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IFAU – INSTITUTE FOR LABOUR MARKET POLICY EVALUATION

Harmonizing unemployment and sickness insurance: Why (not)?

Laura Larsson

WORKING PAPER 2004:8

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Harmonizing unemployment and sickness insurance: Why (not)?*

by

Laura Larsson♠

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Abstract

The paper discusses harmonization of unemployment insurance (UI) and sickness insurance (SI). The focus is on the difference between the benefit ceilings in the two insurance systems that has been shown to affect the behavior among unemployed SI recipients. The four conclusions are: (*i*) It is difficult to argue that the design with different benefit ceilings of UI and SI would be optimal. (*ii*) During the study period 1998–2001, unemployed were overrepresented among SI recipients. (*iii*) Some of the overrepresentation is due to the different benefit ceilings. Thus, harmonization of the systems is motivated; (*iv*) In a complex system as the Swedish social insurance system, reducing moral hazard in one group probably also implies various indirect effects. When designing a reform, all insurances should be considered simultaneously.

Keywords: government policies, moral hazard, sickness insurance, unemployment insurance
JEL-codes: H51, H55, I18, J65

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1 Introduction

It is hardly an exaggeration to claim that absence due to sickness is currently one of the hottest topics in Swedish domestic politics. The number of days on sickness insurance (SI) benefits has more than doubled since 1997.[1] What explains the drastic rise in sickness absence? What can and should be done to reduce it? The views differ. Some look for answers among employers and in bad working environments; others claim that there has been a change in attitudes about work, or that the SI benefits are too generous. Consensus has not yet been reached despite the steadily growing number of reports by academic researchers and government committees.

Some reports have already indicated that the unemployed are overrepresented among the SI beneficiaries. For part of the unemployed, benefits from the SI are more generous than from the unemployment insurance (UI). Can this explain the overrepresentation? Thus far only one study (Larsson, 2002) has looked at the interplay between UI and SI, suggesting that different benefits *do* increase sick reports among the unemployed. The extent of that effect, however, is still unknown.

Nevertheless, these observations have initiated a debate on harmonizing SI and UI. Quite soon after the debate arose, in April 2003, the government announced a reform for reducing SI benefits for those unemployed who could receive higher benefits from SI than UI. It is thus a partial harmonization of the two systems, as it only concerns persons initially on UI and not all SI beneficiaries. The new regulations apply from July 1, 2003. The reform may seem like a simple solution to the problem, but there are still many question marks concerning the implementation, expected effects, and potential further harmonization. Thus, the debate is far from completed.

The purpose of this paper is to provide substance and structure to that debate. It starts with a short description of the current UI and SI systems. In short, UI and SI provide income-related benefits with the same marginal replacement rate, 80 percent, up to a ceiling. The ceilings, however, differ so that the maximum SI benefit exceeds the maximum UI benefit. An obvious first question then is: "Why are the SI and UI systems different?" I approach this question by discussing the design of optimal social insurance. In an optimal

[1] See official statistics from the National Social Insurance Board, at www.rfv.se/statistics.

design, all costs for moral hazard, control and administration are taken into account. The paper argues that the design with equal marginal replacement rates but different ceilings is hardly optimal. Instead, it is probably a result of a long history of political compromises. Given that it is not optimal, some harmonization is motivated.

The second question of this paper is "What are the behavioral effects of different ceilings on the unemployed?" The results from Larsson (2002) suggest that unemployed persons do exploit the possibility of receiving higher benefits by reporting sick. In this paper, the results in Larsson (2002) are elaborated further to derive the extent of this "excess sick report rate". According to the analysis, a reduction of the SI ceiling to the UI ceiling level would lead to a 25 percent decrease in SI benefit days among unemployed with wages above the UI benefit ceiling. However, the net cost of excess sick reports depends on whether the SI periods postpone the moment when the unemployed finds a job or not. Depending on this, the cost can vary from some millions to several hundred millions SEK.

Third, the paper discusses expected effects of harmonizing the ceilings, based on previous theoretical and empirical evidence. First, the partial harmonization that only concerns *persons initially on UI* is considered. Second, the expected effects of reducing the maximum SI benefits or increasing the maximum UI benefits *for all* are discussed. The net effect of various harmonization models depend on how the UI and SI systems interact with other parts of the social insurance system.

The partial harmonization is not necessarily such a simple way to reduce moral hazard as expected. First of all, interactions with other parts of the social insurance may imply new sources of moral hazard as SI is made less attractive for the unemployed. Moreover, the partial reform implies that the SI system becomes less uniform, and thus requires increased administration. A general harmonization of the ceilings would involve most Swedish workers and thus have huge financial and political consequences. In short, a general increase of the UI ceiling would be very expensive, whereas it is difficult – if not impossible – to gain political acceptance for a large general reduction of the SI ceiling.

2 Swedish sickness and unemployment insurance[2]

SI and UI form an integral part of the compulsory public social insurance in Sweden. Benefits from the public social insurance are income-related and for the most part financed by taxes. The system, being a part of the Swedish Welfare State, can be characterized as general rather than selective. That is, most citizens are comprised by the system, and the degree of economic means tests in the allocation of rights is low (Rothstein, 2002). Moreover, the Swedish system is often perceived as generous in international comparisons.

2.1 Description of sickness insurance

The purpose of SI is to provide economic maintenance when the worker is too sick to work and support himself. Until the reform in July, 2003, the marginal replacement rate was 80 percent of the wage prior to the sick period. The reform reduced the replacement rate to 77.6 percent. However, there is both a lower and an upper limit to the benefits: To receive SI the worker must have had a monthly wage of at least SEK 767 per month, which corresponds to benefits of SEK 613.[3] Furthermore, SI benefits never exceed 80 percent (77.6 percent) of SEK 24,125 per month, as illustrated in Section 2.3.

Basically all employed workers – with a wage above the lower limit – are automatically covered by the SI. Students and unemployed workers are also eligible for the SI as long as certain conditions are fulfilled. An unemployed person, for example, must be registered at a local employment office as job seeker. The size of his SI benefits is not based on his UI benefits but his wage before unemployment. Thus, unemployed persons without previous employment do not receive SI benefits.

SI is administered by 21 local social insurance offices and financed by general state taxes. Some of the tax revenue is collected from the employers through social insurance fees. Employers also pay their employees' sickness

[2] This section describes the UI and SI systems as they were until the reform of SI July 1, 2003. The reform implied mainly two changes: the replacement ratio was reduced from 80 percent to 77.6 percent, and the ceiling for the maximum SI benefits for unemployed was reduced. The latter change is discussed in more detail in Section 5.
[3] SEK 100 equals to about € 10.7 (February 2004).

compensation during the first 14 days of sickness.[4] The workers' tax bill includes a general contribution to the social insurance, as well.

Besides the replacement rate below 100 percent, the SI system contains two instruments to prevent unjustified absence. First, the insured person must visit a doctor within seven days of sickness in order to receive additional compensation after the first week. Again after four weeks, a doctor's certificate must be provided to the SI authorities. Unjustified absence shorter than one week is made less attractive by the absence of any compensation for the first day of sickness.

2.2 Description of unemployment insurance

The purpose of UI is to insure against involuntary unemployment. Benefits from the UI are either income-related or fixed, depending on the person's work history. For income-related benefits, the unemployed has to fulfill three conditions[5]:

- *The basic condition* that the unemployed is available for vacant jobs. In practice, this means that he has to be registered at an employment office as a job seeker and that he is willing to accept a job.
- *The membership condition* that the unemployed has been a member of an UI fund for at least 12 months prior to unemployment. Membership is voluntary.
- *The working condition* that the unemployed has to have worked at least six months during the last twelve month period.

If the unemployed has been a member of an UI fund for shorter period than a year but still fulfills the other two conditions, he is entitled to the fixed basic amount of compensation. This is the case also if he fulfills the first two but not the working condition, given that he has recently completed full-time studies.

UI benefits are time-limited to 60 weeks, corresponding to 300 benefit days. These benefit days can be received either continuously or with breaks in the unemployment period. The person can qualify for a new period of 300 benefit days during a break by re-fulfilling the working condition. If he has not done that by the end of the 300 benefit day period, the employment officer will assess his need of intensified counseling. If such need is found, he will be assigned into a labor market program called *activity guarantee*, which implies

[4] Except for the first day of sickness that is uncompensated.
[5] For a detailed description, see e.g. the web-page at www.aea.se.

that he is offered intensive counseling and the entire spectrum of services and labor market programs available to job seekers at the employment offices.

The activity guarantee is a full-time activity. The participants receive compensation equal to UI benefits. If the unemployed refuses to participate in the program, UI benefits will expire. If no need for intensified counseling is found, the employed gets entitled to UI benefits for another 300 day period.[6] This possibility exists one time only.

Similar to the SI benefits until July, 2003, the income-related UI benefits are 80 percent of previous earnings.[7] There is a lower and an upper limit to the UI benefits, as well. The fixed basic amount of SEK 7,400 (≈ € 790) per month constitutes the minimum, corresponding to 80 percent of a monthly wage of SEK 9,250. The upper limit varies depending on how long the person has been unemployed. During the first 100 days of unemployment, the maximum benefits are 80 percent of a monthly wage of SEK 20,075. After that, the ceiling is reduced to 80 percent of SEK 18,700. *Figure 1* in Section 2.3 illustrates.

UI is administered by 39 unemployment insurance funds representing workers from different occupational groups.[8] All together, the UI funds have approximately 3.8 million members, corresponding to 86 percent of the work force and 67 percent of the adult population. The funds are formally independent, but they must be officially approved by the state and follow common regulations in order to receive the state grant. The main source of finance for the UI benefits is the state grant, rest is financed by membership fees.[9]

The UI funds closely cooperate with the local employment offices, especially in controlling whether the unemployed fulfill the rules concerning job search. The unemployed person has to meet his employment officer

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[6] There are no formal guidelines for the employment officer's assessment on this issue. The unemployed person's education, previous work experience and unemployment history play presumably a role. For a Swedish description of activity guarantee, see Fröberg & Persson, 2002.

[7] However, in the UI system earnings are defined somewhat differently than in the SI system. Somewhat simplified, the UI benefits are based on the worker's average earnings during the past six months. The SI benefits are based on the estimated earnings the worker *would have had* during the sickness spell.

[8] Including the ALFA fund that is not associated to any workers' union. Furthermore, the ALFA fund pays unemployment compensation to persons who are not members of any UI fund.

[9] In 2002, the total bill for UI benefits (including administration costs) was SEK 23.8 billion (≈ € 2.55 billion, February, 2004), of which 17.5 percent was financed by membership fees. (Discussion with Peter Skönefeld at the UI funds' Central Organization, 9 May, 2003.)

regularly and he is obliged to apply for any job the officer assigns him.[10] If not, the employment officer must write a report to the UI fund, which then decides on a suitable sanction. In short, either the unemployed is suspended from the UI benefit, or his benefits are reduced. These sanctions are time-limited or permanent, depending on whether the person has broken against the rules before, and the expected duration of the employment he refuses to accept.

The first five days of involuntary unemployment are uncompensated. If the unemployment is voluntary – i.e. if the person has left his job without a valid reason or if he has been laid off because of improper behavior – the uncompensated period is up to 45 weekdays.

2.3 Interaction of sickness and unemployment insurance

Broadly, the UI and SI systems look very much the same: They have similar purposes, namely to insure against an "accident"; they cover most of the adult population; they are mostly financed by general state taxes; they provide income-related benefits with the same marginal replacement rate; and they contain monitoring instruments to prevent unjustified use of the benefits.

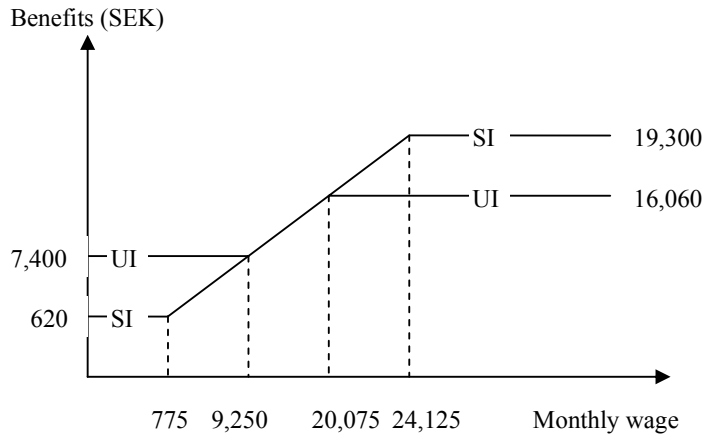
Differences appear at a closer look. The beneficiary groups do indeed largely overlap, but the principle for coverage differs. SI is a compulsory insurance in that it automatically comprises persons with earnings above the (very low) minimum level, whereas UI is a voluntary insurance. They are also administered by different authorities with different organizational principles and traditions. Furthermore, monitoring instruments, sanctions, time-limits for maximum benefit duration, and the benefit ceilings are different.

Some of these differences may affect the incentives to switch from UI to SI (or vice versa). In the present paper, the focus is on the benefit ceilings. *Figure 1* illustrates the benefit size from UI and SI as described above. The marginal replacement rate is indeed the same, 80 percent, but the different floors and ceilings imply that, for many individuals, benefits from UI and SI are not identical.

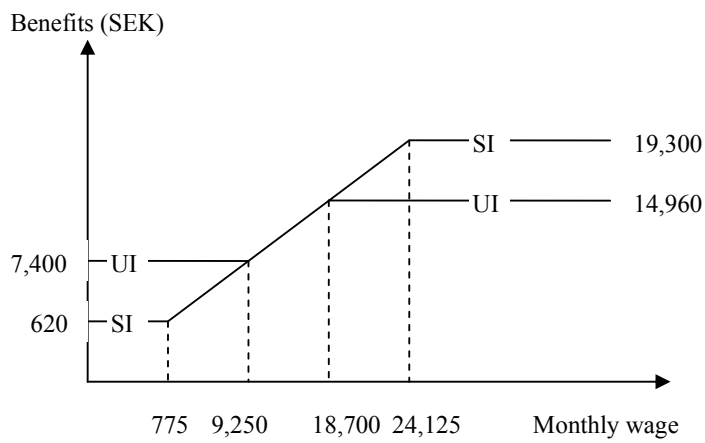
[10] The unemployed person is not obliged to accept any job in order to receive further UI benefits. Family situation, the duration of unemployment and other factors are taken into account in the judgement. There is also a distinction between the employment officer *suggesting* and *assigning* a job: in the former case the unemployed is allowed to reject the offer without sanctions.

Figure 1 UI and SI benefits in May 2003

A. Days 6–100 of unemployment



B. Days 101–300 of unemployment



Note: SEK 100 equals to about € 10.7 (February 2004).

Unequal ceilings imply that it is more advantageous for persons with monthly wages above the UI ceiling to be on SI than on UI. Thus, unemployed whose

previous earnings exceed the UI benefit ceiling have an incentive to report sick. Similarly, persons with monthly wages below the UI floor receive more from UI than from SI.

Another difference that has been shown to affect the unemployed concerns the formal time-limits for maximum benefit duration. UI benefits are limited to 300 days, whereas SI benefits can in principle be received forever.[11] In practice, though, the time-limit of UI is not strict, as it is possible to receive a new period of 300 UI benefit days instead of participating in activity guarantee. Nevertheless, Larsson (2002) shows that the probability of reporting sick increases as the UI benefit expiration date approaches. One plausible explanation is that the unemployed person reserves his UI benefits and postpones the expiration date by reporting sick and thus receiving SI instead.

3 Why are the systems different?

3.1 Designing an optimal social insurance

In a standard economics textbook insurance model, the demand for insurance arises as risk-averse individuals are exposed to a risk of (income) loss. Risk aversion means that the individuals prefer a safe outcome to a gamble. In such a situation, utility maximizing individuals choose a full insurance against the risk. In perfect competition and with perfect information, insurance companies are willing to provide full insurance for an actuarially fair rate that equals the individual's risk. We would thus observe voluntary full insurance, i.e. replacement ratios of 100 percent, against both unemployment and sickness.

However, the underlying assumptions of the model are seldom fulfilled in the real world where full insurance is more of an exception than a rule. First of all, the model requires perfect information. In reality, the accident risk varies among individuals, and the insurer cannot observe the individual risk. On a private insurance market, this asymmetry would lead to *adverse selection*. The insurances companies would have to base their rates on the "worst-case" forecasts, and consequently only the "worst-case" individuals would purchase

[11] In practice, however, persons who are too sick to return to their jobs eventually switch to disability pension. In 2001, the average length of a SI period prior to a disability pension period was 685 days. (Source: National Social Insurance Board)

these insurances. A compulsory insurance solves this problem as all individuals are forced to purchase the insurance and the rate can be based on the average incidence of accident. Thus, adverse selection provides a rationale for the compulsory social insurance.[12]

Another problem with asymmetric information is *moral hazard*. It means that the existence of insurance causes individuals to change their behavior towards greater risk, thus increasing their use of insurance. Moral hazard can be reduced by reducing the insurance generosity or by increasing the control. In fact, if perfect monitoring of the insurance applicants was possible, no moral hazard would occur. However, perfect monitoring is seldom an option as it is very expensive and difficult to implement. Consequently, uncompensated days, replacement rates below 100 percent, and limited duration of the benefit periods are cheaper and easier ways to reduce moral hazard. Theoretical and empirical evidence of the relationship between moral hazard and the generosity of UI and SI is presented in more detail in the following sections.

Designing a socially optimal social insurance system involves of course other aspects than asymmetric information. Values and norms concerning income redistribution and a minimum level of maintenance for each citizen form the basis of the social insurance system. For example, financing through progressive taxes and decreasing marginal replacement rates are ways to level out income differences. Furthermore, administrative costs of running an insurance system depend on how complex the rules are for e.g. eligibility, replacement and premiums. This is an often used argument for a general and uniform system instead of a means-tested.[13]

An optimal design is derived from weighing all efficiency and equity (and other) aspects together. The bottom line is that in an optimal system, all costs for moral hazard, control and administration are taken into account. Thus, some moral hazard may indeed exist in an optimal system as it is weighed against monitoring, administration, income redistribution, etc. This leads us to the next

[12] As described in the previous section, SI in Sweden is compulsory whereas UI is formally voluntary. However, the design of the state-subsidized UI is so generous that it is clearly advantageous for basically every worker to be a member.

[13] The very fundamental question is whether the society should provide any social insurance at all. The political, economic and philosophical arguments for and against a publicly provided welfare system are numerous. Asymmetric information, as discussed in the previous section, is one example. However, the rest of this paper presupposes the existence of Government subsidized social insurance.

question on whether the design of UI and SI as illustrated in *Figure 1* can be regarded as optimal.

3.2 Can different UI and SI ceilings be optimal?

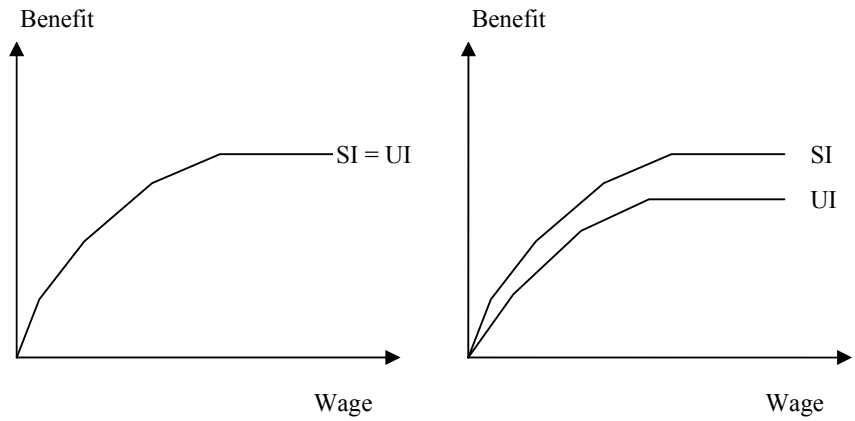
Let us consider two alternative optimal designs of UI and SI. Both presume that the marginal replacement rate is less than 100 percent because of moral hazard among the benefit recipients. Furthermore, high-income earners are assumed to be more inclined to increase their risk of sickness or unemployment due to generous insurance than low-income earners. Thus, the average replacement rate is decreasing.[14]

Figure 2A illustrates a first possible optimal design based on these assumptions. The individuals' risk behavior is assumed to be as sensitive to the generosity of UI as of SI, so the benefit-wage profile is identical in UI and SI.

Another optimal design is illustrated in *Figure 2B*. Here it is assumed that the individuals' risk behavior is *more* sensitive to the generosity of UI than to SI. That is, high UI benefits cause more moral hazard than high SI benefits. The average replacement rate of UI is then lower than of SI, *ceteris paribus*, for all wages. Alternatively, we could assume that monitoring whether unemployment is voluntary or not is more costly than monitoring a persons' health status. Thus, to allow the same amount of moral hazard in UI and SI systems for the same monitoring cost, the benefit-wage profile of UI must be flatter than that of SI. Third, the society might simply be willing to allow for more moral hazard among the sick than among the unemployed. Nevertheless, the optimal average replacement rate from SI is constantly higher than from UI.

[14] Taslimi (2003) derives an optimal wage-UI benefit profile from a search model framework with heterogeneous workers. According to his results, the optimal average replacement rate is decreasing. Fredriksson & Holmlund (2003) discuss other efficiency aspects of designing optimal unemployment insurance.

Figure 2 Two possible designs of SI and UI



2A: Identical SI and UI 2B: Different SI and UI

Can the design in *Figure 1* with same constant marginal replacement rates up to different ceilings ever be regarded as an approximation of some of the optimal designs in *Figure 2*? Most likely not. A constant replacement rate up to a ceiling *per se* may be an approximation of the designs in *Figure 2*, as it makes the system more uniform and simple to administrate than a continuously decreasing replacement rate. But an approximation of *Figure 2A* would be a design with *same* (constant) replacement rates up to *same* ceilings, whereas an approximation of *Figure 2B* would imply *different* (constant) replacement rates up to *different* ceilings.

The present design with *same* (constant) marginal replacement rates up to *different* ceilings looks like a mixture of these two, and it is very difficult to find a rationale for such a design. It presumes that low-income earners are as sensitive to UI and SI generosity, but high-income earners are more sensitive to UI than SI generosity.

Moreover, it is not likely that *Figure 2B* illustrates an optimal design since it implies incentives for the unemployed to report sick. Recall that an optimal design presumes that all costs for moral hazard etc are regarded. That means that even moral hazard among *unemployed* SI recipients would be taken into account, which seems unrealistic.

It seems likely that the present design is a result of a long history of political compromises rather than an optimal design. A glance at the UI and SI history gives the impression that the systems emerged and developed quite separately (though during the same time period), and that the interplay between the two systems has not been an issue when designing them. From the very beginning, they have differed in some details and been identical in other respects.[15] The numerous reforms during the 20th century have not, at least not systematically, strived for harmonizing the systems.

In sum, *if* there is no rationale for the UI and SI systems to be different, harmonization is motivated *given* that it moves us closer to the optimal design. However, in a complex system as the Swedish social insurance, reducing moral hazard in one group of individuals may increase moral hazard in another group, or increase the administration cost. Thus, a cost-benefit analysis of various harmonization alternatives should take into account the *net changes* in moral hazard and administrative costs, as well as potential indirect effects of each alternative.

4 Behavioral effects of different ceilings

The study by Larsson (2002) suggests that unemployed whose previous wage exceeds the UI ceiling report sick more often than they would if the ceilings were the same. In other words, different ceilings do seem to cause moral hazard among the unemployed. Here, the word moral hazard comprises even pure misuse of the system. However, the study does not find any incentive effect that increases the average length of the sick period. That is, unemployed who can benefit from reporting sick do it more often but not for longer periods. A possible interpretation is that the requirement of doctors' certificate after all makes it difficult to stay on SI for more than one week if not truly sick.

Larsson (2002) is based on data for the period 1998–1999.[16] Before going into more detail in describing the analysis in that study, let us look at more

[15] Lindqvist (1990) is a nice overview of SI history in Sweden. Marklund (1982) describes the history of both UI and SI in European countries, including Sweden, and the USA.
[16] Data from 1997 were also used to control for sickness and unemployment history.

recent data on SI spells among the unemployed. This will serve two purposes. First, the data give an indication on how common it is that unemployed individuals report sick. Second, we can apply the results from Larsson (2002) to estimate how much moral hazard the different benefit ceilings caused during the period 1998–2001.

4.1 The data

Larsson (2002) and the present paper use the same data sources. Information on the individuals' UI spells is collected from UI funds' register database (AKSTAT). Information on the SI spells is collected from the sickness period register (sjukfallsregister), administered by the National Social Insurance Board. These registers are matched within the LINDA database (Longitudinal INdividual DAtabase) that is a 3.35 percent representative sample of the Swedish population.[17] LINDA includes a rich set of individual characteristics.

UI and SI records are matched annually. In other words, SI spells in 1998 are matched to UI spells in 1998. Start and end dates for all UI and SI spells are observed. The combined data set includes all individuals who received either UI or SI benefits during the year. Thus, the data set shows the extent of *insured openly unemployed* among the SI recipients during that year. Similar combined data sets are constructed for 1999, 2000, and 2001.

Henceforth, *unemployed* refers to individuals observed in the UI statistics sometimes during the calendar year. *SI recipients* are individuals observed in the SI statistics. A SI recipient is defined as an *unemployed SI recipient* if he switches from UI to SI or vice versa. That is, the SI spell must be either preceded or followed by an UI spell.[18]

[17] For a detailed description of LINDA, see Edin & Fredriksson (2000). Larsson (2002) includes a detailed description of UI and SI data.

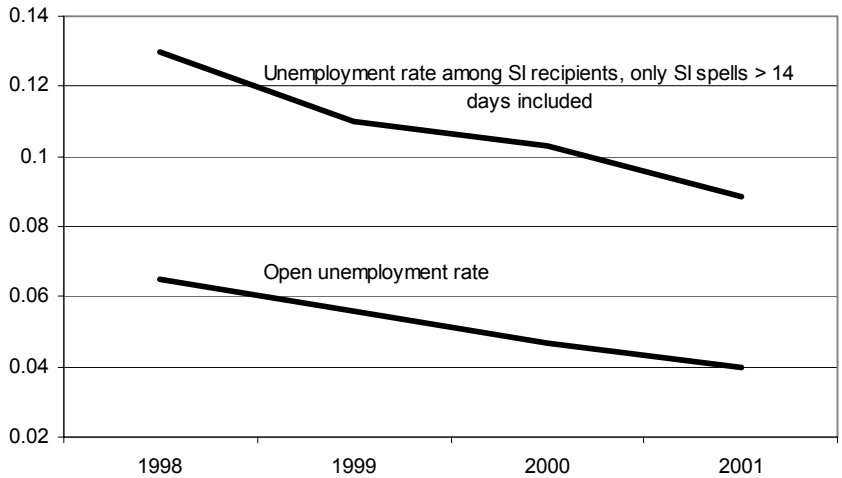
[18] Since the data are not matched over calendar years, the stock of unemployed in January each year is somewhat incorrectly defined. Only those SI recipients in the stock in January 1 whose SI spells are *followed* by an UI spell are defined as unemployed SI recipients. Some of the SI recipients in the stock are thus falsely defined as 'not unemployed' as I do not observe their preceding UI spell during the previous year. Thus, the number of unemployed SI recipients may be downward biased if based on the stock. For this reason most of the descriptive statistics are based on the inflow of unemployed instead which is not associated with this problem.

4.2 Sick spells among unemployed 1998–2001

Let us start by looking at how many of all SI recipients are unemployed. *Figure 3* defines the unemployment rate among SI recipients as the number of all unemployed individuals starting a sick spell during the year, divided by all individuals starting a sick spell. During the study period, this rate was twice as high as the official open unemployment rate in the economy. Moreover, the data in *Figure 3* suggests that among unemployed the probability of reporting sick is approximately four times higher than the overall probability of reporting sick among all insured. [19]

[19] Note that the unemployment rate among SI recipients is based on inflow of new SI recipients, whereas the official open unemployment rate reports the average stock of unemployed divided by the average work force during a year. However, the data in *Figure 3* can be used to estimate the relationship between the probabilities of reporting sick among the unemployed and in the population. Consider the following notation:
p = probability of reporting sick among (insured) unemployed,
q = overall probability of reporting sick,
T = the number of sick reports among unemployed,
N = the total number of sick reports,
U = the number of unemployed,
L = labor force.
The curves in *Figure 3* show T/N (upper) and U/L (lower). Let us assume (quite realistically), that 70 percent of all unemployed are insured, and that the number of individuals covered by the SI is 1.25 times the labor force. Thus, T/N can be written as T/N = [p* 0.7*U]/[q*1,25*L], implying p/q = (T/N)(1.25/0.7)(L/U). According to *Figure 3*, T/N = 0.089 and U/L = 0.04 in 2001. Consequently, p/q = 3.97. The probability of reporting sick is four times higher among the unemployed than in the population.

Figure 3 Unemployment rate in the annual inflow of SI recipients and in the work force, 1998–2001



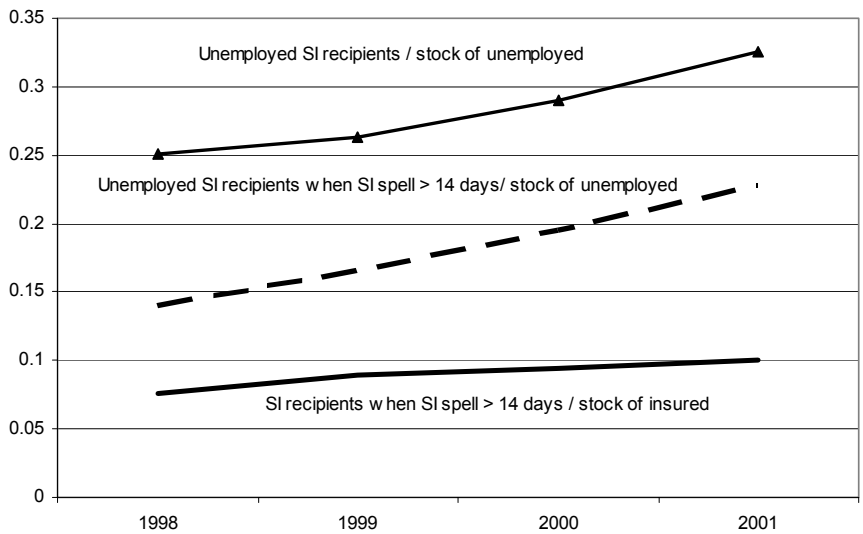
Note: Unemployment rate among SI recipients a calendar year is defined as: the number of unemployed persons who start a SI spell longer than 14 days during the calendar year / the total number of persons who start a SI spell longer than 14 days during the calendar year. Open unemployment rate is collected from the Labor Force Survey 1998–2001.

Figure 4 shows another estimate of the overall sick report rate among unemployed, as compared to all insured. The continuous line relates the number of individuals, who some time during the calendar year start a SI spell, to the average population of insured during the year. Similarly, the dashed line relates the number of unemployed individuals starting a SI spell to the average stock of unemployed during the year. Both these lines only include individuals starting a sick spell longer than 14 days.[20]

[20] Recall from the description in Section 2 that employers pay for the first 14 days of an employee's sick period. Thus, sick periods shorter than 15 days of *employed* individuals do not show up in the data.

Unemployed clearly seem to be overrepresented among the SI recipients. The share of SI recipients was 1.8–2.3 times higher among unemployed than in the population. Furthermore, during the period 1998–2001, sick report rate has *risen* more among unemployed than in other groups. Finally, the line with triangles line in *Figure 4* includes even short SI spells among the unemployed showing that, each year, 25–33 percent of the average stock of unemployed received SI benefits for some period.

Figure 4 Inflow of SI recipients in the population and among unemployed, only SI spells longer than 14 days included (continuous and dashed lines) and all SI spells included (line with triangles)



Note: The numerator is defined as the sum of persons with a SI spell starting Jan 1 – Dec 31 each year. Unemployed SI recipients are defined as persons whose SI spells are in connection to an UI spell, either before or after. The denominator "stock of insured" is defined as 3.35 percent (LINDA sample size) of the average annual work force by the Labor Force Survey (AKU) times 1.25, as the number of insured is approximately 25 percent greater than the labor force. The denominator "stock of unemployed" is defined as the annual average of the stock of UI recipients each week in the AKSTAT database.

What about the length of SI spells among unemployed as compared to other SI recipients? According to a report by the National Social Insurance Board (RFV – Riksförsäkringsverket, 2003), SI spells in 2001 were on average 1.5 times longer among unemployed than among employed.[21] For comparability, I have applied a similar sampling method to study the average SI spell length in the matched UI and SI data.[22]

Table 1 reports the results. Note that, as in the above figures, the unemployed are compared to the entire sample of SI recipients (including unemployed) instead of employed as in RFV (2003).[23] The SI spells were longer among unemployed only in 2001. The difference, however, is not as large as in RFV (2003).

Table 1 SI spell lengths among unemployed and all SI recipients, inflow February 1–16 1998–2001

	All SI recipients			Unemployed SI recipients		
	Mean SI	Median	N	Mean	Median	N
1998	125,0	69	613	103,2	56	99
1999	90,6	37	1073	84,9	35	77
2000	106,7	46	1116	101,4	46	95
2001	102,4	45	1100	116,0	54	87

Note: The samples of all SI recipients include persons who start a SI spell February 1–16. Only spells longer than 14 days are included.

In sum, while unemployed clearly were overrepresented among SI recipients during the whole study period 1998–2001, their SI spells were not longer than the average spells among all SI recipients. Of course, the overrepresentation may be due to demographic differences between the groups, stress caused by unemployment, or other factors. Nevertheless, some of it may be explained by

[21] See Table 3 in RFV (2003).

[22] As in the RFV study, the sample in *Table 1* includes all SI spells starting February 1-16. However, the observation windows differ somewhat: in my data all spells that last longer than until December 31 are censored, whereas RFV (2003) observes the spells until March 1 the following year. Thus, the mean of the SI spell lengths is smaller in my data.

[23] SI recipients who are not unemployed are not necessarily employed. For example, they can be students or participate in some active labor market program. Thus, it would not be correct to exclude the unemployed from the sample of all SI recipients and call the rest *employed.*

the design of the UI and SI systems. The next step is to see how much. In other words, how large is the *excess sick report rate* due to different benefit ceilings?

4.3 Excess sick reports due to different ceilings

The conclusion in Larsson (2002) – that unemployed who can benefit from reporting sick do it more often but not for longer periods – is based on results from a duration analysis. Appendix A discusses the method in more detail but, in short, the basic idea is to estimate probabilities of reporting sick for each point in time. The question is "What is the probability of reporting sick after 2 (or 4, 6, etc) weeks of unemployment, conditional on that the individual is still unemployed after 2 (or 4, 6, etc) weeks?". A rich set of control variables, such as age, gender, education, and sickness and unemployment history, is included in the estimations. The results show that, among individuals who can benefit from reporting sick, all these probabilities are higher when the ceilings are different than they would be if the ceilings were the same.

To determine the effect of different ceilings in the entire sample, we must aggregate the conditional probabilities. Moreover, the estimated aggregate sick report probability must be compared to the hypothetical situation where the UI and SI ceilings are identical. Such an analysis (see the Appendix) suggests that, on average, sick report rates would have been 25 percent lower among the middle- and high-wage unemployed if the SI ceiling was as low as the UI ceiling. In other words, the different benefit ceilings cause an *excess sick report rate* of approximately *one third* in that group.

What does this figure mean in terms of SI expenditure? That is, how much do the excess sick reports cost each year? First, the answer depends on the wage distribution among unemployed SI recipients and the length of their SI spells. The fewer middle- and high-wage unemployed there are among SI recipients, and the shorter their SI spells, the smaller is the cost of moral hazard.

Given that the number of SI recipients would be 25 percent lower but the SI spells would be as long, the annual sum of SI days would be 25 percent lower among the middle- and high-wage unemployed. We can thus obtain an approximation of the cost of excess sick reports for the period 1998–2001 by using the descriptive data in *Table 2*. It comprises all unemployed SI recipients for each four calendar years. That is, the populations consist of all unemployed

individuals who had an ongoing SI spell sometime during the calendar year.[24] Annual SI days is the average sum of all sick days during the year for this population.[25]

Table 2 Wage distribution among unemployed SI recipients and annual SI statistics, 1998–2001. (Figures in parentheses report shares of total population)

	Wage below UI ceiling	Wage between the ceilings	Wage above SI ceiling	All
	Annual stock 1998			
No of individuals	2,304 (76 %)	657 (22 %)	71 (2 %)	3,032
Annual SI days	54	60	71	56
	Annual stock 1999			
No of individuals	1,825 (69 %)	760 (29 %)	76 (3 %)	2,661
Annual SI days	61	72	52	64
	Annual stock 2000			
No of individuals	1,578 (62 %)	859 (34 %)	96 (4 %)	2,533
Annual SI days	68	73	84	70
	Annual stock 2001			
No of individuals	1,855 (83 %)	290 (13 %)	93 (4 %)	2,238
Annual SI days	76	81	88	77

Note: The population each year consists of both the stock of SI recipients 1 January and the inflow of new SI recipients during the year. However, the stock may be an underestimate of the true stock, see footnote 18.

Second, the cost of excess sick reports depends on what these individuals would have done instead had they not received SI benefits. In other words, would they have received UI benefits for some or all of the period? If not, the cost of excess sick reports is determined by the amount of their SI benefits. If yes, the cost is determined by the difference between their UI and SI benefits. Two examples illustrate.

Consider first an example where SI postpones the moment the average unemployed person finds a job. When the SI ceiling is *higher* than the UI ceiling, the person (with wage above the UI ceiling) reports sick after 50 days' of

[24] Both the inflow of new SI recipients and the stock in the beginning of the calendar year are included.

[25] All SI spells during the calendar year are counted even if only one of them is connected to an UI spell.

unemployment. He stays sick for 20 days and receives SI for 19 days. After that, it takes 40 days for him to find a job. Thus, the time until employment is 50+20+40=110. When SI ceiling is *equal* to UI ceiling, he stays on UI for 50+40=90 days. In this case, an estimate of the cost of excess sick reports can be obtained by the following formula:

$$\frac{1}{0.0335}\left(\frac{0.25 * \textit{no of SI recipients} * \textit{annual compensated}}{\textit{SI days} * \textit{average daily SI benefits}}\right)_{UI<wage\leq SI} + \frac{1}{0.0335}\left(\frac{0.25 * \textit{no of SI recipients} * \textit{annual compensated}}{\textit{SI days} * \textit{average daily SI benefits}}\right)_{wage>SI}, \quad (1)$$

where the denominator refers to the LINDA sample size of 3.35 percent of the entire Swedish population.[26] In 1998 the cost according to formula (1) was approximately SEK 156 million; in 1999 SEK 206 million; in 2000 SEK 252 million; and in 2001 SEK 127 million.[27] This is the *maximum cost of excess sick reports*.

Now consider another example where it does not matter whether or not the unemployed receives SI for some period(s). He finds a job as quickly – after 90 days in the above example – in any case. Now the cost is determined by the difference between the SI bill and the UI bill for the 20 days that the person is on SI. Using the descriptive data in *Table 2*, we can calculate the *minimum cost of excess sick reports*: SEK 17.2 million in 1998; SEK 22.4 million in 1999; SEK 30.7 million in 2000; and SEK 11.0 million in 2001.

In sum, the cost of moral hazard due to the different benefit ceilings was somewhere between SEK 11 and 127 million in 2001. Is this little or much? Related to the total Government expenditure for SI, SEK 36,700 million in

[26] The average number of SI spells and thus the number of uncompensated days is assumed to be two. The average daily benefits for 1998-2001 respectively were approximated to be: SEK 473 (wage between the UI and SI ceilings) and SEK 598; 476 and 598; 477 and 602; 533 and 606. In the wage category between the ceilings, the figures were calculated by: 1/365*(12*average wage in the category*0.8). In the wage category above the SI, the figures were calculated by: 1/365*(12*SI ceiling wage*0.8).

[27] Expressed in euros, the cost was 16.7 million; 22.0 million; 27.0 million; and 13.6 million (February 2004). The relatively low figure for the last year is due to the UI reform in 2001 that increased the UI ceiling for the first 100 days of unemployment. In the calculation I have used the higher UI benefit ceiling.

2001, it may seem little. But we should relate it to the total expenditure of our population of unemployed SI recipients in *Table 2*. Then it corresponds to 2–25 percent of the expenditure. Thus, moral hazard is potentially very costly.

5 Consequences of harmonizing the ceilings

Thus far, I have shown that moral hazard due to different UI and SI ceilings is potentially very expensive. However, altering the ceilings may be associated with other costs. This section looks closer into potential incentive effects and other consequences that arise when the ceilings are altered. Both a *partial* and a *general* harmonization are discussed. Partial harmonization refers to the reform from July 1, 2003, that equalized the ceilings only for the unemployed persons. A general harmonization alters the ceilings for all workers.

5.1 How many people are affected?

To start with, let us see how many people are affected if some or both of the ceilings are altered. *Table 3* shows descriptive wage data for the stock of UI recipients, SI recipients, and the work force. *Table 2* in the previous section shows the wage distribution among unemployed SI recipients.

Table 3 Income distributions in the stock of UI and SI recipients and in the work force, 1998–2001, nominal terms

	1998			
	Below UI ceiling	Between UI and SI ceilings	Above SI ceiling	
	Below 15,950	15,950–22,750	Above 22,750	
UI recipients	0.64	0.32	0.04	
SI recipients	0.65	0.29	0.05	
Work force	0.41	0.44	0.15	
	1999			
	Below 15,950	15,950–22,750	Above 22,750	
UI recipients	0.59	0.36	0.05	
SI recipients	0.58	0.35	0.07	
Work force	0.33	0.49	0.18	
	2000			
	Below 15,950	15,950–22,875	Above 22,875	
UI recipients	0.54	0.41	0.05	
SI recipients	0.52	0.39	0.09	
Work force	0.27	0.53	0.21	
	2001			
	Below low UI ceiling	Between UI ceilings	Between high UI and SI ceiling	Above SI ceiling
	Below 15,950	15,950–18,700	18,700–23,063	Above 23,036
UI recipients	0.50	0.27	0.17	0.06
SI recipients	0.46	0.24	0.20	0.11
Work force	0.20	0.28	0.28	0.25

Note: The wage distribution among UI recipients each year is determined as the mean of wage distributions in weekly stocks in the UI funds' register. Only persons who have received income-related UI benefits are included. The wage distribution among SI recipients is determined as the mean of wage distributions in monthly stocks in the SI register. The wage variables underlying the distribution among UI and SI recipients are thus slightly different. The wage distribution in the work force is obtained from Statistics Sweden wage statistics (*Lönestatistisk Årsbok*).

In the short run, changes of the UI and SI ceilings will affect persons who receive these benefits. Thus, the size of these populations is interesting when determining the immediate effect of a harmonization – for example the SI or UI expenditure saving. Of course, if the harmonization only applies to unemployed SI recipients, they define the population of interest.

In the long run, however, more people than those initially on the benefits are affected as a changed benefit structure alters the incentives to use the benefit. Consequently, the wage distribution in the work force is interesting when determining the moral hazard effect of a harmonization or the political possibilities to implement the harmonization.

Table 3 shows that the wage distributions among the UI and SI recipients and in the work force differ quite dramatically. In the two benefit recipient groups, the share above the (lowest) UI ceiling increased from approximately one third to a half during the period 1998–2001. In the work force, almost 60 percent had a wage above the UI ceiling already in 1998. In 2001, the share was 80 percent. Consequently, all general changes in the benefit ceilings would affect large groups immediately, and up to 80 percent of the work force in the long run.

5.2 Partial harmonization of the ceilings

The reform of 1 July, 2003, decreased the SI benefit ceiling for unemployed SI recipients. The new SI ceiling equals the higher UI ceiling that is valid during the first 100 days of unemployment, see *Figure 1*. That is, the maximum monthly SI benefit decreased from SEK 19,300 to SEK 16,060.

Given the 2001 wage distribution shown in *Table 2*, this reform immediately affects 17 percent of the unemployed SI recipients. The SI benefits of unemployed in the highest wage category, 4 percent of the population, decrease by approximately SEK 107 per day. For unemployed with wages between the old and the new ceiling, the decrease is smaller and depends on their previous wages. In 2001, a corresponding reform would have led to an immediate SI expenditure saving of approximately SEK 57 million among openly unemployed UI recipients. Based on the data in this paper, a very conservative estimate for the entire unemployed population in 2003 is

approximately SEK 110 million.[28] The long-run saving is larger as moral hazard decreases.

The reform may thus seem as an easy way to reduce Government expenditure and moral hazard. However, there are at least four issues that might make this reform less effective than expected. First, it makes the SI system less uniform. The literature on administration and implementation of public policies includes good arguments for general, uniform policies. Selective and means-tested policies demand more control and imply borderline cases. Administration of such policies easily gets very heavy.[29] In our case, different ceilings for unemployed and others requires more control of the SI recipients' labor market status to make sure that everybody receives correct SI benefits.

Second, new incentives to switch status on the labor market arise. It becomes more advantageous to report sick when employed than when unemployed. Persons who risk unemployment or whose temporary employment is about to end may thus report sick before they get unemployed. In that case we will observe increased flows from employment to SI.[30] Furthermore, interaction between UI and SI is hardly the only interaction within the social insurance system. As SI becomes less generous, other insurances may get relatively more attractive. Palme & Svensson (2003) provides some evidence of interaction between UI, SI, and early retirement pensions. Parent's insurance to take care of a sick child is another example of insurance schemes that may get relatively more attractive.

Third, we should not expect moral hazard among unemployed SI recipients to decrease drastically until all the differences between the UI and SI systems are harmonized. After all, different ceilings are not the only source of moral hazard among unemployed SI recipients. Larsson (2002) shows that the proba-

[28] This figure is based on the assumption that the population of unemployed in this paper is approximately 63 percent of the entire unemployed population including program participants. 63 percent corresponds to the share of openly unemployed of all unemployed in statistics from National Labor Market Board. Furthermore, I have assumed that program participants have SI spells similar to those in *Table 2*. Thus, the estimated saving in 2001 is SEK 90 million. Assuming that the SI expenditures of the unemployed has followed the average SI expenditure growth rate of 25 percent, the estimated figure for 2003 would be SEK 113 million.

[29] For a discussion, see e.g. Rothstein (2002).

[30] According to the new rules, persons who get unemployed during their SI period must report it to the local social insurance office in order to get their SI benefits reduced. Obviously, incentives not to report it are strong. Controls and sanctions are needed, which in turn will increase the administration costs of running the system.

bility of reporting sick increases as the UI benefit expiration approaches. When receiving SI, unemployed people "preserve" their UI benefits, thus postponing the expiration date. So even if the ceilings are harmonized the unemployed still have incentives to report sick. Furthermore, the fact that SI benefits are paid for 7 days and UI benefits for 5 days per week implies that sickness periods that last over a weekend are attractive for all unemployed irrespective of previous wage.

Even after the reform, many unemployed can receive higher benefits from SI than from UI. Unemployed persons who are not entitled to income-related UI benefits, who are suspended from UI, who receive reduced UI due to refused work offers, or who have been unemployed for more than 100 days are examples of such cases.

Fourth, besides the public UI and SI benefits, many unemployed receive benefits from contractual insurances against sickness and unemployment. These insurances are regulated by collective agreements between unions and employers' organizations. A survey of various contractual insurances by Adolphson (2003) shows that it can still be clearly profitable for a high-wage unemployed to report sick even if the public UI and SI ceilings are harmonized. Some of the high-wage unemployed receive considerably higher contractual benefit from SI than from UI.

5.3 General harmonization of the ceilings

The UI and SI ceilings remain different for most insured after the partial reform. Section 3 showed that a design with identical replacement ratios but different ceilings is hardly optimal.[31] Even though the purpose of this paper not is to speculate on exactly what the optimal design looks like, some general harmonization of the ceilings may be a step to right direction. Such a harmonization implies either that the SI ceiling is decreased or the UI ceiling increased (or both), for all insured.

To begin with the expected moral hazard effects of such a harmonization, let us look at how benefit generosity affects unemployment or absence due to sickness in the economy. In short, the results from the international literature suggest that more generous UI benefits increase the average length of unem-

[31] The recent reform that decreased the replacement ration of SI from 80 percent to 77.6 percent makes it even harder to motivate the design as it now implies that SI has a lower replacement ratio but a higher ceiling than UI.

ployment periods and the number of unemployed in the economy. Similarly, higher SI benefits increase both the incidence and the duration of sickness periods.

Since 1970s, search theory provides the most common theoretical tool to study the effect of UI on unemployment.[32] In search models, the expected duration of unemployment is determined by the (unemployed) individual's search activity and the labor market situation. An unemployment period ends the sooner, the more vacancies there are available, the more actively the individual seeks for a job, and the less choosy he is to accept a job. The size of the UI benefits affects above all the tendency to accept a job offer: the higher the benefits, the choosier the unemployed individual. Of course, if the employment service authorities are very efficient in "forcing" the unemployed to accept any job offer the size of the UI benefits are of less importance.[33] Moreover, other aspects of the UI benefits, such as the duration of benefits or sanctions, are shown to affect the unemployment duration.

Krueger and Meyer (2001) is the most recent international survey of the empirical evidence on how UI benefit generosity affects unemployment.[34] They summarize the international literature as follows:

"An elasticity of unemployment duration with respect to benefits of 0.5 is not an unreasonable rough summary, though there is a wide range of estimates in the literature."

[32] The first search theoretical models are presented in Mortensen (1977) and Burdett (1979). For surveys of both theoretical and empirical evidence up to late 1990s, see Atkinson & Micklewright (1991) and Holmlund (1998).

[33] It can be shown in the search theoretical framework that higher benefits may also reduce the duration of unemployment among non-insured individuals. In Sweden, as in many other countries, an individual qualifies for UI benefits through work experience. Higher UI benefits make it more attractive to take a job and thus qualify for the benefits.

[34] They also provide a discussion on identification of the UI effects. In cross sectional studies the effect of UI benefits is identified by regressing the duration of unemployment on the replacement ratio that in turn is determined by previous wage and other individual characteristics. It is thus difficult to compare two identical individuals with different replacement ratios. Consequently, the estimated effect may not necessarily show any causal relationship. Studies where identification is based on regional variation (such as across U.S. states) or some partial reform that changes the replacement ratio for some but not all individuals are thus more reliable. Carling et al (2001) is an excellent Swedish example of the latter strategy.

The results from early Swedish studies provide some support to these results (see Björklund, 1978, and Björklund & Holmlund, 1989). However, a recent study by Carling et al (2001) suggests stronger effects. They analyze the reform in 1996 when the replacement ratio was decreased from 80 percent to 75 percent. The fact that the reduction only affected individuals with earnings below the UI ceiling (the ceiling was not altered) implies that the groups above the ceiling can be used a control group. They estimate an elasticity of 1.6: a 10 percent increase in UI benefits is associated with a 16 percent increase in the unemployment duration. The standard error of the estimate is quite large, though.

Higher UI benefits may also increase the number of unemployed. One potential mechanism is through wages: higher UI benefits lead to higher wages and thus lower employment. Holmlund (1989), Forslund (1992), and Holmlund & Kolm (1995) are examples of Swedish studies analyzing the effect of UI benefits on wages and providing some support for the hypothesis. However, identification of the causal effect is somewhat complicated as wages more or less perfectly determine the size of the benefits. Krueger & Meyer (2001) provide a survey on U.S. studies. Their conclusion is that the elasticity of UI claims with respect to UI benefits is approximately 0.5. Thus, an increase in the UI benefits by 10 percent would lead to a 5 percent increase in the number of UI recipients. However, the institutional setting in the U.S. differs quite from the Swedish, and thus the mechanisms through which UI generosity affects the number of unemployed differ as well. Consequently, one should be careful with generalizing the Krueger & Meyer (2001) estimates to the Swedish context.

Similar to the UI literature, the literature on SI provides evidence of strong incentive effects: higher SI benefits increase both the incidence and the duration of sickness periods. Theoretical studies have traditionally analyzed sickness as absence from work in the labor supply framework. In these models, absence from work emerges in a situation where the employment contract obliges the worker to supply a certain amount of labor that exceeds the worker's optimal labor supply. The worker maximizes his utility over income and leisure under income and time constraints. Absence is associated with a cost in terms of lost income: the lower the SI benefits, the higher the losts of income.[35]

[35] Examples of such models and empirical applications are provided by Allen (1981), Barmby, Orme and Treble (1991), Barmby, Sessions and Treble (1994) and Brown and Sessions (1996). Currie and Madrian (1999) summarize international research on the subject.

In such a framework, it is straightforward to show that an increase in the SI benefits leads to more absence from work. Higher benefits imply a lower cost associated with absence and alters thus the worker's budget constraint. Given that leisure is a normal good, this leads to a decrease in the optimal labor supply of the worker. Consequently, the incidence and the duration of absence increase.

Empirical studies confirm this theoretical result. Broström et al (2002), Henrekson & Persson (2004), and Johansson & Palme (1996 and 2002) present Swedish evidence that higher SI benefits are associated with more sickness absence. For example, in a Swedish summary of their 2002 paper Johansson and Palme calculate the elasticity of sickness incidence with respect to benefits to be 0.5 for males and slightly higher for females. They do not however find any evidence that the size of SI benefits would significantly affect the length of the SI periods. (Johansson & Palme, 2003)

In sum, the moral hazard literature seems to suggest that an increase of the UI benefit ceiling would increase equilibrium unemployment, whereas a reduction of the SI ceiling would decrease equilibrium absence due to sickness. The groups affected by these reforms would be large. Thus, increasing the UI ceiling would imply that both the daily UI benefits *and* the number of benefit days increase for approximately 50 percent of the entire population of UI recipients. Moreover, even if the percentage increase in the number of new unemployed would be moderate, the absolute increase could still be considerable as 80 percent of the work force have wages above the UI ceiling (Figures for 2001 in *Table 3*).[36] Similarly, decreasing the SI ceiling would save a lot both in terms of reduced SI expenditure per day *and* reduced number of days for more than half of the entire SI recipient population.

Thus, a reduction of the SI ceiling is a much cheaper harmonization than an increase of the UI ceiling. The administration costs of such general reforms hardly differ either; both should be quite low. However, most question marks

[36] Consider the following example: If the UI benefit ceiling was increased to equal the SI ceiling, at most the increase would be 29 percent (from SEK 14,960 to 19,300 per month) for individuals with earnings equal or above the SI ceiling. According to the Carling et al (2001) estimate, their expected unemployment duration would then increase by 46 percent. The Krueger & Meyer (2001) estimate would imply a 14.5 percent increase in the unemployment duration. Assuming that the average length of unemployment is 6 months, the increase at most would thus be 4 to 12 weeks. The expected increase would naturally be smaller for individuals with earnings closer to the UI ceiling.

associated with a partial reform also concern these general reforms. For example, interactions between SI and other social insurances – such as early retirement pensions or parents' insurance – may imply that these other insurances are utilized considerably more when SI is made less generous. Moreover, a real harmonization of the ceilings is not reached until the contractual insurances are harmonized, which is difficult for the government to decide on.

Decreased absence from work is not necessarily all that efficient. If the workers attend their job sick, their productivity may be lower. However, there is no evidence that "sick-presence" would increase when benefits are decreased.

Last but certainly not least, the wage distribution in the work force does not only affect whether the reforms are economically possible and motivated. It is important from a political perspective, as well. Harmonizing the ceilings by reducing the SI ceiling to equal the UI ceiling would concern a vast majority of all workers. Whether such a reform is politically feasible or not is, of course, beyond the scope of the present paper.

6 Concluding remarks

Harmonization of the social insurance is not a new topic in the political debate. In March 1993, some of the leading economist and political scientists in Sweden, known as the "Lindbeck Commission", published a report on how to improve the Swedish economy. Among many other things, the authors emphasized the need of reforms within the social insurance system. They already at that point in time noticed the problem of interactions between various insurances due to different benefit levels, and argued for as uniform systems as possible.[37]

Today, ten years after the report, many of the differences in benefit generosity still remain. It is thus interesting to see whether the present harmonization debate leads to more comprehensive reforms. My aim with this paper has been to contribute to the debate by bringing out facts about the part of the social insurance system that I know most about, namely unemployment and sickness insurance. These two insurances are interesting to discuss also because of the recent reform that harmonizes the replacement ratios for the unemployed.

[37] See SOU 1993:16 or Lindbeck et al (1994)

The conclusions from this paper are: First, the design of UI and SI with equal replacement ratios but different benefit ceilings is hardly optimal. An optimal system weighs the cost of moral hazard against the cost of monitoring, administration etc. However, in our case it is difficult to argue that the moral hazard among unemployed SI recipients would be optimal.

Second, statistics from the period 1998–2001 show clearly that unemployed are overrepresented among SI recipients. It is not obvious, however, that their SI spells are much longer than on average.

Third, results from Larsson (2002) applied to the data in this paper suggest that moral hazard among unemployed SI recipients due to different benefit ceilings potentially has been very costly. Consequently, some harmonization at least among the unemployed is motivated.

Fourth, reducing moral hazard in some parts of the social insurance is seldom a free lunch when the system is as complex as the Swedish. UI and SI are hardly the only social insurances that interact. Altering the generosity of UI and SI not only alters the use of those insurances, but implies also indirect effects on the use of other insurances. Thus, reforming only some of the insurances but leaving the others unaltered does not necessarily lead to desired effects. When designing a reform, all insurances should be considered simultaneously.

Finally, general reforms that alter the benefit ceilings for all insured concern many people as most workers have a wage above the UI ceiling. Realization of such reforms may thus be politically difficult. Progressive taxes together with benefit ceilings imply that the financial burden of UI and SI already today is relatively much heavier for persons with wage above the ceiling than below it. Moreover, the average financial burden has gotten heavier during the past years, as wages have increased more than the ceilings have been raised. An important condition for a legitimate system is that citizens perceive the financial burden as fair. Thus, a reduction of the SI ceiling would probably be perceived as unfair, and such a reform would unlikely appear as politically feasible.

The question of legitimacy is of course more complex than that. Alarming reports about misuse of social insurance benefits may undermine the legitimacy of the existing system. If so, some reforms are necessary to prevent a collapse of the citizens' confidence in the long run. Solidarity on the tax payers' side requires solidarity of the beneficiaries.

The system must not only be perceived as legitimate among the voters but also among the implementing authorities. If they do not agree with the rules

and regulations, the system may turn out to be entirely different in practice than on paper. The authorities must of course be well acquainted with the rules in order to implement them, as well. The more complicated the system, the higher the risk of misinterpretation and misuse. Bad implementation may imply a legitimacy problem among the citizens as their confidence in the implementation process collapses. A successful reform concerning UI and SI requires thus that all implementing authorities – employment offices, UI funds, local social insurance offices, the medical profession, and the National Labor Market Board and the National Social Insurance Board on the top – find it fair and support it.

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Appendix A

Identification of the incentive effect in Larsson (2002)

The strong connection between income and health, as documented in a series of studies, makes it difficult to identify the effect of differing benefit ceilings.[38] Higher income is shown to correlate with better health, thereby implying a lower probability of sickness. There are several potential explanations to this. High wage earners may have healthier living habits, or employers may discriminate against individuals with bad health and offer them lower wages. Nevertheless, this positive correlation between wages and health would imply that individuals with previous wages above the UI ceiling have a lower probability of being on SI instead of UI. The incentive effect due to different ceiling, in turn, implies that individuals with previous wages above the UI ceiling have a *higher* probability of being on SI instead of UI. Thus, wages are expected to have two opposite effects on the probability of being on SI.

Larsson (2002) applies non-parametric discrete hazard models to estimate sick report rates and length of the sick period. The *incentive effect* of wages is separated from the *health effect* by estimating the effect of wages on the sick report probability separately for the three wage categories: previous wage below the UI ceiling (group I), between the UI and SI ceilings (group II), and above the SI ceiling (group III). In groups I and III, a change in wage does not alter the difference between SI and UI benefits, whereas in group II, the difference increases as wage increases. Same approach is used to estimate the length of the sick period.

The results show that, in groups I and III, wage has a significantly negative effect on the hazard rate into sickness, reflecting the health effect. In group II, however, the effect of wage on the hazard rate into sickness is significantly positive. The positive incentive effect is thus strong since it dominates the negative health effect.

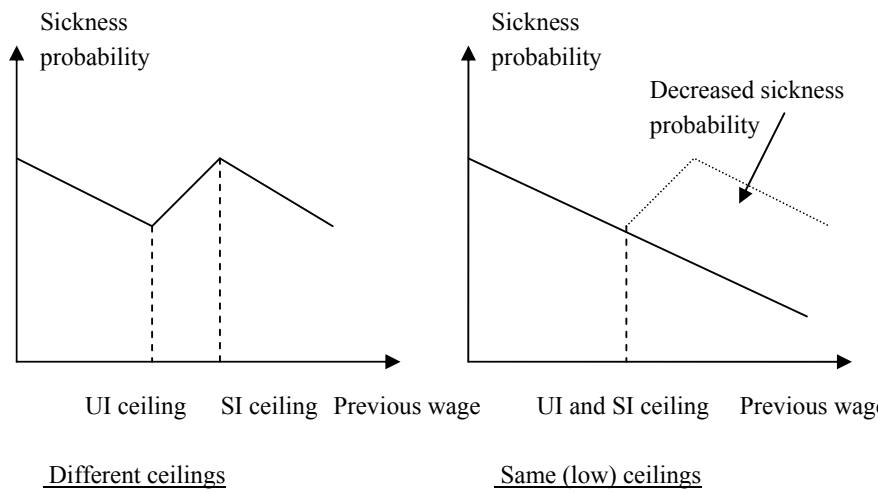
Calculation of the excess sick report rate due to moral hazard

We can derive the incentive effect on the overall probability to report sick from the hazard estimates for each time interval. The question is: *How much (less)*

[38] For a summary of studies concerning the interplay between health and labor market outcomes, see Currie & Madrian (1999).

would the unemployed with wages above the UI ceiling report sick if the SI ceiling was as low as the UI ceiling? This hypothetical experiment is illustrated in Figure A1.

Figure A1 How to estimate the cost of moral hazard according to the Larsson (2002) study



First, I use the parameter estimates in Larsson (2002) to estimate the hazard for each individual with wage above the UI ceiling and for each time interval. Low-wage individuals are excluded since their sick report rate is assumed to remain unaltered. The individual probability of reporting sick within the total time period is obtained from equation A1:

$$P(sick) = 1 - \prod_{t=1}^{5}(1 - h_t), \qquad \text{(A1)}$$

where h_t is the estimated individual hazard for time interval t. Aggregating these individual probabilities gives us an estimate of the overall sickness probability *when the ceilings are different.*

Then, I apply the exact same procedure but use the hypothetical parameter estimates for the wage effect *when the ceilings are the same.* As a result, I obtain an estimate of what the sickness probability would be if the SI ceiling

was as low as the UI ceiling. The percentage effect of lowering the SI ceiling is obtained from equation A2:

$$\Delta P(sick) = \frac{P_{same\ ceilings} - P_{different\ ceilings}}{P_{different\ ceilings}} \quad . \qquad \text{(A2)}$$

The results $\Delta P(sick) \approx -0.25$ means that, on average, sick report rate would have been 25 percent lower among the middle- and high-wage unemployed if the SI ceiling was as low as the UI ceiling.

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