity.

Unemployment risks show substantial variation among labor force participants. Private insurance companies would be likely to have difficulties assessing these risks in each case and would be forced to set premiums according to certain standard rules, which, in the extreme case, may be the average risk for the market. Those with low risks would encounter disadvantageous premiums and perhaps refuse to buy any insurance. Eventually, adverse selection could totally eliminate a private insurance market.

Against this background, one may ask whether the government's policies have a reasonable scope, structure and direction. The answers to these questions are dependent upon the size of any adverse incentives created by unemployment benefits.

Our overview of the theoretical insurance literature showed that it is not possible to ascertain the optimal extent to which society should subsidize insurance in a market with adverse selection and moral hazard. One can therefore discuss the question of the scope of government intervention only in a speculative manner.

On the one hand, one can claim that the current subsidy is altogether too large for those groups which are presently included in the system. The government contributes more than 90 percent of the funds expenses, so that the members contributions have almost

become merely symbolic. Furthermore, those included in the insurance system have generally established themselves on the labor market. This, in turn, should lead to the result that the adverse selection problem is not so great; individuals' work histories should pretty well reveal a good deal about their unemployment risks. This is also supported by the fact that private compensation systems exist. It is probable, then, that a lower degree of government subsidy would cause more such solutions to arise on the private market. A concrete example of this is the regulation regarding temporary layoffs. If the government subsidization of unemployment insurance benefits for laid off workers were reduced, the treatment of layoffs in collective agreements would almost certainly take another form.

On the other hand, one can claim that the Swedish system has much too poor a coverage. Only about half of the unemployed collect benefits from the unemployment insurance funds. Barely one fourth collect KAS, which gives low degree of coverage, and at least one fourth obtain no form of unemployment coverage. We have very poor information regarding the degree to which the latter receive other social assistance. In Chapter 5 we could only ascertain that unemployed without benefits have low taxable income.

Of those who lack unemployment compensation, new entrants are probably foremost. How urgent better coverage for these groups will be is difficult to determine without more thorough information on their economic situation. It is hard to believe that a private market solution would arise in this case. Our hypothesis is that the problem with adverse selection is largest for new entrants. Government subsidies of the KAS type appear to be well motivated in this case.

The next question involves the structure and directions of compensation. This includes the issue of the time profile of benefits, which can be constructed in different ways, from a lump sum severance payment to one in which benefits rise with duration of

unemployment. During recent years, some interesting theoretical studies have been done. There are efficiency arguments in favor of a declining payments profile, possibly with some severance payment for those who have been employed for a long time with the terminating employer. By efficiency we mean that the best expected outcome for those who become unemployed, given some level of resources. Such a construction, however, can create great inequities among those who have luck in getting a new job quickly and the unfortunate who must wait longer.

We have also discussed the distributional argument for government subsidies to unemployment insurance. The risk of unemployment is higher among groups with low skills and low incomes. Subsidized unemployment compensation should therefore contribute to a more even distribution of the households' disposable income. The data we have shown indicate that benefits from unemployment funds go largely to households with relatively normal incomes. KAS has, not unexpectedly, more impact on lower incomes.

It seems clear that the subsidies to the UI system could be used better with respect to distributional criteria if the efficiency aspect were ignored. A rising time profile of benefits would probably have more favorable distributional effects. The same would be true if compensation to a large extent were based on total family income. A conflict between efficiency and distributional goals thus exists.

Seasonal unemployment is treated relatively generous by the Swedish unemployment insurance system. Consequently, industries with large seasonal variations in the demand for labor receive significant implicit wage subsidies via benefit payments. These effects are especially clear within agriculture, forestry, fisheries, and construction. A likely result is that the current design of the benefit system affects the relative sizes of different industries. The number of employed workers within, e.g., forestry, agricul-

ture, and construction will be somewhat higher than they would be in an industry neutral system.

A possible approach here would be to reduce the subsidies to the UI funds and rely more on membership fees. In this way the system would treat various industries more equally. It is also likely that higher membership fees would affect the behavior of unions. The choice between wages and employment may change in favor of higher employment.

On the other hand the redistributive effects of the UI system would be reduced. Some individuals with low unemployment risks may choose to withdraw from the funds if the fees are increased. Anyway it is likely that substantially higher membership fees would require that membership becomes compulsory if adverse selection is to be avoided.

APPENDIX

Calculations of Replacement Ratios for Average Unemployed Workers

Replacement ratios in Figure 3 are calculated by using the formula:

$$R = \frac{B \cdot 5(1 - t')}{W \cdot H(1 - t)} \qquad \begin{array}{l} t' = t'(B, W, H, E, D) \\ t = t(W, H) \end{array}$$

where

B is the average benefit level for an unemployed worker

W is the expected hourly earnings for an unemployed worker, including basic wages on time-work and piece work, overtime supplements, extra shift pay, public holiday pay and other wage supplements ("C-lön"),

H is desired weekly hours among the unemployed,

t is the average income tax rate for a person with hourly earnings W and desired hours H, and

t' is the average income tax rate for a person with hourly earnings W, desired hours H, benefit level B, E weeks in employment, and D weeks in unemployment.

(Benefits were not taxable before 1974; hence $t' = 0$ 1965-73.) We assume $46 = D + E$ for 1965-77 and $45 = D + E$ for 1978-85. Five weeks vacation was introduced from 1978, and two weeks involve holidays.

The tax rates are based on average municipality tax rates and refer to an unmarried worker without children. D refers to the average duration of an unemployment spell and is obtained from D

= U/IU , where U is the average number of unemployed and IU is the weekly flow into the unemployment pool.

The average benefit level is obtained from

$$B = \alpha_1 B_{UI} + \alpha_2 B_{KAS}$$

where

B_{UI} is the average UI benefit paid out per day (utbetald dagpenning),

B_{KAS} is the average KAS benefit paid out per day (genomsnittlig stødbelopp),

α_1 is the fraction of unemployment days covered by UI benefits, and

α_2 is the fraction of unemployment days covered by KAS benefits.

(Note that $\alpha_1 + \alpha_2 < 1$ since not all unemployment is covered by benefits.)

The total number of unemployment days per year is calculated as $UDAYS = U \cdot 52 \cdot 5$, where U is the average number of unemployed during each year.

Expected hourly earnings for an unemployed worker is given by

$$W = \beta_1 WM + \beta_2 WF + \beta_3 WY, \quad (\beta_1 + \beta_2 + \beta_3 = 1)$$

where

WM is hourly earnings for a male blue-collar worker in mining and manufacturing,

WF is hourly earnings for a female blue-collar worker in mining and manufacturing,

WY is hourly earnings for a teenage worker ("minderårig"), and

β_i is the share of unemployment for males, females and teenagers, respectively ($i = 1, 2, 3$).

Sources:

SOS Löner	(WM, WF, WY)
AKU	(U, IU, β_i)
AMS	B_{UP} , B_{KAS} , number of compensated unemployment days)
Riksskatteverket	(tax tables)

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* Source material from SCB's Labor Force Surveys, AFA, Riksförsäkringsverket unemployment funds, AMS insurance unit as well as Trygghetsrådet SAF-PTK has also been used.

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