*Report from the Economic Affairs Department at the Ministry of Finance*

# How should the functioning of the labour market be assessed?

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# Preface

The Economic Affairs Department at the Ministry of Finance analyses the economic development and how the economy's resources are used and distributed. This includes forecasts of the development of the real economy and public finances, as well as consequence analyses of various political proposals. These analyses and assessments serve as the basis for the government policy. For reasons of space, there is in practice very limited scope in government bills to present the methods and assumptions on which the policy is based. To increase transparency in its reporting, the government therefore announced in the Budget Bill for 2009 that it intended in future to publish a separate more detailed report on the analyses of the Economic Affairs Department. This is now done in the report series *Reports from the Economic Affairs Department at the Ministry of Finance*.

The report series is intended for a variety of readers. In the first place, it responds to requests from the Swedish Fiscal Policy Council and the Swedish National Audit Office for increased transparency in reporting. Other interested parties include government authorities, researchers and other organisations working with analyses of economic development.

The report "How should the functioning of the labour market be assessed?" has been written by Anders Bergvall, Iida Häkkinen Skans, Pernilla Johansson, Katarina Richardson, Hans Sacklén, Martin Söderström and Anna Öster, all of whom work at the Economic Affairs Department at the Ministry of Finance. The report has been discussed in a seminar at the Ministry of Finance by Peter Fredriksson from Stockholm University, Göran Hjelm from the National Institute of Economics Research and Christina Nyman from the Riksbank.

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Any comments on this report are most welcome. These can be submitted directly to Martin Söderström on telephone +46 8 405 1251 or by e-mail to martin.soderstrom@finance.ministry.se.

Stockholm, December 2011

Kerstin Hallsten

This report is an English translation of the report "*Hur ska utvecklingen av arbetsmarknadens funktionssätt bedömas?*" (Report from the Economic Affairs Department at the Ministry of Finance 2011:1) which was published in April 2011. Therefore, this report does not include assessments of new policy measures presented in the 2012 Budget Bill or new forecasts on the development of the labour market that have been done after the 2011 Spring Fiscal Policy Bill. The aim of this report is to describe the methods used when assessments of the functioning of the labour market are carried out. These methods are relatively stable to actual changes in the labour market. For an updated assessment of the policy effects and the development of the labour market, see the 2012 Budget Bill.

# Contents

# Summary: How should the functioning of the labour market be assessed?

This report presents the Economic Affairs Department's assessment of how the functioning of the labour market will develop between 2006 and 2020 and the methods used in this assessment. The report summarises a project begun by the Department in autumn 2010. It focuses on trends in equilibrium unemployment, potential employment and the potential labour force, which together provide an overall picture of the functioning of the labour market.

One important objective in estimating equilibrium unemployment, for example, is to make it possible to decompose actual (measured) unemployment into a cyclical and a structural component. This decomposition is useful in forecasting and also for understanding the need for stabilisation policy measures or establishing the long-term fiscal scope for reform.

The development of the functioning of the labour market can also be used to follow up whether employment policy has the intended effect in the long run and, to a certain extent, also to assess the need for further structural reforms. The aim of several of the Government's reforms is to increase potential employment by reducing equilibrium unemployment or increasing labour force participation. Monitoring the development of these estimated quantities provides an indication of whether the reforms have had the intended effect. High equilibrium unemployment or low potential labour force participation may also indicate that economic policy measures may improve the functioning of the labour market.

*Equilibrium in the labour market*

The term "labour market equilibrium" has various meanings. In this report, equilibrium refers to a situation where the effects of all temporary shocks in the economy have abated, i.e. a steady-state equilibrium (see Chapter 1). If the economy is in equilibrium, actual (measured) unemployment is equal to equilibrium unemployment. In practice, however, the economy is continuously affected by various shocks, such as cyclical swings, and thus actual unemployment almost always deviates from equilibrium unemployment.

Equilibrium in the labour market is determined, among other things, by the regulatory framework and the institutions associated with the labour market, such as the tax system, education and unemployment insurance. Thus economic policy measures may affect equilibrium. If, for example, an in-work tax credit is introduced, it sets in motion a process of adjustment leading to a new equilibrium with lower equilibrium unemployment and higher potential employment. This adjustment process is discussed in the report, in both the theoretical part (Chapter 1) and the empirical part (Chapters 2 and 3).

Equilibrium is of particular interest when assessing the need for labour market reforms. In forecasting, the adjustment path to a new long-term equilibrium is also of interest in order to decompose employment into a structural and a cyclical component.

*The general outline of the analysis*

There are many ways of estimating the development of labour market equilibrium but there is no consensus on the best method. This report describes how the Ministry of Finance estimate is made. In brief, labour market equilibrium in 2006 has been calculated using a number of econometric models that estimate the development of equilibrium unemployment between 1980 and 2006, inter alia, using long time series of actual unemployment trends. The results are checked against important indicators of resource utilisation in the labour market and some micro-based indicators of how the functioning of the labour market developed around 2006, for example, indicators of long-term unemployment and the situation for groups with a weak attachment to the labour

market. In the next step, the potential labour force is calculated based on the cyclical covariation of unemployment and labour force participation. Finally, potential employment is calculated as the difference between the potential labour force and equilibrium unemployment. There is a detailed account of the equilibrium estimate for 2006 in Chapter 2.

Several factors indicate a change in equilibrium in the labour market since 2006. First, the Government has made several reforms that are expected to reduce equilibrium unemployment and increase potential employment and labour force participation. Second, demographic trends indicating an increasing proportion of young people and people born abroad in the population will lower the employment rate while equilibrium employment will increase and the potential labour force participation rate will decrease. Finally, the residual effects of the economic crisis of 2008 will persist in the labour market for several years to come, including high long-term unemployment, lower employment and lower labour force participation. Under these circumstances, it is difficult to estimate and forecast the development of equilibrium employment based on historical correlations as there are strong reasons to believe that these correlations have changed. For this reason, a more in-depth assessment is made of how policy, demography and the economic crisis of 2008 affect the functioning of the labour market during the period 2006 to 2020. The analysis is summarised in Chapter 3. The end year, 2020, has been chosen to coincide with the EU 2020 employment target.

*Assessment by the Ministry of Finance*

The estimate of equilibrium unemployment in 2006, together with the effects of government policy and demographic trends, provides an estimate of equilibrium for 2020. This estimate is summarised in Table 1.1. Previous structural reforms summarise the assessment of the reforms carried out between 2003 and 2006. In 2006, sufficient time had not passed for their full impact to be felt.

**Table 1.1 Summary of the estimates, 2006 and 2020 (per cent/percentage points).**

| | Equilibrium unemployment | Labour force participation | Employment rate |
|---|---|---|---|
| **Level 2006** | **6.6** | **71** | **66** |
| *Demography* | 0.4 | -2.1 | -2.2 |
| *Unchanged ceiling* | -0.6 | 0.1 | 0.5 |
| *Structural reforms* | -1.4 | 2.2 | 3.0 |
| *Previous structural reforms* | 0.0 | 0.1 | 0.1 |
| **Level 2020** | **5.0** | **71** | **68** |

Note: Equilibrium unemployment refers to ILO unemployment, aged 15-74. Labour force participation and the employment rate refer to those aged 15-74. The contribution of the different components refers to the change between 2006 and 2020. "Unchanged ceiling" means that the maximum daily unemployment benefit (SEK/day) remained unchanged between 2007 and 2011.

The Ministry of Finance estimates that equilibrium unemployment will decrease from 6.6 per cent in 2006 to 5.0 per cent in 2020. Structural reforms such as the in-work tax credit and unemployment insurance reforms will reduce equilibrium unemployment by 1.4 percentage points and an unchanged ceiling for unemployment insurance benefits reduces it by 0.6 percentage points. Over the same period, demographic trends will contribute to an increase of 0.4 percentage points in equilibrium unemployment. Furthermore, the potential labour force will increase by about 400 000 people and potential employment by around 450 000 between 2006 and 2020. The employment rate is thus expected to be 68 per cent in 2020, an increase of 2 percentage points. The Government's reforms contribute to a three percentage point increase in the employment rate even though this is mostly offset by groups with a relatively low employment rate making up an increasingly large component of the working aged population. The effects of the economic crisis of 2008 are expected to have abated by 2020.

*Are further reforms needed to improve the functioning of the labour market?*

The Ministry of Finance estimates that the potential employment rate will be 68 per cent and equilibrium unemployment 5.0 per cent of the

labour force by 2020. This labour market equilibrium indicates a relatively large quantity of "unutilised resources" in terms of labour, even in a normal cyclical situation with 32 per cent of the working aged population not in employment and 5 per cent of those wanting to work unable to find a job. Even though we know that many individuals in the age group 15-74 are students, people on parental leave or old age pensioners, this indicates that measures to reduce equilibrium unemployment and further increase labour force participation will probably lead to an increase in welfare. The current high level of long-term unemployment and the uneven distribution of job opportunities among different demographic groups and different education groups are further indications of this.

But understanding how much it is *possible* and *feasible* to increase the employment rate requires knowledge about, what constrains employment and what measures contribute to sustainable higher employment. It is also important to understand all of the consequences of a particular measure, for example, its effect on income distribution. To answer these questions, the Government has drawn up a framework for employment policy (see the 2011 Spring Fiscal Policy Bill, Chapter 4). A key part of this work has been to improve labour market statistics in order to obtain as comprehensive and detailed a picture as possible of the functioning of the labour market. Measures of the expected development of the labour market equilibrium are important complements to labour market statistics.

*Important assumptions and limitations*

There is, of course, a considerable degree of uncertainty attached to these estimates. This applies to the estimate of labour market equilibrium in 2006 but perhaps even more to the estimates of labour market trends between 2006 and 2020. The impact assessment of government policy is based on current research in the areas concerned. However, this research is not comprehensive and different studies' findings may sometimes differ depending on the method and data used. The chapter with background analysis of the impact assessments presents the assumptions considered particularly important for the estimates.

It should also be mentioned that no impact assessment has been made for some of the reforms, for example, measures targeting the foreign born and education measures because there is no suitable basis for such estimates. It should also be pointed out that available research provides limited guidance on how the adjustment process to a new long-term equilibrium occurs.

Finally, it should be pointed out that certain assumptions have been made on policy design in the next few years. One of the most important assumptions is the technical assumption that the unemployment insurance ceiling will be adjusted upwards by the wage growth rate beginning in 2012 according to current conventions for long-term estimates. For the sake of clarity, it should be pointed out that an increase in the ceiling is not included in the reforms the Government presented for its current term of office in the 2011 Budget Bill. Similar assumptions have been made about the volumes in active labour market policy (ALMP) which is assumed to change in line with the size of the labour force.

*Further work*

The assessment of the development of the functioning of the labour market must be continuously followed up and evaluated. This involves, for example, monitoring whether labour market developments are consistent with this assessment. Thus for some years now, the Spring Fiscal Policy Bill has included indicators of whether labour market reforms have had the intended effect (see, for example, the 2011 Spring Fiscal Policy Bill, Chapter 4). It is also important to check impact assessments regularly in the light of new research findings.

It has been necessary to make a number of simplifying assumptions and to limit the work to exclude a number of important issues, because of limited resources and the absence of clear guidance from research in many instances. These limitations and simplifying assumptions are natural starting points for future projects, some of which may be undertaken internally by the Ministry of Finance while others may need to be assigned to external experts or other government agencies. For example, it would be desirable to analyse how the Government's reforms affect different demographic and education groups. It is also important to

assess the impact of more reforms than has been done within the framework of this project.

In a longer perspective, a calibrated search/matching model which can be used to analyse different types of reforms in an integrated model framework would be desirable. One advantage of such a model would be that it would enable analysis of non-linearities and interaction effects, which has not been possible in this project.

*Report outline*

This report consists of 11 chapters. Chapter 1 presents the theoretical analytical framework. Chapter 2 presents estimates of labour market trends up to 2006 and finally Chapter 3 presents development from 2006 onwards.

In addition to these three main chapters, there are eight background chapters with estimates of the impact of policy, demography and the crisis on the functioning of the labour market. All background chapters are summarised in Chapter 3 which can be regarded as the main chapter of the report and which presents the assessment of the functioning of the labour market up to 2020.

# 1 The analytical framework for the functioning of the labour market

## 1.1 Summary

This chapter presents the analytical framework used by the Ministry of Finance to describe the functioning of the labour market. This analytical framework is based on a theoretical search and matching model that is primarily used to describe long-term equilibrium in the labour market, i.e. a situation where all adjustment processes in the economy have run their full course. The model is used, among other things, to identify the mechanisms that determine equilibrium unemployment in the long term and how economic policy measures may affect these mechanisms.

To be useful in the Ministry of Finance's day-to-day work, the model needs to be supplemented and expanded to describe how the labour market shifts between two long-term equilibria. In actuality, this means that the adjustment path between two long-term equilibria is defined as the unemployment (or employment/labour force) that would exist in the absence of any cyclical shocks. Two real-world complications are also added to the model: demographic changes and the effects of large cyclical fluctuations.

The chapter is arranged as follows. Section 1.2 briefly describes the basic theoretical model. Section 1.3 describes how economic policy measures according to the model may affect equilibrium unemployment. Section 1.4 describes the adjustment process between two long-term equilibria. Section 1.5 discusses the importance of demography and economic crises in the functioning of the labour market.

## 1.2 Theory about the functioning of the labour market

This section contains an overview of the theoretical search and matching model used by the Ministry of Finance to describe the functioning of the labour market. There is a detailed description of the model in Pissarides (2000). Like all models, this is a simplified description of the real world based on a set of assumptions. However, the model is generally accepted and considered a reasonable description of the labour market in the long term, i.e. when the labour market is in equilibrium.

### 1.2.1 The basic model

There are two types of agents in the basic search theory model: profit-maximising firms and utility-maximising individuals. There are many firms producing homogenous goods (i.e. they are price-takers on the commodity market). The individuals are similarly homogenous with respect to productivity and the value placed on leisure time.

The labour market in the model is characterised by "search frictions", i.e. it is expensive for firms and the unemployed to find one another. For firms, the costs consist of direct hiring costs such as advertising and training costs. For individuals, the costs are associated with loss of income during the unemployment spell and the effort associated with looking for work.

Individuals are either employed or unemployed. For each time period there is a particular probability that those who are employed will lose their job (the job separation rate). In the simplest models, this risk is exogenous and thus cannot be affected by the agents in the model. The same wage is paid to all individuals who work and the unemployed receive unemployment benefits. The value of a job offer is the difference between the wage and unemployment benefit.

The individual's decisions in the model concern to what extent he or she will look for work and what job offers are acceptable (which in economics is usually called the individual's reservation wage) to maximise utility. The unemployed affect their chances of obtaining a job offer by seeking work more or less intensively.

The equilibrium in the model is described as a flow equilibrium and occurs when the inflow to and outflow from unemployment

are equal. Aggregate unemployment and employment will thus be determined by the factors on which the flows are based and which characterise the equilibrium. In other words, aggregate unemployment in equilibrium will be determined by the inflow into unemployment and the duration of unemployment.

Jobseekers and firms with vacancies are thus engaged in a search and matching process to bring about employment. If the matching process between vacancies and jobseekers becomes more efficient and employment contracts can be entered into more quickly, unemployment spells will shorten and thus aggregate unemployment will decrease. How efficient matching is depends partly on the intensity of the unemployeds' job search. Higher search intensity will increase the probability of obtaining work, i.e. employment contracts will be entered into more quickly, leading to a decline in unemployment. At a certain level of matching efficiency, more vacancies and/or more unemployed will result in a greater number of successful matches because firms will be more successful in finding suitable candidates to hire and jobseekers will more easily find suitable work when there are more vacancies.

When a firm with a vacancy and a worker without work meet, a negotiation ensues which, if they reach agreement, will result in an employment contract. The agreed wage level will be somewhere between the employee's reservation wage and the employer's marginal product adjusted for search costs. If wages are assumed to be determined according to Nash's bargaining model, the surplus will be divided between employer and employee in relation to their bargaining power.

The probability of the unemployed finding work depends on the probability of receiving a job offer and the probability of accepting the job offer. The jobseeker's own efforts affect the possibilities of obtaining a job offer and the employee's wage demand will affect the probability of accepting the job offer. Key decision parameters in the model are thus, for the individual, search intensity and the reservation wage. For firms, the decision concerns whether it is profitable to post vacancies. In the early search and matching models, many other variables included in the model were exogenous, i.e. they could not be affected by the agents in the model. Important mechanisms of this kind that help determine equilibrium unemployment and aggregate employment are firms' search costs, the risk of being given notice (job separation rate, of which an important part is the economy's

structural change rate), the matching function (the process by which jobseekers and firms with vacancies meet) and the functioning of wage formation (determined, in part, by the social partners' relative bargaining power).

### 1.2.2 Labour force participation

The above description aims at capturing the model's most basic features. In recent decades, the model has been expanded in a number of respects, many of which are described in Pissarides (2000). One limitation of the standard model is that it only analyses how large a proportion of the labour force is unemployed but disregards the determination of labour force participation. As the participation decision is very important for the functioning of the labour market, it is important to be able to analyse, within the same theoretical framework, the impact of different factors on employment through effects on *both* the proportion of the population in the labour force (labour force participation) *and* the proportion of the labour force which is employed.

Pissarides (2000) has expanded the model to include the decision on labour force participation, a model developed further by Kolm and Tonin (2010). In these models, the decision on labour force participation depends on the relative value of participation in the labour force compared with remaining outside. Accordingly, reduced taxes on work, for example, will increase labour force participation since this increases the relative value of being employed. A better labour market situation also has effects on labour force participation as more people will decide to participate in the labour force when the expected search time decreases.

### 1.2.3 Small open economy

The basic matching model is designed for a closed economy and equilibrium is therefore determined by factors in the domestic economy. In a comprehensive macro model for an economy trading goods, services and securities with the outside world (an open economy), these analyses must be complemented with conditions that result in equilibrium in relation to the rest of the world. An open economy, for example, with a long-term expansive

stabilisation policy, would be able to keep aggregate unemployment below equilibrium unemployment while accumulating deficits with other countries. To determine whether an open economy is in long-term equilibrium, a comprehensive analysis must therefore be made to determine whether the economy is in equilibrium in relation to other countries. This would include an analysis of whether or not the real exchange rate is in long-term equilibrium, which in turn involves having to make a systematic analysis of the determining factors of the real exchange rate. No such analysis is currently available.

## 1.3 Equilibrium unemployment and economic policy measures

In the long run, equilibrium unemployment is determined according to the search theory by the mechanisms described in the previous section. The factors which in turn affect these mechanisms are mainly of a structural nature such as institutions and regulatory frameworks. The Government can thus affect equilibrium unemployment via structural reforms.

### 1.3.1 Tax on labour

The introduction of a tax on labour in the simple search theoretical model will have no impact on unemployment unless the tax affects the value of being unemployed relative to the value of working. If unemployment benefits are taxed, the relative value of being unemployed will not be affected by a change in the tax rate. If unemployment benefits are tax-exempt or if the change in the tax rate only affects earned income, a tax reform will affect the reservation wage and search behaviour.

In a search and matching model that makes labour force participation endogenous, a tax change affects employment through its impact on the proportion of the population in the labour force. According to this model, a tax reduction will increase the value of being employed compared with staying outside the labour force. Labour force participation will therefore increase at a given wage before tax. A firm's decision to post a vacancy takes into account both expected future wage costs (the wage plus the

employer's social security contribution) and the time it may take to fill the vacancy. An increase in the number of jobseekers reduces the time it takes to fill the vacancy. This makes it profitable for employers to post more vacancies. More successful matches will then occur, leading to an increase in employment. It should be noted that the increase in labour force participation thus leads to higher employment even without a direct effect on wages (supply creates its own demand). In addition to the direct effect on labour force participation, a tax reduction affects equilibrium unemployment, which is described below.

### 1.3.2 The replacement rate in unemployment

The replacement rate states how large a proportion of the earned income lost will be compensated for in the event of unemployment. For obvious reasons, unemployment benefits will affect the replacement rate, but a tax deduction that only applies to earned income and not to unemployment benefits will also affect the replacement rate. Unemployment benefits and tax deductions on earned income will thus, through the replacement rate, have a similar effect on equilibrium unemployment.

The replacement rate affects unemployment in two ways. First, a reduction in the replacement rate makes work relatively more profitable than unemployment, thus creating an incentive for the unemployed to increase their search intensity. This increases employment for a given number of vacancies, but it also has the indirect effect of encouraging firms to post more vacancies, as the expected length of the vacancy decreases when the unemployed look for work more intensively.

Second, a lower replacement rate will help moderate wage demands.[1] This is because it is less profitable to be unemployed. When, due to lower wage growth, the employer receives a larger share of the surplus, it will be advantageous for firms to post more vacancies, which will increase employment and reduce unemployment for a given labour force participation rate. Labour force participation may also be affected, even though there are two counteracting forces at work here. It will be more attractive to be

[1] The real wage level is determined in the theoretical search and matching model. But because of constant productivity growth, wages in the economy are expected to increase at a corresponding rate and the wage effect therefore continues to be discussed in terms of wage growth.

part of the labour force when there is a higher probability of finding a job (firms post more vacancies), but at the same time the restrained wage growth and the reduced replacement rate will tend to reduce labour force participation.

### 1.3.3 Active labour market policy

Active labour market policies (ALMPs) are intended to support and help unemployed individuals return to work. To the extent that these efforts strengthen the competitiveness of the unemployed, unemployment spells will be shorter and thus equilibrium unemployment will decrease.

However, ALMP programmes affect not only those participating in them; for example, many ALMP programmes displace other unsubsidised jobs. But ALMP also has other indirect effects that affect employment and unemployment in equilibrium. ALMP can (for example, through job search assistance) affect matching between the unemployed and job vacancies. ALMP can also affect the functioning of the labour market through its effects on wage formation and labour force participation. In addition, different ALMP programmes have potentially different macro effects. And, finally, ALMPs must be financed by taxes that affect all taxpayers.

### 1.3.4 Recruitment and dismissal costs

Companies' costs for recruiting and giving notice to employees (such as those arising from employment protection law) can affect equilibrium unemployment in the model. The effect of the costs of giving notice on equilibrium unemployment in the simple model depends on whether the costs consist of unemployment benefits or whether these are direct bargaining costs. To the extent that it is unemployment benefits, these costs will be internalised in wage bargaining and do not affect equilibrium unemployment. However, if bargaining costs are affected, firms' profits will be reduced, leading to fewer job opportunities and an increase in equilibrium unemployment.[2]

[2] This is true only if firms' layoffs (job separation rate) are exogenous in the model. If firms' layoffs are endogenous, the qualitative effect on equilibrium unemployment is ambiguous.

### 1.3.5 Indirect effect via relative wage flexibility, the pace of structural change and competition in product markets

Economic policy measures may indirectly affect several of the mechanisms discussed in the review of the theory. Some are described here.

Equilibrium unemployment may be affected to the extent that technological development affects demand for different groups in the labour market to varying degrees. An often quoted example is that technological development leads to higher demand for highly trained labour (skill-biased technological change). To avoid an increase in unemployment, an increase in demand of this kind must lead to wage increases for this group relative to low-skilled workers. This will in turn lead to an increase in the supply of highly educated labour and a further decrease in wage differentials. If the labour market cannot deal with this process, unemployment will increase among the low skilled.

The flow of individuals from employment to unemployment will decrease if the economy is exposed to fewer shocks (i.e. a reduction in the pace of structural change). The decrease in structural change rate will lead to lower turnover in the labour market. Thus firms' recruitment and training costs will decrease, leading to lower equilibrium unemployment and a higher real wage.

The greater the competition in the market, the more price elastic the demand for a firm's products will be. Firms' profits, which are created when the price of their products exceeds production costs, will then be squeezed by increased competition as competition leads to a smaller price mark-up. This will in turn lead to rising real wages and employment and a reduction in equilibrium unemployment.

## 1.4 Adjusting to long-term equilibrium

An important aspect when analysing the development of equilibrium unemployment, potential employment and potential labour force is the manner and speed at which the economy reaches a new long-term equilibrium, i.e. a situation in which the effect of all adjustment mechanisms in the economy have run their full course. The simple model presented above does not provide any

guidance here. However, it is highly probable that this adjustment between two long-term equilibria will take time (several years).

To determine the need for stabilisation policy measures at any point in time and to make macroeconomic forecasts, it is necessary to have an idea of how adjustment between two long-term equilibria actually takes place. Only then will it be possible to have an idea of how large a part of actual unemployment or employment, for example, depends on the cyclical situation.[3] This difference, between actual employment and the adjustment path, for example, is generally called the employment gap.

How quickly and in what way the economy reaches the new long-term equilibrium depends mainly on how rapidly individuals and firms change their behaviour, how quickly wages adjust and the monetary policy response:

1. *Behavioural changes*: A prerequisite for households and firms to change their behaviour is that they are aware that institutions and regulatory frameworks have changed. Certain types of behavioural changes, for example, the expected increase in the unemployeds' search intensity when the replacement rate decreases, may take place relatively quickly. Other changes in behaviour, such as an increase in the number of people choosing to train for an occupation where the risk of unemployment is low or retrain and move to obtain work, can take considerably longer. It is also possible that shifts in norms will occur, i.e. that there will be other changes in behaviour in addition to the effects that are a direct result of rule changes.
2. *Wage adjustment:* If households' incentives to participate in the labour force increase and if incentives to search for work more intensively are strengthened, wage growth will temporarily moderate. The temporary moderation in wage growth will in turn lead to an increase in demand for labour and increased investment. High wage flexibility thus leads to more rapid adjustment to the new long-term equilibria.

[3] Sometimes the concepts NAIRU (Non-Accelerating Inflation Rate of Unemployment) and equilibrium unemployment are used as synonyms. However, there is a theoretical difference. Equilibrium unemployment is determined by real factors such as labour market legislation, the functioning of the labour market and the pace of structural change. NAIRU is, in contrast, a *nominal* change, which is also affected by expected inflation and wage developments, which mean that NAIRU tends to vary more in the short run with the cyclical situation compared with equilibrium unemployment.

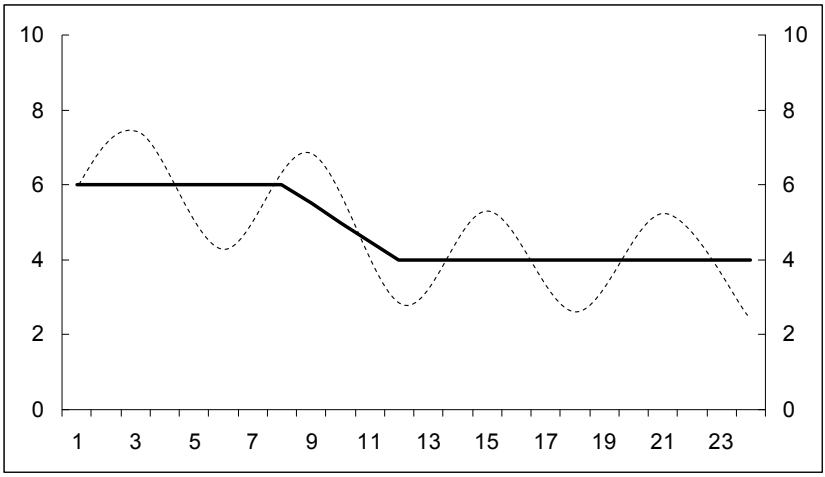
3. *Real interest rate adjustment*: How rapidly and how much the Riksbank lowers the interest rate when, for example, households' incentives to work increase and wage growth temporarily moderates will affect the speed of adjustment to a new equilibrium. All else being equal, a larger real interest rate adjustment will lead to increased demand in the economy and a more rapid increase in firms' investments, and thus the adjustment to a higher employment will be swifter.

A lower tax on earned income (for example, the in-work tax credit) can be used to illustrate the adjustment from one long-term equilibrium to another. The tax reduction probably leads almost immediately to an increase in the incentives to participate in the labour force and increased search intensity among the unemployed. When more individuals want to work, wage growth temporarily moderates, and thus the Riksbank lowers the interest rate to keep inflation on target. With relatively lower wage costs, increased search intensity and a lower real interest rate, employers post more vacancies and investing and starting new businesses becomes more profitable. This leads to an increase in employment and a decrease in equilibrium employment to the new long-term equilibrium level. Increased investment results in an increase in capital stock and thus productivity and wages increase more rapidly for a while. It probably takes a long time before the economy reaches a new long-term equilibrium, but most of the effects on the labour market are expected to appear within two to four years.[4]

Figure 1.1 shows the adjustment to a new long-term equilibrium and the actual development given similar business cycles. The solid line connects two long-term levels of equilibrium unemployment, thus showing the adjustment path. The economy is exposed to a structural shock in year 8 which reduces equilibrium unemployment. Four years later the economy has adjusted to the new equilibrium. The dashed curve illustrates the development of actual unemployment. Cyclical unemployment is measured by the unemployment gap which is the vertical distance between actual unemployment and the adjustment path.

[4] Model simulations indicate that adjustment to a new long-term equilibrium takes about 10 years. However, in most macro models, the effects on the labour market occur relatively quickly (within a few years). See, among others, IMF WEO (2010) or the EU Commission's Economic Forecast (Autumn 2010).

**Figure 1.1 Theoretical outline, adjustment to a new long-term equilibrium and actual unemployment**




Note: The solid line shows the adjustment path and the dashed line shows the actual development.

## 1.5 Complications in the real world

The model of the labour market presented in the previous section was, of course, highly simplified. Two factors not captured in the simple model are demographic trends and the large cyclical shocks. These factors are important in understanding the development of potential employment, potential labour force and equilibrium unemployment.

### 1.5.1 Demographic trends

Demographic changes lead to constant change in the size and composition of the labour force. In the model we have up to now assumed that labour force inflows and outflows of homogenous labour are constant. To analyse demographic variations in the model, the inflow and outflow must accordingly be differentiated, both in terms of quantity and in composition over time.

A temporary increase in the rate of growth of a homogenous population (of working age) will result in higher labour force participation for a while. The number of unemployed will increase temporarily and competition for jobs will become tougher.

However, it will be easier for firms to recruit because the increase in supply will reduce wage growth, and the cost of posting a vacancy will decrease when more applicants are available. In the long run, when population growth has returned to its original rate of increase, the temporary effects will abate and the economy will return to its original long-term equilibrium level. A permanently faster population growth will lead to a permanently faster increase in employment. Equilibrium unemployment will also be higher as a permanently faster population growth entails a permanently faster inflow into unemployment.

There will be other effects if the composition of the labour force changes constantly. For example, an increase in the proportion of young and inexperienced people in the labour market may contribute to an overall deterioration in matching between jobseekers and vacancies. The new individuals entering the labour market often are less skilled and have more uncertain productivity. Matching will probably function less well for young people than for unemployed of other ages. As described above, poorer matching efficiency leads to higher equilibrium unemployment.

### 1.5.2 Effects of strong cyclical fluctuations on equilibrium unemployment

A deep and protracted downturn can have long-term effects on unemployment, employment and labour force participation. There are several factors that explain how these effects may become persistent.

One important reason is that an economic downturn does not affect all industries and regions equally. In terms of the above model, a cyclical downturn may be illustrated by a temporary increase in the structural change rate, for example, because firms and industries with obsolete technology are out-performed. Those who lose their jobs in these industries may lack the skills required to obtain a new job under the prevailing wage structure. Matching between labour force skills and employers' demand will thus deteriorate. These problems may be long term if those who have lost their jobs have relatively little incentive to improve their skills or move or if it takes a long time to train for the occupations where the demand for labour is high. An economic upturn thus will not

automatically lead to these individuals finding work. Instead higher unemployment may persist for a long time.

In a downturn, unemployment spells are prolonged because of a high inflow into unemployment at the same time that outflow to jobs is low, even among people who are competitive in the labour market. But prolonged unemployment spells may reduce competitiveness and thus increase equilibrium unemployment. This may, for example, be the case if an individual's motivation to look for work decreases or if professional skills are lost during the time spent unemployed. Studies (such as Agell & Bennmarker 2007) also show that employers perceive the long-term unemployed as less skilled even though they are equally qualified in every other aspect.

A further reason for the increase in equilibrium unemployment may be that the wage structure does not adjust sufficiently to restrain unemployment. This is the case, for example, if the social partners do not take the unemployed into account in wage bargaining. This will curb the demand for labour and unemployment will remain high.

Cyclical changes and temporary changes in the structural change rate will as a rule not affect equilibrium unemployment in the long run. As those individuals who have lost their competitiveness retrain, move or leave the labour force, matching will again improve and equilibrium unemployment fall back to its pre-crisis level. Furthermore, cyclical fluctuations do not affect long-term structural change in the economy but only how quickly structural change takes place. Slower structural change rate after the crisis will contribute to the more rapid return of equilibrium unemployment to its pre-crisis level.

# References

Agell, J. and Bennmarker, H. (2007), "Wage incentives and wage rigidity: a representative view from within", Labour Economics 2007, vol. 14.

EU Commission Economic forecast (Autumn 2010).

IMF WEO (2010)

Kolm, A-S. and M. Tonin (2010), "In-Work Benefits and Unemployment", in course of publication *International Tax and Public Finance*.

Pissarides (2000), *Equilibrium Unemployment Theory*, second edition, Cambridge, MA: MIT Press.

# 2 Development of equilibrium unemployment, potential employment and potential labour force 1980–2006

## 2.1 Summary

The aim of this chapter is to assess the development of the potential labour force, potential employment and equilibrium unemployment for the period 1980–2006. The estimate of the level in 2006 is particularly important as it serves as the basis for the projection to 2020. The Ministry of Finance estimates that equilibrium unemployment was 6.6 per cent in 2006.

In practice, it is very difficult to estimate the level and development of the potential labour force, potential employment and equilibrium unemployment. First, they are not observable, and it is thus not even possible *ex post* to clearly determine their level and development. Second, the economy is in principle never in a long-term equilibrium situation. Various shocks constantly affect the available data. It is thus not obvious how these potential variables should be calculated. See Chapter 1 for a discussion on the determinants of equilibrium unemployment.

One way of estimating equilibrium unemployment is to use econometric models. These models are estimated using historical data and can thus provide a historical picture of equilibrium unemployment. The disadvantage of this method is that it usually provides little guidance about the underlying factors. Furthermore, this method does not provide any direct guidance as to how equilibrium unemployment and consequently actual unemployment will develop in the future. A different method for

determining equilibrium unemployment is thus needed for the forecast period.

An alternative method is to try to measure the underlying factors and, on the basis of these estimates, draw conclusions about the level and development of equilibrium unemployment. As the main objective at the Ministry of Finance has been to assess how the functioning of the labour market will develop in the future, the latter alternative is preferable. However, making an estimate of the underlying factors requires detailed information about these factors. As this information is difficult and time-consuming to obtain historically, a detailed estimate of this kind is made from 2006 onwards. The estimate of equilibrium unemployment from 1980 to 2006 has instead been made based on model estimates and indicators. The choice of 2006 as the cut-off point is primarily because the current government took office in 2006, after which a large number of structural reforms were implemented that are expected to affect the functioning of the labour market. Further, the choice of 2006 in principle enables model estimates to capture entire business cycles, leading to more stable estimates. Based on equilibrium unemployment, the potential labour force is defined by a simple rule of thumb and thus potential employment can be aggregated.

The estimate of how equilibrium unemployment, potential employment and the potential labour force develop between 2006 and 2020 is presented in Chapter 3. This analysis is based on the expected effects of the structural reforms, demographic developments and the financial crisis' lasting effects on the labour market.

The chapter is arranged in the following way. The first section presents different model estimates of equilibrium unemployment. An analysis is then made of what may be a reasonable equilibrium level in 2006 based on different indicators of resource utilisation in the economy. Lastly, the Ministry of Finance presents its estimate of equilibrium unemployment, potential employment and the potential labour force from 1980 to 2006.

## 2.2 Model estimates of equilibrium unemployment

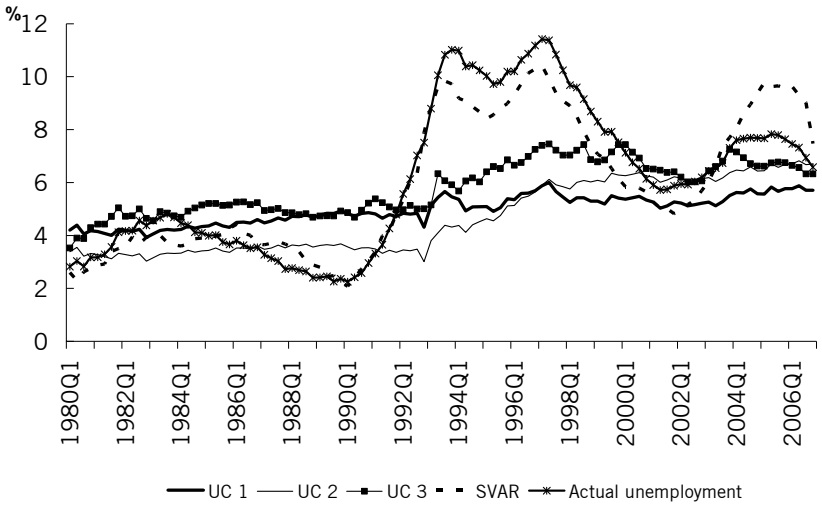
Different types of models can be used to decompose unemployment into a structural component (equilibrium

unemployment) and a cyclical component (the deviation from equilibrium). In this report, four different estimates of equilibrium unemployment are examined.[5] The different estimates are derived from two types of models: structural vector autoregressive models (SVAR models) and models for unobservable components (UC models). The two types of models estimate equilibrium unemployment in different ways. The SVAR model estimates a measure of equilibrium unemployment by identifying different types of economic shocks and eliminating those shocks which are considered demand shocks or temporary supply shocks. The UC model formulates a correlation between unobservable components (such as equilibrium unemployment) and observable quantities (such as inflation) based on economic theory. A more detailed review of the different models can be found in the appendix.

Figure 2.1 summarises the estimates of equilibrium unemployment obtained using a UC model for GDP gap and equilibrium unemployment by Apel and Jansson (1999) (UC 1), a similar UC model expanded for persistence effects by Mossfeldt and Österholm (2010) (UC 2), a UC model for unemployment and the real exchange rate by Lindblad and Sellin (2008) (UC 3) as well as a structural VAR model (SVAR). The development of actual unemployment is also shown in the figure.[6]

[5] All the models may be considered to estimate an adjustment path for equilibrium unemployment.
[6] All unemployment measures are defined based on the ILO concept for the age group 15–74.

**Figure 2.1 Estimates of equilibrium unemployment rate, 1980–2006**




Note: Unemployment is measured using the ILO definition, for the age group 15–74. The National Institute of Economic Research's chain-linked series for employed persons are used for the period 1981–2000. Data from Statistics Sweden are used for the period 2001–2006.

Source: Statistics Sweden, the National Institute of Economic Research and own estimates.

The SVAR model largely follows actual development and has fluctuated sharply during the 2000s. It is difficult to find economic arguments in support of equilibrium unemployment, as we have defined it, developing in this way. The SVAR model is therefore not taken into account in estimating equilibrium unemployment.

The estimates obtained using the three UC models coincide reasonably well and they all indicate a higher level in the mid-1990s than in the 1980s. According to the model estimates, the level of equilibrium unemployment varies in 2006 between 5.8 and 6.7 per cent (see Table 2.1), which is slightly lower than the actual unemployment of 7.1 per cent. Considerable uncertainty is attached to the estimated measures of equilibrium unemployment, as shown by the confidence interval of the UC1 and UC2 models (see the appendix).

**Table 2.1 Model estimates of equilibrium unemployment in 2006 and actual unemployment, age group 15–74**

| | 2006 |
|---|---|
| UC 1 | 5.8 |
| UC 2 | 6.7 |
| UC 3 | 6.5 |
| Actual unemployment | 7.1 |

Source: Statistics Sweden and own estimates.

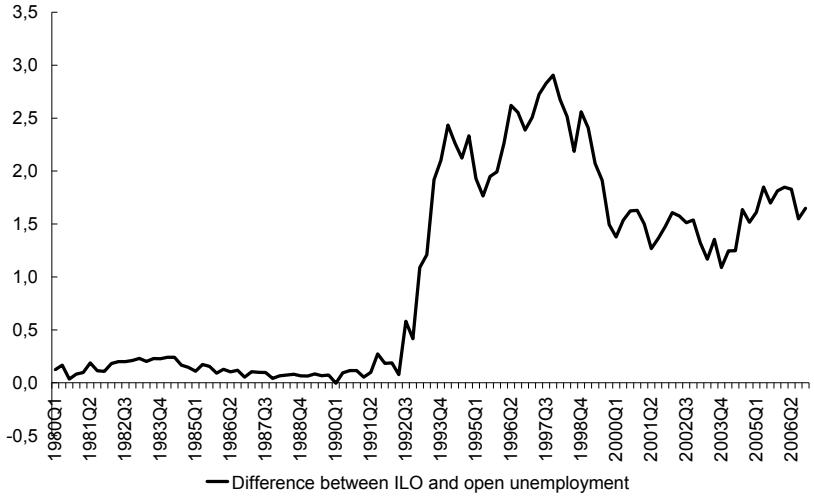
## 2.3 Development of equilibrium unemployment 1980–2006

Studies of the Swedish labour market during the 1990s draw the conclusion that no significant changes took place in the functioning of the labour market during that period, which ought to have led to higher equilibrium unemployment (see, for example Johansson, Lundborg and Zetterberg (1999) and Holmlund (2003)).[7] Why then do the models provide such an unequivocal picture indicating an increase in equilibrium unemployment?

The UC model with persistence effects (UC 2) indicates that the increase in the 1990s can be partly attributed to the sharp increase in actual unemployment. Another explanation for the increase in equilibrium unemployment may be the education reforms with an increase in the number of postsecondary students and students in the three-year upper secondary school, which led to a sharp increase in the number of full-time students looking for work in the 1990s. The difference between unemployment under the previous definition and ILO unemployment (i.e. including full-time students who are registered as unemployed) increased markedly in the early 1990s (see Figure 2.2). Figure 2.3 shows estimates of equilibrium unemployment under the former definition and ILO unemployment using Lindblad and Sellin's UC model (UC 3). Equilibrium unemployment according to the ILO definition began to increase as the difference between the definitions became substantial.

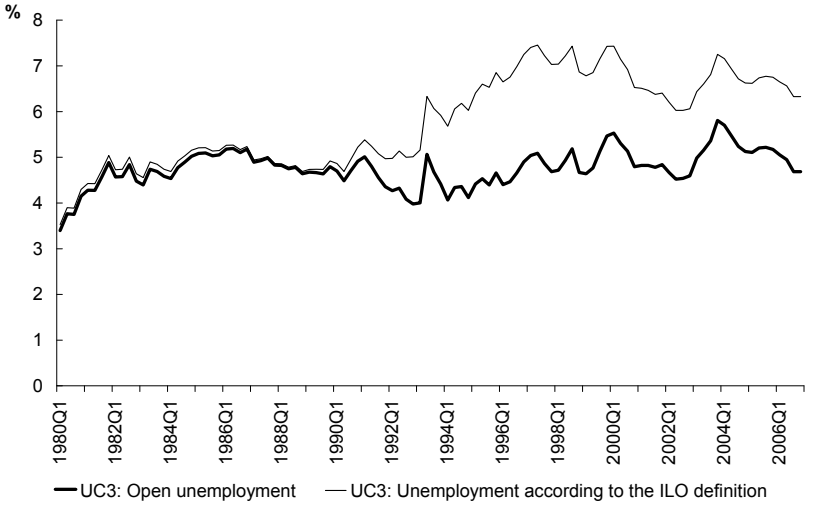
[7] Holmlund (2003) states, however, that a number of institutional factors may underlie falling equilibrium unemployment towards the end of the 1990s.

**Figure 2.2 The difference between unemployment as defined by the ILO and open unemployment**




Source: Statistics Sweden.

**Figure 2.3 Estimates of equilibrium unemployment as defined by the ILO and open unemployment**




Source: Statistics Sweden and own calculations.

Lundborg et al (2007) point to the increased refugee immigration as one reason for the increase in equilibrium unemployment.[8] The increased numbers of refugee immigrants who have sought asylum in Sweden do not necessarily match the Swedish labour market without considerable retraining and intensive language studies. Globalisation and the subsequent increase in structural change may also push up equilibrium unemployment, at least in the short term. However, there is nothing that clearly indicates that job destruction and job creation have increased over time, which indicates that globalisation could not have played an important part in equilibrium unemployment.

But one factor which should have reduced equilibrium unemployment is the Swedish Industrial Agreement between the trade unions and employers that came into effect in 1997. The Industrial Agreement has, through increased cooperation, led to more stable wage formation with more consideration given to macroeconomic conditions. The Calmfors-Driffill curve[9] specifies a relationship between the degree of centralisation and real wage cost increases. According to this curve, national agreements for the whole of the labour market or local bargaining at individual companies leads to lower real wage increases and a more favourable macroeconomic outcome than bargaining at the trade union level. The Industrial Agreement may be regarded as a wage formation model where both ends of the Calmfors-Driffill curve occur at the same time: the central level where the social partners assume responsibility for the national economy and the local level where wages are set on the basis of demand and supply conditions at a particular firm. This should have led to lower equilibrium unemployment.

Increased competition in the product markets could, through more moderate wage formation, lead to lower equilibrium unemployment. However, the empirical support for this hypothesis is rather limited[10] and with a well-functioning wage formation since the Industrial Agreement in 1997, it may be difficult to determine what other factors have affected wage formation.

[8] In 2010, unemployment among those born outside Europe was about three times that of unemployment among those born in Sweden.
[9] Calmfors & Driffill (1988).
[10] See Appendix 7 Långtidsutredningen SOU 2010:93.

All in all, there is no clear evidence that directly argues against the above estimates.

## 2.4 Checking the equilibrium level for 2006 based on the indicators

The estimate of the equilibrium level in 2006 is particularly important as it serves as the basis for the projection for 2006 to 2020. The equilibrium level of the variables in 2006 is crucial for the end level in 2020 as the effects of the structural reforms, demographic effects and persistence effects are calculated solely as changes from the given level in 2006. It is therefore important to check whether this level is reasonable, based on the available indicators.

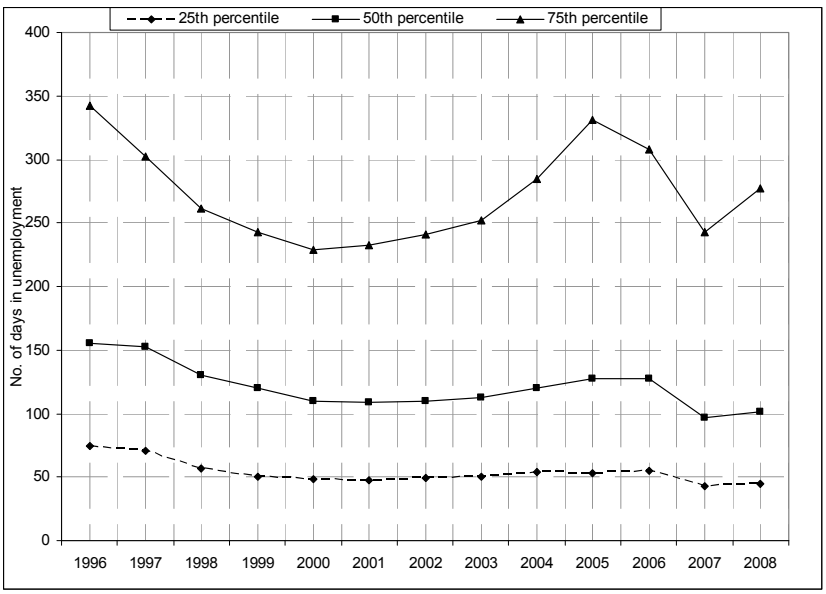
In 2005, a new trend could be seen in the labour market when employment began to increase after a number of years of weak labour market development. In 2006 and 2007, economic recovery continued with a strong increase in employment and falling unemployment. A stronger labour market will result in higher resource utilisation.

A number of micro indicators suggest that resource utilisation in the labour market in 2006 was lower than normal but rising. One such example is that the demand for labour for weak groups increased in 2006. Weak groups include individuals registered as unemployed for long periods, young people, those born outside Europe, individuals with disabilities and those without an upper secondary school education. Unemployment decreased and employment increased particularly among young people and those born outside Europe. Labour market participation increased both among young people and older people.

Figure 2.4 below shows the development of unemployment spells since 1996. "Abnormally" long unemployment spells indicate that the faster outflow to jobs which is typical of an upturn has not yet been reflected in shorter unemployment spells, thus providing information about how the labour market situation relates to equilibrium. In this context, unemployment spells refer to the time registered at the Public Employment Service as unemployed or in an active labour market policy programme (ALMP) until the person has found a job or ceases to be registered at the Public Employment Service for some other reason (for example, to

study). In the figure, the 75th percentile shows how much time it takes before 75 per cent of those who have become unemployed at a particular time are deregistered. As the figure shows, unemployment spells increased beginning in 2000 and peaked in 2006. The explanation for this is that the economy was exiting a downturn. The long-term level of unemployment spells was probably considerably lower. Based on this indicator, resource utilisation in the labour market in 2006 can be described as low but rising.

**Figure 2.4 Length of ended registration periods at the Public Employment Service as unemployed or in a programme for people who became unemployed during the first quarter of the respective year**



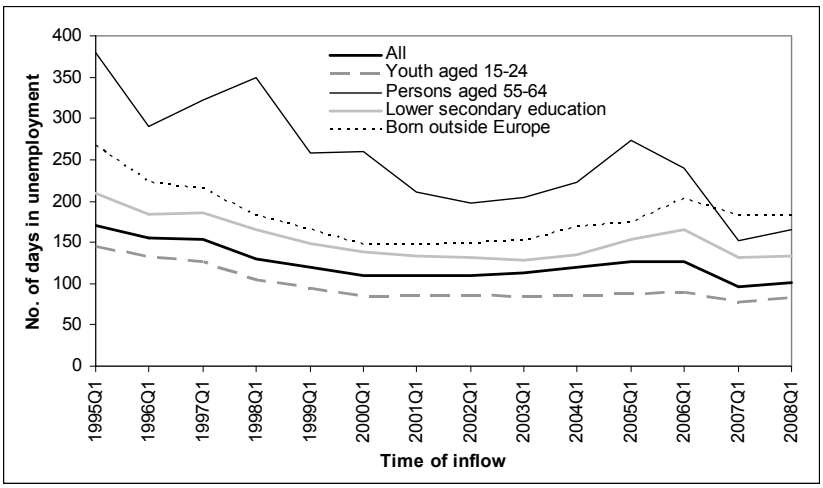

Note: Later inflows cannot be studied as the follow-up period only extends to April 2009.

Source: Own calculations based on the IFAU database.

In Figure 2.5, the 50th percentile (the median) shows the length of time it takes before 50 per cent of those who have become unemployed at a particular time find work. The 50th percentile for all is the same as in Figure 2.4. In addition, information is shown for all decomposed into so called weak groups in the labour market, i.e. young people (aged 15 to 24), older workers (aged 55 to 64), people with only a pre-upper secondary education and

people born outside Europe. There is a substantial difference between the median duration of unemployment for the different groups. Young people have the shortest unemployment spells and the median duration has in principle been unchanged throughout the 2000s. Older people have the longest unemployment spells and median unemployment moreover increased in the early 2000s. The median duration of the inflow of older individuals between 2005 and 2007 is, however, much shorter than for the earlier inflow. For individuals born outside Europe, unemployment spells lengthened beginning in the early 2000s and no improvement has taken place since then. The development for those with only pre-upper secondary school education has in general followed that of all unemployed, even though the median unemployment spell is longer. One indication of strained resource utilisation in the labour market is the improvement in the situation for groups in the labour market that are normally weaker. Even though no definite conclusions can be drawn from the figure below, a reduction of the median duration can be seen for all groups in 2006, which could be interpreted as increasing resource utilisation in the labour market.

**Figure 2.5 Ended registration periods (median duration of unemployment) at the Public Employment Service decomposed into different groups**



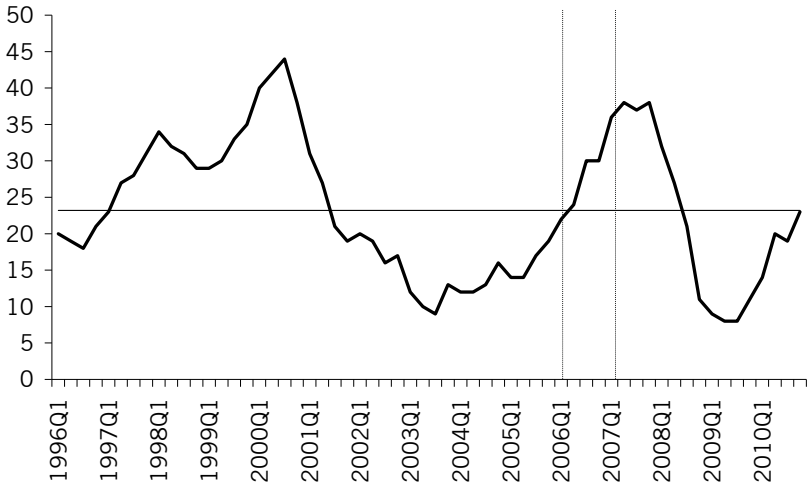

Note: Later inflow cannot be studied as the follow-up period only extends to April 2009.

Source: Own calculations based on the IFAU database.

Most macro indicators also suggest that there were still unutilised resources in the labour market in 2006. The proportion of firms that experienced labour shortages rose during 2006 according to the National Institute of Economic Research's Economic Tendency Survey (see Figure 2.6). This indicates that firms needed to hire more staff to meet the growing demand. The labour shortage rates in the Economic Tendency Survey are primarily an indicator of resource utilisation in firms, i.e. an indicator of the demand for labour and, to a lesser extent, a direct indicator of resource utilisation in the labour market. More direct indicators of resource utilisation in the labour market are instead Statistics Sweden's statistics for the length of time it takes firms to recruit and the Public Employment Service's survey of the firms' ability to find the right staff. Vacancies and recruitment times[11] rose markedly in 2006 but this was far from a peak level (given the short time series then available). According to the Public Employment Service's interview survey, labour shortages in the private sector rose in 2006 but did not reach high enough levels to indicate a strained resource utilisation in the labour market (see Figure 2.7). Inflation tends to lag behind resource utilisation in the labour market. The inflation trend in 2007 thus reflects resource utilisation during 2006 to a great extent. Towards the end of 2007, underlying inflation, in terms of CPIF, accelerated (see Figure 2.8), indicating rising resource utilisation during 2006. CPIF rose, however, over 2 per cent only in the final months of 2007, indicating that the resource situation in the labour market in 2006 did not lead to an inflation rate above the Riksbank's inflation target.

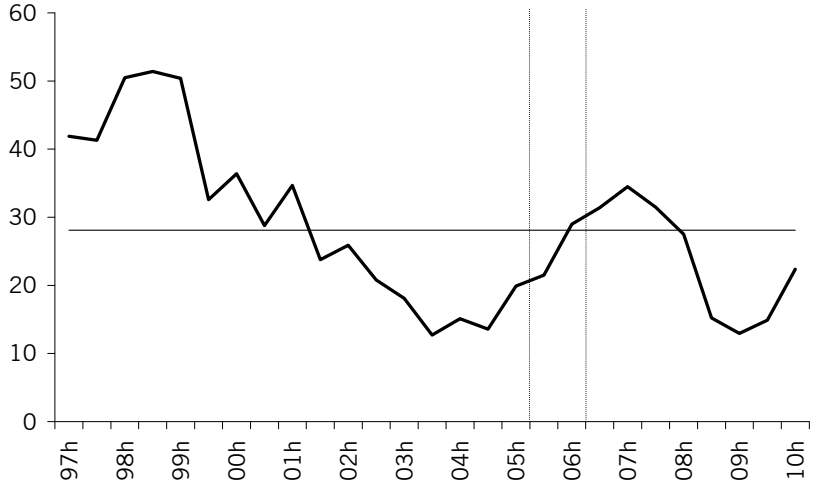
[11] According to Statistics Sweden's cyclical vacancy statistics.

**Figure 2.6 Shortage of labour, quarterly data**




Source: The National Institute of Economic Research

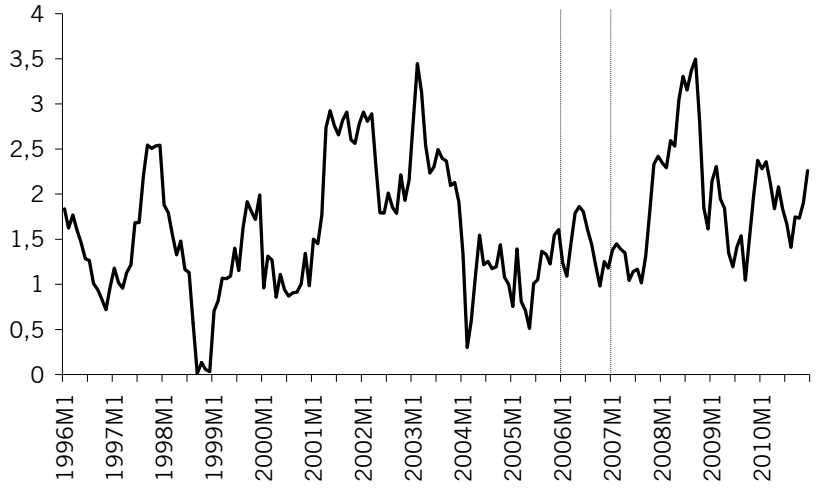
**Figure 2.7 Recruitment problems in the business sector according to the Public Employment Service's business sector survey**




Note: Proportion of workplaces experiencing labour shortages during the past six months

Source: The Public Employment Service

**Figure 2.8 Underlying inflation, CPIF [Consumer Price Index with fixed mortgage rates]**




Source: Statistics Sweden.

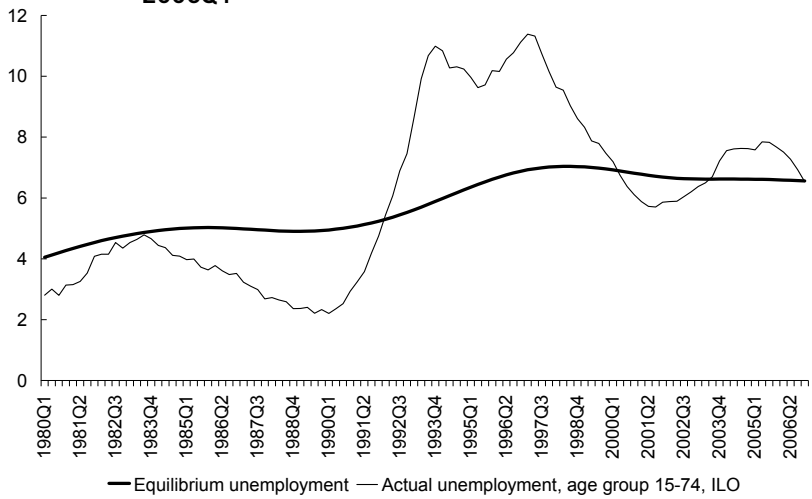
Taken as a whole, both micro and macro indicators indicate that resource utilisation in the labour market was rising but lower than normal in 2006 when actual unemployment was 7.1 per cent. According to the model estimates, the level of equilibrium unemployment in 2006 varied from 5.8 per cent to 6.7 per cent, which accords with the reasoning above. The same indicators discussed above indicate that resource utilisation in the labour market started to come under strain in 2007, when actual unemployment was 6.1 per cent. A reasonable estimate is therefore that equilibrium unemployment was somewhere between 7.1 per cent (actual unemployment in 2006) and 6.1 per cent (actual unemployment in 2007).

## 2.5 The Ministry of Finance's assessment of the development of equilibrium unemployment and the potential labour force, 1980–2006

Figure 2.9 shows the Ministry of Finance's assessment of the development of equilibrium unemployment between 1980 and 2006. The assessment is based on Lindblad and Sellin's UC

model.[12] This model captures several of the mechanisms identified as important in the Ministry of Finance's analytical framework and the results are considered reasonable based on available indicators of resource utilisation in the labour market. The Ministry of Finance thus estimates that equilibrium unemployment was 6.6 per cent in 2006, which is slightly lower than the actual unemployment of 7.1 per cent, thus indicating that there were unutilised resources in the labour market in 2006.

**Figure 2.9 Equilibrium unemployment and actual unemployment, 1980Q1–2006Q4**




Source: Statistics Sweden and own estimates.

The model estimates and thus the estimate of equilibrium unemployment shown in Figure 2.9 capture the adjustment of equilibrium unemployment towards a long-term equilibrium rather than the long-term level. This is because the economy in principle never is in a long-term equilibrium situation as rules and institutions are continually changing. Furthermore, the economy is continually subject to various structural shocks that may affect equilibrium and the continuously varying population structure also

[12] To avoid fluctuations in the adjustment path and thus the interpretation of the unemployment gap due to short-term variations in the model estimates, the series is smoothed using a Hodrick-Prescott filter. The basic series (unfiltered) is shown in Figure 2.1. Filtering the series further explains why equilibrium unemployment is 6.6 rather than 6.5 per cent (compare with Table 2.1).

affects labour market equilibrium. The level of equilibrium unemployment in 2006 is decisive for the final level in 2020 as development between 2006 and 2020 is calculated as changes based on the given level in 2006 as a result of the structural reforms' effects, demography and persistence. It is therefore also important to determine whether reforms carried out before and during 2006 can conceivably affect the equilibrium level in the future.

Between 2003 and 2006, different reforms were carried out that may have affected potential employment and the potential labour force and that probably had not yet had their full effect in 2006. For example, a maximum charge was introduced in municipal childcare between 2001 and 2003, which has increased labour force participation among women. Examples of other reforms carried out between 2003 and 2006 are the tax reduction for the national pension contribution, the increase in the basic tax allowance, abolition of the inheritance and gift tax, lower upward adjustments of the thresholds for state income tax, corporate tax relief, measures to combat tax evasion and benefit fraud, improvements in the sick leave process and disability pensions as well as increased resources for schools, colleges and universities and research. In particular, sickness insurance reforms and tax changes made in 2006 had probably not had their full impact in 2006. For example, there was a downward trend in the number of individuals with sickness benefits beginning in 2003 that did not appear to be abating in 2006. All in all, these reforms probably had a positive effect on the potential labour force and potential employment. These effects are discussed in more detail and quantified in Chapter 3.

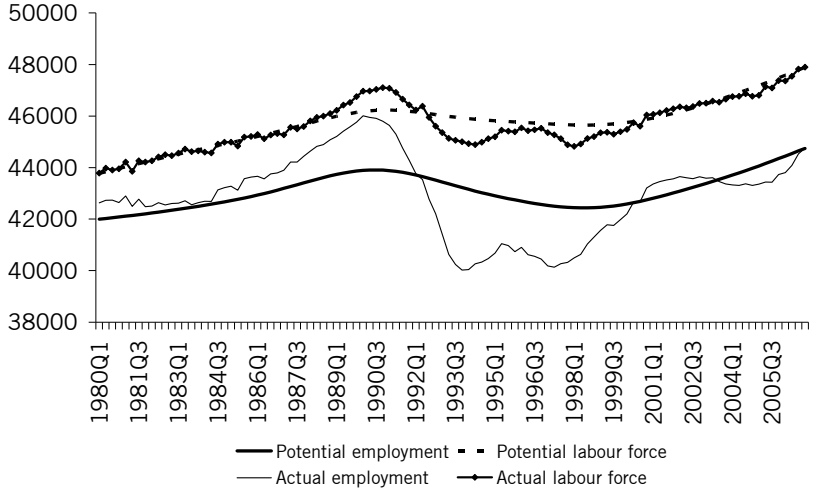
The potential labour force and employment are calculated by assuming that the labour force gap covaries with the unemployment gap. Estimates using Swedish data indicate that cyclical swings in unemployment affect employment at 2/3 and the labour force at 1/3 with a time lag of about two quarters.[13] The potential labour force is thus estimated based on the assumption that the labour force gap constitutes 1/3 of the unemployment gap with a two-quarter time lag. This is obviously an uncertain

[13] According to internal working material at the Ministry of Finance, which has estimated the correlation between changes in the trend-adjusted (HP filter) labour force and employment on Swedish data during the period 1980-2008, an increase in employment of 1 p.p. will lead to an increase in the labour force of around 0.3 p.p. with a time lag of two quarters. Accordingly, cyclical fluctuations in unemployment affect employment at 2/3 and the labour force at 1/3 with a two-quarter lag.

assumption and it is possible that this correlation looks different for different reforms or has changed as a result of the reforms implemented. Improving the estimation of the potential labour force is an important future methodological development.

The sum of the estimates for equilibrium unemployment and the potential labour force is the estimate of potential employment. While equilibrium unemployment rose during the 1990s, the potential labour force fell, partly because many took early retirement during the crisis (see Figure 2.10). Potential employment thus fell, due to both an increase in equilibrium unemployment and a smaller potential labour force. Towards the end of 2006, the actual labour force was level with the potential labour force and actual employment was level with potential employment.

**Figure 2.10 Employment and the labour force, 1980Q1–2006Q4**




Note: Refers to the ILO definition of the labour force, aged 15-74.

Source: Statistics Sweden and own calculations.

# References

Apel, M & Jansson, P. (1999) System estimates of potential output and the NAIRU, Empirical Economics, Vol. 24, No. 3.

Blanchard, O. J. & Quah, D. (1989) The dynamic effects of aggregate demand and supply disturbances, American Economic Review, Vol. 79, No. 4, pp. 655–673.

Calmfors, L. & Driffill, J. (1988) Bargaining Structure, Corporatism and Macroeconomic Performance, Economic Policy 6.

Fabiani, S., A. Locarno, G. Oneto & P. Sestito (2001) The sources of unemployment fluctuations: An empirical application to the Italian case, Labour Economics, Vol. 8, No. 2, pp. 259–289.

Hanspers, K. & L. Hensvik (2010) Konkurrens och sysselsättning — en empirisk studie av fem marknader, bilaga till Långtidsutredningen, SOU 2010:93.

Hjelm, G. & K. Jönsson (2010) In Search of a Method for Measuring the Output Gap of the Swedish Economy, Working Paper No. 115, National Institute of Economic Research.

Holmlund B. (2003), The rise and fall of Swedish unemployment, CESIFO Working Paper 918, April 2003.

Johansson S., P. Lundborg & J. Zetterberg (1999) Massarbetslöshetens karaktär och vägarna till full sysselsättning, FIEF.

Lundborg, P., J. Vartiainen & G. Zettergren (2007), Den svenska jämviktsarbetslösheten: En översikt av kunskapsläget, Specialstudier, No. 11, February 2007, The National Institute of Economic Research.

Lindblad, H. & Sellin, P. (2008) The Equilibrium Rate of Unemployment and the Real Exchange Rate: An Unobserved Components System Approach (November 2008). Riksbank Working Paper No. 221; Riksbank Research Paper Series No. 52. Available at SSRN: http://ssrn.com/abstract=1099942

Mossfeldt, M. & P. Österholm (2010) The Persistent Labour-Market Effects of the Financial Crisis, National Institute of Economic Research, Working Paper No. 117.

# Appendix: Description of the models used to describe equilibrium unemployment until the end of 2006

## The structural VAR model

To estimate a measure of equilibrium unemployment using a structural vector autoregressive model, a VAR model is specified which includes real wage growth, GDP growth, inflation, unemployment and the wage component.[14] When the model's reduced form has been estimated, the structural shocks are identified by adding on long-term restrictions as in Blanchard and Quah (1989). The vector moving average form (VMA form) of the structural model appears as follows.

$$\begin{bmatrix} \Delta \ln W_t \\ \Delta \ln Y_t \\ \Delta \ln P_t \\ U_t \\ WL/Y \end{bmatrix} = C(L)\varepsilon_t = \begin{bmatrix} C_{11}(L) & C_{12}(L) & C_{13}(L) & C_{14}(L) & C_{15}(L) \\ C_{21}(L) & C_{22}(L) & C_{23}(L) & C_{24}(L) & C_{25}(L) \\ C_{31}(L) & C_{32}(L) & C_{33}(L) & C_{34}(L) & C_{35}(L) \\ C_{41}(L) & C_{42}(L) & C_{43}(L) & C_{44}(L) & C_{45}(L) \\ C_{51}(L) & C_{52}(L) & C_{53}(L) & C_{54}(L) & C_{55}(L) \end{bmatrix} \begin{bmatrix} \varepsilon_t^{pr} \\ \varepsilon_t^{ls} \\ \varepsilon_t^{d} \\ \varepsilon_t^{ts_1} \\ \varepsilon_t^{ts_2} \end{bmatrix}$$

In the above expression, W is the real wage in the business sector, Y is output in the business sector, P is the business sector's value added prices, U is unemployment while WL/Y is the wage component in the business sector. The structural shocks are identified in this model as a productivity shock, a labour supply shock, a demand shock and two temporary supply shocks. These structural shocks can be identified from estimated residuals by assuming that the matrix C(L) is the lower triangle. This

[14] See Fabiani et al (2001) and Hjelm and Jönsson (2010) for a description of this model.

identification assumes that all components above the main diagonal in C(L) are set at zero. The four lower shocks in vector $\varepsilon_t$ will then not have any long-term effects on the real wage level. Similarly, the three lower shocks in $\varepsilon_t$ will not have any long-term effects on output, etc. By making a historical decomposition where the three lower shocks (the demand shock and the two temporary supply shocks) are eliminated, the structural levels are calculated for the different variables, including unemployment.

## Models with unobserved components

An alternative to estimating equilibrium unemployment using structural VAR models is to use UC models. These models link unobserved quantities to observed quantities through relationships suggested by economic theory. The types of relationships used vary between models. Apel and Jansson (1999) use a Phillips curve to link cyclical unemployment to inflation while Lindblad and Sellin (2008) link equilibrium unemployment to factors which should, according to labour market models, affect this level. By utilising the relationships linking unobserved components to observed quantities, statistical methods can be used to obtain an estimate of the unobserved components. Two of the UC models used in this report are based on the structure established by Apel and Jansson (1999) and the specification used by Hjelm and Jönsson (2010). The system of equations specified and used in this report is shown below.

$$\Delta\pi_t = \alpha_0 + \alpha_1\Delta\pi_{t-1} + \alpha_2\Delta\pi_{t-2} + \phi_1 U_t^c + \phi_2 U_{t-1}^c + \mathrm{B}z_t + \varepsilon_t^1$$
$$y_t = y_t^n + \varphi_1 U_t^c + \varphi_2 U_{t-1}^c + \varepsilon_t^2$$
$$U_t = U_t^c + U_t^n$$

$$y_t^n = \beta_{t-1} + y_{t-1}^n + \varepsilon_t^{yn}$$
$$\beta_t = \beta_{t-1} + \varepsilon_t^{\beta}$$
$$U_t^n = U_{t-1}^n + \varepsilon_t^{un}$$
$$U_t^c = \theta_1 U_{t-1}^c + \theta_2 U_{t-2}^c + \varepsilon_t^{uc}$$

In the above expressions $\pi$ is inflation (CPIX), y is the logarithm of GDP, z is a matrix with proxy variables for temporary supply shocks. Estimates of the unobserved components can be obtained by applying the Kalman filter to the state-space model specified based on the above equations.

It is frequently asserted that the cyclical component of unemployment can affect the permanent component of unemployment, i.e. equilibrium unemployment. In other words, it may be of interest to include a parameter in the above model that allows for persistence effects. Mossfeldt and Österholm (2010) do this by using the above specification with the modification that the relationship describing equilibrium unemployment is specified as follows.

$$U_t^n = U_{t-1}^n + \lambda U_{t-1}^c + \varepsilon_t^{un}$$

Lindblad and Sellin (2008) set up a UC model that resembles the two UC models shown above. However, there are certain differences relating to the exogenous variables included in the models and the relationships used to estimate equilibrium unemployment. The model specified by Lindblad and Sellin (2008) is based more on labour market theories than, for example, the model analysed by Apel and Jansson (1999). The equations that relate the unobserved variables in Lindblad and Sellin (2008) to observable quantities take the following form.[15]

$$u_t = u_t^c + \beta_1 a_t + \beta_2 a_{t-1} + \beta_3 r_t + \beta_4 r_{t-1} + \beta_5 \theta_t + \beta_6 \theta_{t-1} + \beta_7 \theta_{t-3} + \beta_8 e_{t-1} + \varepsilon_{u,t}^n$$

$$\Delta e_t = \lambda_{10} u_t^c + \beta_{11} e_{t-1} + \beta_{12}(d - d^*)_t + \beta_{13} q_{t-1} + \beta_{14} g_{t-1} + \beta_{15} g_{t-1}^* + \beta_{16} \Delta(d - d^*)_t + \beta_{17} \Delta q_t + \beta_{18} \Delta g_t + \ldots$$

$$\ldots + \beta_{19} \Delta g_t^* + \beta_{20}(y^* - y^{n*})_t + \lambda_{16} y_t^n + \beta_{21} y_t^{n*} + \varepsilon_{e,t}^n$$

$$\Delta\Delta_4 p_t = \lambda_{20} u_t^c + \lambda_{21} u_{t-1}^c + \beta_{22} y_t^{c*} + \beta_{23} \Delta\Delta_4 p_{m,t} + \beta_{24} \Delta\Delta_4 p_{m,t-3} + \beta_{25} \Delta\Delta_4 pr_{t-2} + \beta_{26} \Delta\Delta_4 pr_{t-3} + \rho\varepsilon_{p,t-4} + \xi_{p,t}$$

$$y_t = \lambda_{30} u_t^c + y_t^n + \varepsilon_{y,t}^c$$

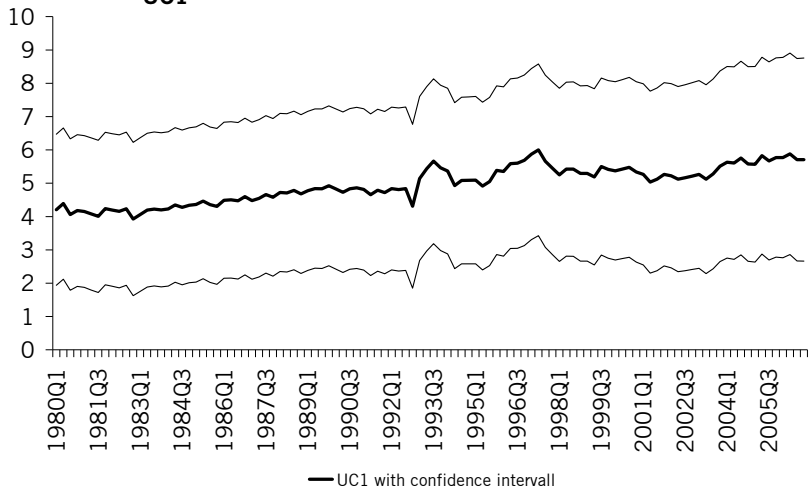
From the first equation above, it is evident that the structural component of unemployment, i.e. equilibrium unemployment, is explained by the extent of active labour market programme (a), the replacement rate (r), the design of the tax system ($\theta$) and the exchange rate (e).[16] The unobserved components are specified to correspond to the specification in Apel and Jansson (1999). Open unemployment is estimated and then recalculated to

[15] The model which is estimated uses the EUR/SEK exchange rate.
[16] See Lindblad and Sellin (2008) for a description of the model.

unemployment according to the ILO definition based on the difference between the actual series of open unemployment and unemployment according to the ILO definition.[17]

## Confidence interval for UC1 and UC2

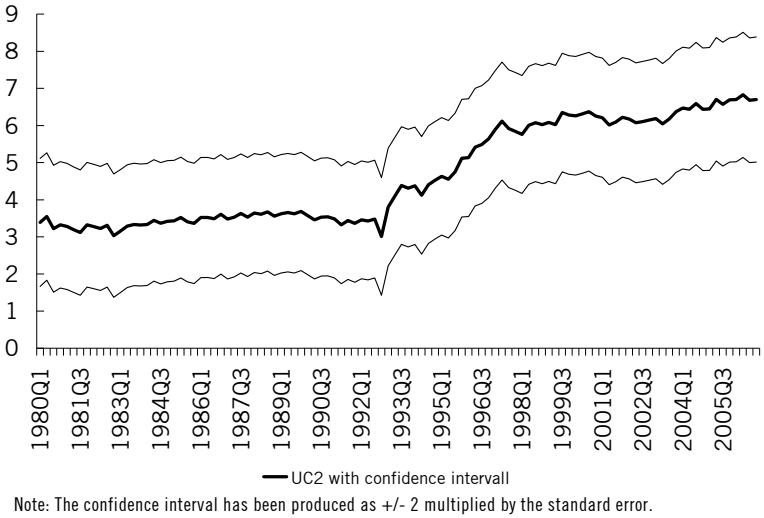
**Figure A1 Confidence interval for equilibrium unemployment according to UC1**




Note: The confidence interval has been produced as +/- 2 multiplied by the standard error.

[17] The updated estimates of the model of Lindblad and Sellin (2008) have been made possible thanks to the authors' provision of updated data and software files for estimates.

**Figure A2 Confidence interval for equilibrium unemployment according to UC2.**




Note: The confidence interval has been produced as +/- 2 multiplied by the standard error.

# 3 Development of equilibrium unemployment, potential employment and potential labour force between 2006 and 2020

## 3.1 Summary

The Ministry of Finance's estimate of equilibrium unemployment, potential employment and the potential labour force up to 2020 is dependent on:

- The equilibrium level of the labour market in 2006
- Effects of structural reforms
- Demographic developments up to 2020
- The effects of the financial crisis on equilibrium in the labour market

Other factors such as the pace of structural change in the economy, the state of competition and bargaining power in the labour market may change between 2006 and 2020, thus affecting equilibrium unemployment. As there is limited information about how these factors will develop in the future, it is assumed that they will not affect labour market equilibrium between 2006 and 2020. Possible changes in the real equilibrium exchange rate between 2006 and 2020 may also affect labour market equilibrium, although this has not been taken into account in this report. The end year has been set at 2020 to coincide with the new EU employment target, the EU 2020 targets.

The Ministry of Finance estimates that equilibrium unemployment will fall from 6.6 per cent in 2006 to 5.0 per cent year in 2020 (see Table 3.1). Structural reforms such as the in-work tax credit and unemployment insurance reforms will reduce equilibrium unemployment by 1.4 percentage points and an

unchanged ceiling for unemployment benefits until the end of 2011 will reduce it by 0.6 percentage points. At the same time, demographic developments contribute to a 0.4 percentage point increase in equilibrium unemployment during the period. These calculations also take into account the reforms implemented before 2006 which had not had their full impact in 2006. To sum up, equilibrium unemployment will fall by 1.6 percentage points between 2006 and 2020 while there will be an increase in the potential labour force of about 400 000 people. Potential employment will increase by about 450 000 between 2006 and 2020.

Long-term labour force participation will remain unchanged, however, while the employment rate will increase by about 2 percentage points. Labour force participation will be unchanged because of changes in the composition of the labour force. Groups with lower labour force participation will represent a larger share of the working age population (aged 15 to 74). Demographic developments will thus result in a decrease in labour force participation and the employment rate by about two percentage points between 2006 and 2020.

**Table 3.1 Summary of the estimates, 2006 and 2020 (per cent/percentage points)**

| | Equilibrium unemployment | Labour force participation | Employment rate |
|---|---|---|---|
| **Level 2006** | **6.6** | **71** | **66** |
| *Demography* | 0.4 | -2.1 | -2.2 |
| *Unchanged ceiling* | -0.6 | 0.1 | 0.5 |
| *Structural reforms* | -1.4 | 2.2 | 3.0 |
| *Previous structural reforms* | 0.0 | 0.1 | 0.1 |
| **Level 2020** | **5.0** | **71** | **68** |

Note: Equilibrium unemployment refers to ILO unemployment, age group 15-74. Labour force participation and the employment rate refer to the age group 15-74. The contribution of the different components refers to the change between 2006 and 2020. "Unchanged ceiling" refers to the maximum daily benefit (SEK/day) in unemployment insurance benefits, which did not change between 2007 and 2011.

The chapter is arranged as follows. The first section discusses the effects of structural reforms, demographic developments and the impact of the financial crisis on the functioning of the labour market. The following section shows the Ministry of Finance's estimate of equilibrium unemployment, potential employment and

the potential labour force between 1980 and 2020. In the final section, there is a discussion of the plausibility of the results.

## 3.2 The importance of policy, demography and the crisis for the functioning of the labour market between 2006 and 2020

As discussed in the theoretical analytical framework, labour market equilibrium is affected, by such factors as structural reforms, demographic changes and possibly by major cyclical shocks. This section analyses how these factors affect equilibrium unemployment, potential employment and the potential labour force during the period from 2006 to 2020.

### 3.2.1 Effects of government policy

A number of structural reforms have been implemented since the Government took office in 2006. These have had an impact on the mechanisms discussed in the theory section and they may conceivably affect the potential labour force, potential employment and equilibrium unemployment. This section presents and discusses the Ministry of Finance's impact assessments of the in-work tax credit, unemployment insurance, active labour market policy (ALMP), sickness insurance, social security contributions and the RUT (household work) and RMI (repair, maintenance and improvement) tax credits. The reforms and impact assessments are presented very briefly. For a detailed description of the assessments, see the appropriate chapter for each reform. All in all, these structural reforms are estimated in the long term to lead to a 3.1 per cent increase in the labour supply, a 4.6 per cent increase in employment and a decrease in equilibrium unemployment of 1.4 percentage points. The reforms are also expected to lead to an increase in average hours worked. The number of hours worked is estimated to increase by 5.7 per cent (see Table 3.2). These estimates are based on existing research on the effects of various measures, such as how changes in taxes, social insurance, or ALMP affect the labour supply and employment. But knowledge about the effects and the rate at which they have an impact is far from complete. There is thus a considerable element of uncertainty attached to the results shown in Table 3.2.

**Table 3.2 Effects of government policies on long-term equilibrium (per cent/ percentage points)**

| | Labourforce | Em-ploy-ment | Unemp-loy-ment | Hours worked |
|---|---|---|---|---|
| In-work tax credit | 1.6 | 2.3 | -0.6 | 2.9 |
| Unemployment insurance | 0.2 | 1.0 | -0.7 | 1.0 |
| Sickness insurance | 0.9 | 0.4 | 0.4 | 0.5 |
| RMI/household services | 0.2 | 0.4 | -0.2 | 0.5 |
| Reduced social security contributions | 0.2 | 0.2 | 0.0 | 0.2 |
| Labour market policy | 0.1 | 0.3 | -0.2 | 0.3 |
| Threshold | 0.0 | 0.0 | 0.0 | 0.3 |
| **Total structural reforms** | **3.1** | **4.6** | **-1.4** | **5.7** |
| Unchanged ceiling | 0.1 | 0.8 | -0.6 | 0.7 |
| **Total effect** | **3.3** | **5.3** | **-1.9** | **6.4** |

Note. The measure of unemployment is ILO, age group 15-74. Employment and the labour force refer to the age group 15-74.

The total effects will, however, be greater, as the ceiling for the unemployment insurance has been unchanged since 2007 (see Table 3.2). This is because rising wages reduce the actual replacement rate. Overall, the unchanged ceiling between 2007 and 2011 leads to a fall in equilibrium unemployment of 0.6 percentage points.[18] This is considered to be a regulatory effect and not a policy effect.

There are several reforms implemented by the Government that probably affect employment and equilibrium unemployment, but these have not been quantified as there is no appropriate basis for the calculations. These reforms include measures targeted on the foreign born (including the new introduction programme, validation of foreign education and Swedish courses for immigrants), the research bill (a permanent increase in research funds of SEK 5 billion), investments in education (for example, for initiatives for teachers, time spent teaching, the new upper secondary school and apprenticeship training), a lower corporate tax, infrastructure investments, the child-raising allowance and the abolition of wealth tax. Pension system reforms are also expected to lead to an increase in the labour supply and employment. These

[18] As from 2012 an assumption is made for calculation purposes that the ceiling of unemployment insurance will be adjusted upwards by wage growth according to current conventions for long-term estimates.

reforms are expected to have a positive net effect on sustainable employment, but this is not dealt with in this report.

The appendix includes a detailed summary table with all of the policy effects that have been estimated. The next section contains a brief description of the most important reforms (see the individual chapters for a detailed description).

## The in-work tax credit

An in-work tax credit was introduced on 1 January 2007 to increase the incentives to work. This has subsequently been strengthened three times – most recently on 1 January 2010. The in-work tax credit provides a general tax reduction for the employed. For broad income groups (individuals with incomes ranging from around SEK 135 000 to around SEK 300 000 per year), marginal tax has been reduced by about six percentage points and average tax by about seven percentage points.

The in-work tax credit is thought to affect employment through its effects on both the proportion of the population in the labour force and the proportion of the labour force that is employed. Its effect on labour force participation is analysed mainly using a microsimulation model. Labour force participation increases both because the after-tax wage is higher and because the probability that those entering the labour force will find a job increases. There may, however, be a counteracting effect on labour force participation as the reform probably leads to some moderation in wage demands. These calculations show that the labour force will increase by around 1.6 per cent in the long term.

Parameters estimated in previous empirical studies are used to calculate the effects on equilibrium unemployment. The calculations show that the in-work tax credit reduces the replacement rate by 5.1 percentage points. When the replacement rate decreases, wage demands tend to moderate and search activity among the unemployed to increase, and the labour market eventually adjusts to a new equilibrium. The reduced replacement rate is estimated to result in a decrease in equilibrium unemployment of about 0.6 percentage points in the long term. The in-work tax credit and the reduced threshold for state income tax also contribute to increasing the incentives for those already employed to work more hours, for example, by shifting from part-time to full-time work. The calculations show that the number of hours worked will increase by around 2.9 per cent in the long term

due to the in-work tax credit and by 0.3 per cent due to the reduced threshold for state income tax.

Figure 3.1 shows the Ministry of Finance's estimates of the impact of the in-work tax credit on equilibrium unemployment, potential labour force and potential employment. The tax cut leads relatively directly to an increase in the labour force and in search intensity among the unemployed. As a result of the strong economic growth between 2007 and 2008, the effect on the labour force was realised rather more quickly than it would have been in a normal cyclical situation. However, the employment effect was not immediate because recruitment takes time and it takes more time before the temporary moderation in wage demands has a full impact on employment. The financial crisis also contributes to a slightly longer adjustment to the new long-term equilibrium because the crisis slows the pace of adjustment to the new long-term equilibrium. The in-work tax credit also increases incentives to train for occupations with low unemployment risk and to retrain and move to obtain work, leading to an increase in employment and a decrease in equilibrium unemployment.

All in all, this adjustment leads to an increase in equilibrium unemployment over a number of years and then, with employment increasing more than the labour force, equilibrium unemployment will fall back to a new long-term level. The effect on employment is estimated at 2.3 per cent and the reform is expected to have its full impact by 2015.

**Figure 3.1 Effects of the in-work tax credit on equilibrium unemployment, the potential labour force and employment**

Per cent and percentage points

## Unemployment insurance

Three reforms in unemployment insurance have been quantified: the change in the replacement rate, the introduction of unemployment contributions and the limitation of the number of benefit days for part-time unemployment.

Several measures have led to a decrease in the replacement rate: a lower ceiling, a decrease in the benefit level, a maximum of 300 benefit days, more qualifying days and a reduction in the number of members of the unemployment insurance funds. The reduced replacement rate affects unemployment through a number of channels, mainly through the search behaviour of the unemployed and lower wage demands. This will eventually lead to higher employment and lower equilibrium unemployment. All in all, it is considered that the reduced replacement rate will lead to equilibrium unemployment falling by 0.8 percentage points. It should be noted that the effect of a reduced replacement rate on equilibrium unemployment is assessed in a similar way to the in-work tax credit.

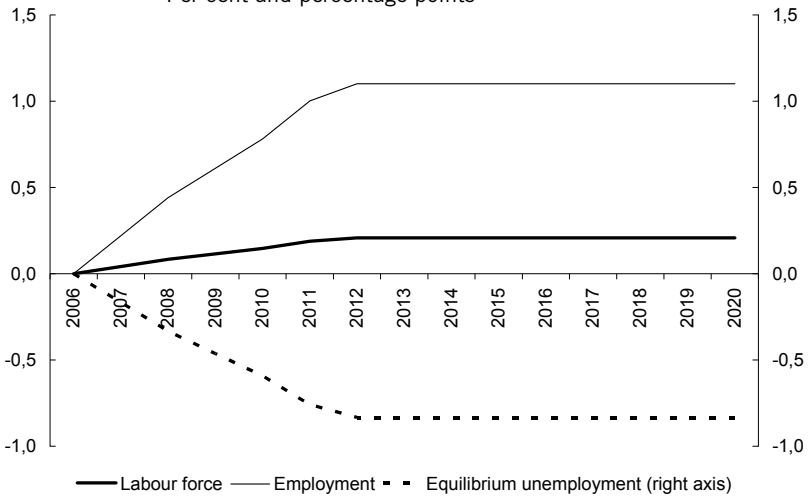
The introduction of fees for unemployment funds that vary according to unemployment affects the labour market in several ways. The replacement rate increases as the fees are only paid by employed members. At the same time, incentives are created for moderation in wage formation. These effects are considered to cancel each other out.

The effects of the limitation in the number of benefit days for partial unemployment are considered to be small. All in all, it is considered that the number of partially unemployed will decrease by 6,000 in the long term, 3,000 due to a reduced inflow from unemployment and 3,000 due to an increased outflow. The outflow is estimated to go in equal parts to full-time work and unemployment.

All in all, the unemployment insurance reforms are considered to reduce equilibrium unemployment by 0.7 percentage points in the long term. Figure 3.2 shows the Ministry of Finance's estimate of the adjustment in equilibrium unemployment due to the unemployment insurance reforms. Reduced unemployment benefit leads immediately to an increase in the search intensity among the unemployed. Like the in-work tax credit, there is a time lag, however, before there is a full impact on employment. The increased probability of obtaining a job leads to a slight increase in the labour force in the long term. The reforms are assumed to have had their full impact by 2012.

**Figure 3.2 Effects of unemployment insurance on equilibrium unemployment, the potential labour force and employment**

Per cent and percentage points




The unchanged ceiling for unemployment insurance benefits for the period also affects the replacement rate and thus equilibrium unemployment. This is because rising wages reduce the actual replacement rate. In all, the unchanged ceiling from 2007–2011 leads to a 0.6 percentage point decrease in equilibrium unemployment. This is considered a regulatory effect, not a policy effect.

## Active labour market policy (ALMP)

Since 2006, a number of reforms have been implemented in ALMP. ALMP resources increasingly target the long-term unemployed and more emphasis is being put on the unemployeds' job search. New start jobs and step-in jobs have replaced various forms of subsidised employment. The job and development guarantee has replaced the activity guarantee and the job guarantee for young people has replaced the youth guarantee and municipal programmes for youth. The Public Employment Service has become a single agency and has begun to use private employment services to complement its own activities. A number of ALMP programmes have been terminated and the volumes in labour market training and work experience placement outside the guarantees have been scaled back.

Of the structural changes in ALMP that we have been able to quantify, new start jobs are considered to have had the largest positive effect and reduced volumes of labour market training the largest negative effect on employment and unemployment in the long term. The structural ALMP reforms that we have been able to quantify are expected to increase the number of employed by 0.3 per cent in the long term and reduce equilibrium unemployment by 0.2 percentage points. The number of hours worked will increase by 0.3 per cent in the long term.[19]

## Sickness insurance

An extensive reform package for sickness insurance was announced in the 2008 Budget Bill.[20] The reform package aimed to strengthen the work capacity of those on sick leave, create incentives to work, and strengthen the demand for workers who have been on long-term sick leave or received sickness and activity compensation, thus increasing the labour supply. Additional reforms in this area were announced in the 2009 and 2010 Budget Bills.[21] The reforms for which impact assessments have been made are the rehabilitation chain, the 12-month time limit on the sickness benefit with a subsequent possibility of receiving extended sickness benefits (at a lower benefit level), the downward adjustment of income qualifying for the sickness benefit (SGI), the stricter qualifications for sickness and activity compensation (S/A) and the abolition of time-limited S/A. These reforms do not provide a complete picture of all the sickness insurance reforms but they are considered the most important in terms of their impact on the labour market.

Equilibrium unemployment is expected to rise by about 0.4 percentage points as a result of the sickness insurance reform. This is due in part to counting many of those on sick leave as employed in the Labour Force Survey (LFS). If people with work capacity are instead transferred to ALMP programmes, measured unemployment will increase. However, if they start to work, employment will not be affected. Only average hours worked and the total number of hours worked will be affected. But the main reason for the increased equilibrium unemployment is the changed rules for sickness and activity compensation. The stricter

[19] The impact assessments do not take into account all the possible effects of ALMP on employment and unemployment.
[20] Govt. Bill 2007/2008:1, see, for example, pp. 12–15.
[21] Government Bill 2008/09:1 and Government Bill 2009/10:1.

qualifications for S/A is expected to lead to a marked decrease in the number of individuals with S/A. Those receiving S/A are counted as not in the labour force. When fewer individuals receive S/A, at least some of these will be in the labour force and unemployment. Potential employment is estimated to increase by 0.4 per cent because with the changed rules for sickness and activity compensation, some people who previously have received S/A will instead work. The statistical classification has considerable influence on the effects of the sickness insurance reforms on employment and unemployment. The number of hours worked is thus a more relevant measure to describe the reforms' effect on the labour market. The number of hours worked is expected to rise by a total of about 0.5 per cent as a result of the reforms, or about 19 000 full-time employees.

### Tax credit for Household services and RMI

The tax credit for household services and RMI (repair, maintenance and improvement) is thought to affect labour market equilibrium via a number of different channels. First, the tax credit, leads households who purchase more of these services to increase their labour supply, for example, by moving from part-time to full-time work. Second, the increased demand for labour is expected to target people with a weaker position in the labour market to a greater extent. Due to structural imbalances in the labour market, the increased demand is expected to lead to sustainable higher employment. The third reason for the increase in employment is that some of the activity in the unregistered sector will shift to the registered sector after the introduction of a tax credit for these services (this effect does not affect the number of employed according to the LFS, however, as unregistered work is already included in the official employment measure).

All in all, the tax credit for household services and RMI is estimated to lead to an increase in employment of 0.4 per cent and a decrease in equilibrium unemployment of 0.2 percentage points in the long term.

## Reduced social security contributions: general and targeting young people

The reforms that have been quantified are the reduction of the general social security contributions by one percentage point and the reduction of social security contributions for young people under the age of 26 by 15.9 percentage points. In the long run, general reductions in social security contributions have little effect on employment since reduced social security contributions tend to be passed on in higher wages and thus employment is only affected because higher real wages lead to an increase in the labour supply.

In the long term, the reduced contributions for young people also lead to real wage increases. One of the motives for the reduced contributions for young people is the rigid wage structure and therefore an excess supply of labour. A selective reduction of social security contributions for young people is expected to increase the demand for young people with a weaker foothold in the labour market, because many industries have a binding minimum wage. Reduced social security contributions for youth may therefore lead to sustainable higher employment and lower equilibrium unemployment among young people. However, there are no empirical studies of how large the sustainable demand effect of reducing social contributions for young people has on equilibrium unemployment. These demand effects are therefore not included in the calculations. These calculations are instead based on the assumption that both the general and the targeted reduction for young people will be passed on in full as higher real wages. The increase in real wages because of the reduced social security contributions is estimated to lead to an increase in the labour force of 0.2 per cent and an increase in employment of 0.2 per cent in the long run.

## Summary of the Government's policy

The Government's policy for sustainable higher employment is being pursued on a broad front. It focuses on measures that stimulate both labour supply and demand. A number of measures have been implemented to make it more profitable to work and simpler to employ and to improve matching in the labour market.

Figure 3.3 shows the Ministry of Finance's estimates of adjustment to the new equilibrium unemployment, the potential labour force and potential employment ensuing from the structural

reforms that have been analysed. The majority of the reforms are assumed to reach their full effect by 2015. However, the effects of the changed rules in sickness and activity compensation are expected to take a longer time: the reforms' full effect will first be achieved in 2019.

**Figure 3.3 Effects of structural reforms on equilibrium unemployment, potential labour force and employment**

Per cent and percentage points


## Wage effects of the Government's policy

The Government's reforms affect the wage level via several channels. The income tax reduction due to the four steps in the in-work tax credit leads to an increase in after-tax wages. In addition to this direct effect, wage effects will occur as a result of behavioural changes ensuing from the in-work tax credit, unemployment insurance reforms and the general and targeted reductions in social security contributions. When work becomes more profitable, due to both the in-work tax credit and the unemployment insurance reforms, the labour supply tends to increase and wage growth to moderate temporarily. Reforms that reduce social security contributions tend, however, to drive up wages in the long run, passing on the reduction in the higher wages.

In addition to these channels, the average wage level is affected by a composition effect that results when more people with a

relatively weak attachment to the labour market obtain jobs due to, among other things, ALMP and the sickness insurance reforms.[22]

To assess the plausibility of the estimated effects of the Government's reforms, it is important to estimate the effect on wages. This section therefore quantifies the effect on wages of the Government's reforms and the composition effect that is consistent with the estimated employment effects. The analysis focuses on average wage growth even though the reforms most likely affect different wage-earner groups to a varying extent. However, this is not reported here since it is very difficult to know how wages change for different groups. As the majority of the effects in the labour market are expected to have had an impact by the end of 2015, the effect on the wage growth is calculated for the period 2007–2015.

The reform that has had the greatest impact on wages is the in-work tax credit. The in-work tax credit entails a general tax credit and is expected to lead to an increase in after-tax wages averaging 6.1 per cent (see Table 3.3).[23] In addition to this direct effect, wage demands are moderated by an increase in the labour supply and a lower replacement rate. The gross real wage level after tax, ceteris paribus, would be about 1.1 per cent lower in 2015 due to the in-work tax credit if this had been the only implemented reform.[24] The unemployment insurance reforms also temporarily moderate wage growth as the replacement rate decreases. The unemployment insurance reforms are estimated, ceteris paribus, to lead to gross real wages that would be about 0.5 per cent lower in 2015 if this had been the only change carried out.

[22] The reforms in sickness insurance, RMI/household services, ALMP and the change in the threshold for state income tax are not estimated to affect employment and unemployment through wage adjustment. Therefore, the only quantified effect for those reforms goes through the so-called composition effect.

[23] These estimates have been made in the microsimulation model FASIT.

[24] The macro model KIMOD is used to calculate the size of the wage adjustment due to the in-work tax credit and changes in unemployment insurance. The labour market in KIMOD is characterised by search and matching frictions and the model thus captures the same mechanisms as the Ministry of Finance's analytical framework. In line with the impact assessments of the reforms, the estimates are based on about a third of the total impact on unemployment of a changed replacement rate arising from increased search intensity and about two thirds from wage adjustment. Even though the model captures the most important mechanisms, a considerable degree of uncertainty is associated with this type of estimate.

**Table 3.3 Wage effects (after tax) of government policy and composition effects (per cent)**

| | Wage effect 2015 |
|---|---|
| In-work tax credit (direct effect) | 6.1 |
| Wage adjustment | 0 |
| *of which* | |
| *In-work tax credit* | *-1.1* |
| *Unemployment insurance reforms* | *-0.5* |
| *Reduced social security contributions* | *1.6* |
| Composition effect | -1.5 |

The reduced general social security contributions and the targeted reduction for young people are expected to increase the demand for labour, which will over time lead to increased wage demands. In the long run, the entire reduction in social security contributions is expected to be passed on in higher real wages for employees. The general reduction of one percentage point is estimated to lead to a real wage level that is 0.8 per cent higher than it would have been otherwise.[25] The reduction in contributions targeting young people is also expected to lead to a higher real wage level. Research does not provide any guidance about how much is passed on. It is conservatively assumed that the whole amount is passed on (a smaller amount passed on leads to a greater effect on employment) and that this mainly takes place through an increase in wages for young people. The average real wage level in 2015 is expected to be 0.8 per cent higher than would have been the case without the targeted reduction.[26]

All in all, the wage adjustment due to the in-work tax credit, the changes in unemployment insurance and the reduced social security contributions is expected to be very small and the level of gross real wages in 2015 will in principle be the same as it would have been without the reforms. The combination of stimulating supply and demand for labour means that the total wage

[25] The calculation is based on the assumption that firms' labour cost, ceteris paribus, remain unchanged after the reduced social security contributions. The reduction in social security contributions from 32.42 to 31.42 thus leads to an increase in wages of 0.8 per cent (32.42/31.42-1=0.8). According to calculation conventions applied by the Ministry of Finance, the reduced contributions will be passed on in higher wages within five years.

[26] This calculation assumes that the labour cost is unchanged, as it is in the general reduction. The reduction is expected to be passed on within ten years, and thus 80 per cent is passed on by the end of 2015.

adjustment is smaller and that the effects of government policy occur more rapidly than would have been the case if the reforms had been implemented separately.[27] The net effect of implementing the reforms on real wages after tax is estimated at about 6 per cent compared with not implementing the reforms.

In addition to wage adjustment, the average wage is affected by what is referred to as a composition effect. Employment increases, inter alia, due to an increase in the labour supply and a decrease in unemployment in groups with a relatively weak attachment to the labour market. On average, these groups have lower productivity and thus a lower wage than those already employed. When more people with relatively low wages enter the labour market, the average wage level in the economy will thus be reduced through this 'composition effect'. In the calculations, it is assumed that those who enter the labour market and obtain a job have 70 per cent of the average productivity. The overall lower average productivity is estimated to reduce the average wage by about 1.5 per cent in 2015 (see Table 3.3).

### 3.2.2 Effects of previous structural reforms

Various reforms were implemented between 2003 and 2006 that may have affected potential employment and the potential labour force but their full impact on the equilibrium level had probably not been realised in 2006. Reforms implemented between 2003 and 2006 include the tax reduction for the national pension contribution, the increased basic allowance, abolition of inheritance and gift taxes, lower upward adjustments of the threshold for state income tax, corporate tax reliefs, initiatives to combat tax evasion and benefit fraud, improvements in the sick leave process and early retirement as well as increased resources for schools, higher education and research.

It is primarily the reforms in sickness insurance and tax changes that probably had not had their full impact in 2006. For example, the number of individuals with sickness benefits showed a declining trend from 2003 which did not seem to be flattening out by 2006. All in all, these reforms are expected to have a positive

[27] In the long run, the effect of the reforms on the level of real wages before tax is probably smaller, as firms will probably not have fully adjusted their production capacity to the higher level of production in 2015. As firms after 2015 continue to increase investments in order to adjust production capacity to the higher level of production, productivity and wages will probably increase somewhat more rapidly for a while, which means that the long-term effect of the Government's policy on the wage level will be somewhat smaller.

effect on the potential labour force and potential employment, as they are expected to increase the incentives to work. Furthermore, the changes in the sick leave process are expected to have a positive effect on potential average hours worked, as reduced sick leave leads to more hours worked.

It is, however, outside the scope of this project to make detailed impact assessments of these reforms and to estimate how much impact there had been by 2006. The effects have instead been quantified by an aggregate estimate of the reforms. All in all, the potential labour force and employment are expected to increase by 0.2 per cent from 2007–2008 and average working hours to increase by 0.3 per cent due to reforms implemented before 2007 (see Table 3.4).

**Table 3.4 Effects of previous structural reforms on long-term equilibrium (per cent/percentage points)**

| | Labour force | Employment | Equilibrium unemployment | Average hours worked |
|---|---|---|---|---|
| Reforms before 2007 | 0.2 | 0.2 | 0.0 | 0.3 |

### 3.2.3 Demographic developments

Demographic changes lead to changes in the size and composition of the labour force over time. As discussed in the theory section, changes in the composition of the population may affect equilibrium unemployment, as matching efficiency may differ from group to group. If, for example, groups with lower skills and more uncertain productivity increase as a share of the labour force, this will probably result in a deterioration in matching and an increase in equilibrium unemployment.

From 2006–2020, the population in the age group 15-74 will increase by an average of 0.6 per cent, but at a more moderate pace. The change in the composition of the population is relatively large since groups with average higher unemployment, such as the foreign born, will increase as a share of the population.

The effect of demographic developments on the functioning of the labour market is calculated by a projection of Statistics Sweden's population forecast, provided that labour force participation, the employment rate and thus the unemployment level are constant for every sub-group of the population (based on age, gender and country of origin) in 2008. However, as labour force participation

among older individuals (aged 55 to 74) shows a rising trend, labour force participation and the employment rate are expected to increase for older people. It is assumed that the labour market exit age will increase by about 0.3 by 2020 compared with 2008 (see the chapter on demographic developments for a more detailed description).

Demographic developments are estimated to lead to an increase in potential labour force and employment of 4.6 and 4.2 per cent respectively during the period, or 225 000 and 190 000 people respectively. Since groups with an average high level of unemployment increase as a share of the population, demographic developments lead to an increase in equilibrium unemployment. Altogether, equilibrium unemployment is estimated to increase by around 0.4 percentage points from 2006 to 2020 due to demographic developments.

**Table 3.5 Effects of demographic developments between 2006 and 2020 (per cent/percentage points)**

| | Labour force | Employment | Equilibrium unemployment | Hours |
|---|---|---|---|---|
| Demography | 4.6 | 4.2 | 0.4 | 4.4 |

### 3.2.4 Persistence effects

The marked decrease in demand in the wake of the financial crisis led to a sharp reduction in employment. At the same time unemployment increased by almost three percentage points. Export-dependent industry, in particular, was hardest hit by the global downturn. However, recovery has come earlier and has been stronger than most people expected. Employment has increased since the autumn of 2009 and unemployment has started to fall.

The Ministry of Finance's overall assessment is that the downturn will temporarily lead to slightly higher equilibrium unemployment. This is primarily due to the drop in employment ensuing from the financial crisis being concentrated on the industrial sector and that a large part of the decrease in employment in industry is expected to be permanent. Future matching of the skills in the labour force and demand by employers will deteriorate slightly, as a person's human capital is to some extent specific to a particular industry or firm. Longer unemployment spells are also expected to contribute to the

reduction in the competitiveness of the unemployed and equilibrium unemployment will thus increase.

To estimate the persistence effects, results are used from the UC model specified by Mossfeldt and Österholm (2010). This model is designed in such a way as to capture the effect of cyclical unemployment on equilibrium unemployment. The overall assessment is that the number of potentially employed will be 25 000 lower in 2012 due to the crisis and that equilibrium unemployment will increase by 15 000. See Chapter 11 for further details.

**Table 3.6 Effects of the financial crisis and the crisis measures (per cent/percentage points)**

| | Labour force | Equilibrium unemployment | Employment |
|---|---|---|---|
| Persistence | -0.2 | 0.3 | -0.5 |
| Crisis measures | 0.1 | -0.3 | 0.4 |

Note: Maximum effect that arises in 2012–2013.

To counter the persistence resulting from the crisis, the Government has strengthened and supplemented the measures implemented earlier. These include measures that maintain job search activity and an expansion of the ALMP and education initiatives.

Table 3.6 above shows the temporary crisis measures' effects on potential employment, the potential labour force and equilibrium unemployment. As shown by the table, the net effect of persistence and the crisis measures is that equilibrium unemployment is not affected by the financial crisis. This is primarily because the volume of coaching and education places was intended to handle a much larger drop in employment than actually occurred. But a temporary increase in the number of people in education and training is expected to contribute to an improvement in matching between employees and employers, regardless of the state of the economy.

Persistence effects and the temporary measures to counteract persistence have only temporary effects on equilibrium unemployment. Equilibrium unemployment will return to its pre-crisis level as people who have been long-term unemployed due to the crisis leave the labour force because of retirement or undergo retraining and thus contribute to better matching. The effects of the education initiatives are temporary in the sense that they only apply to the people who have been educated during the crisis but

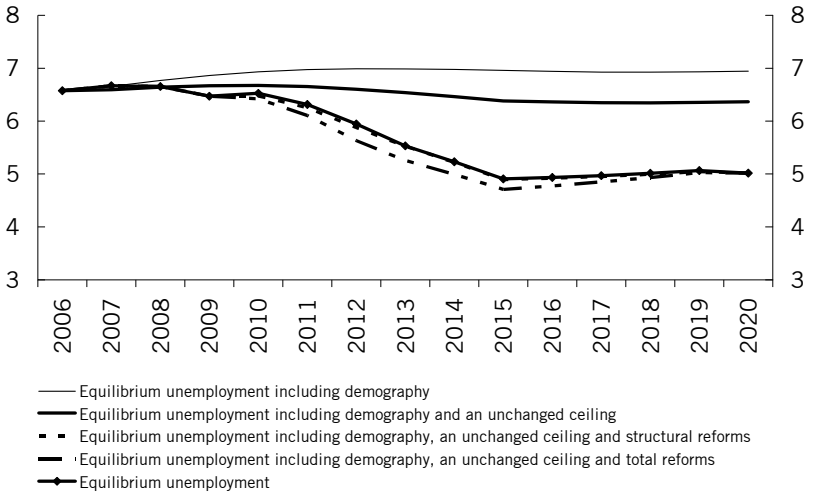
permanent in the sense that they remain as long as these people are in the labour market. It is assumed in the estimates that the persistence effects and the effects of the crisis measures have abated by 2020.

## 3.3 Development of equilibrium unemployment, potential employment and potential labour force between 2006 and 2020

Figure 3.4 shows the development of equilibrium unemployment and adjustment towards the long-term equilibrium between 2006 and 2020 when the effects of demographic developments, structural reforms, crisis measures and persistence as well as the unchanged ceiling in unemployment insurance have been included. According to the estimate, equilibrium unemployment falls from 6.6 per cent in 2006 to 5.0 per cent in 2020.

**Figure 3.4 Development of equilibrium unemployment between 2006 and 2020**

Per cent of potential labour force, annual data




Note: Total reforms refer to structural reforms and crisis measures. The series "equilibrium unemployment" shows the development when the effects of demography, the unchanged ceiling, structural reforms, crisis measures and persistence are included. Unemployment refers to ILO, age group 15-74.

Source: Own calculations

In all, equilibrium unemployment thus falls by 1.6 percentage points during this period. Structural reforms such as the in-work tax credit

and unemployment benefit reforms reduce equilibrium unemployment by 1.4 percentage points and an unchanged ceiling in unemployment insurance to the end of 2011 reduces it by 0.6 percentage points. At the same time, demographic developments increase equilibrium unemployment by 0.4 percentage points.

The slight increase in equilibrium unemployment from 2015 to 2020 occurs because the reforms to sickness and activity compensation are expected to increase the labour supply to a greater extent than employment and because the full effect of these reforms will first be achieved in 2019.

**Table 3.7 The components' contribution to change between 2006 and 2020. Percentage change/number of individuals**

| | Labour force | Employ-ment | Unemp-loyment | Hours worked | Labour force | Employ-ment |
|---|---|---|---|---|---|---|
| Demography | 4.6 | 4.2 | 0.4 | 4.4 | 225 000 | 190 000 |
| Unchanged ceiling | 0.1 | 0.8 | -0.6 | 0.7 | 5 000 | 35 000 |
| Structural reforms | 3.1 | 4.6 | -1.4 | 5.8 | 160 000 | 215 000 |
| Crisis measures | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 |
| Persistence | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 |
| Previous reforms | 0.2 | 0.2 | 0.0 | 0.5 | 10 000 | 10 000 |
| **Total (long-term)** | **8.0** | **9.7** | **-1.6** | **11.4** | **400 000** | **450 000** |

Note: Unemployment refers to change in percentage points.

Overall, the potential labour force will increase by about 400 000 people and potential employment by around 450 000 people between 2006 and 2020 (see Table 3.6). The effect on potential hours totals 11.4 per cent; of that, structural reforms make up the largest component.

## 3.4 The Ministry of Finance's estimate of equilibrium unemployment, potential employment and potential labour force, 1980–2020

According to the Ministry of Finance's estimate, equilibrium unemployment increased during the mid-1990s to peak at around 7 per cent at the end of the 1990s (see Figure 3.5). This increase

can be explained by a number of different factors. One explanation is the marked increase in actual unemployment in connection with the deep recession with ensuing persistence effects. Another explanation is probably that the reforms in education with an increasing number of students in college and university and in three-year upper secondary education led to a sharp increase in the number of full-time students seeking work during the 1990s. Groups with low employment rates also increased as a proportion of the population (partly due to the increase in refugee immigration), which may be a further reason for the rise in equilibrium unemployment during the period.

Equilibrium unemployment is estimated to have declined slightly since the beginning of the 2000s but a major change is expected to take place from 2010. All in all, equilibrium unemployment will fall by 1.5 percentage points from 2010 to 2020, mainly because of the Government's structural reforms. In particular, the introduction of the in-work tax credit and the unemployment insurance reforms are expected to lead to a decline in equilibrium unemployment.

While equilibrium unemployment rose during the 1990s, the potential labour force decreased, among other things because many retired early due to the crisis and the major education initiatives meant that a larger percentage of the population consisted of students and was thus excluded from the labour force to a greater extent (see Figure 3.7). Potential employment thus fell during the period due to both increased equilibrium unemployment and a lower potential labour force (see Figure 3.6). The potential labour force and potential employment have both increased, however, from the beginning of the 2000s. The increase is driven both by population growth and by the Government's structural reforms. The composition of the labour force changes, however, so that groups with a lower labour force participation (for instance, foreign born) will increase as a share of the working aged population, which will dampen the growth of potential labour force participation and the employment rate (see Figure 3.8). The percentage of older persons (over 65), with a substantially lower labour force participation rate and employment rate will also increase. Both labour force participation and the employment rate will be slightly lower in 2020 than in the mid-1980s even if the employment rate rises by two percentage points between 2006 and 2020.

**Figure 3.5 The development of equilibrium unemployment, aged 15–74**

Per cent of potential labour force, seasonally adjusted quarterly values


**Figure 3.6 The development of potential employment, aged 15–74**

Hundreds of persons, seasonally adjusted quarterly data

**Figure 3.7 The development of the potential labour force, aged 15–74**

Hundreds of persons, seasonally adjusted quarterly data

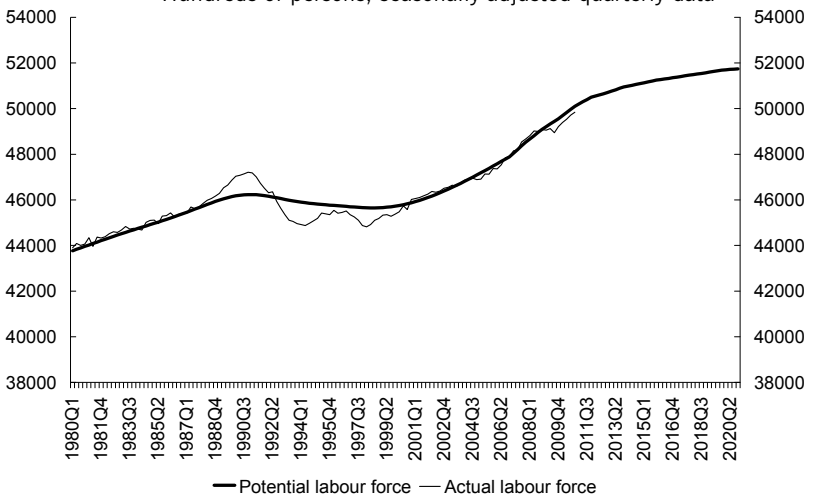
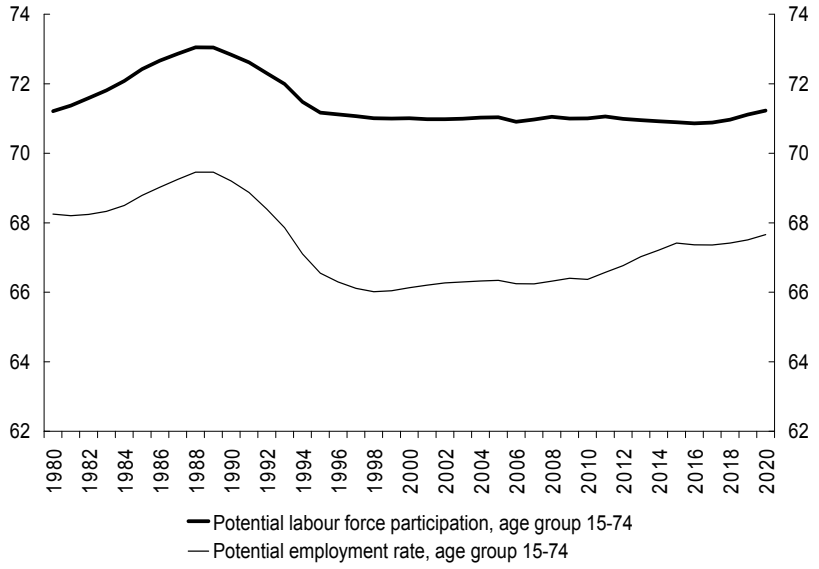



**Figure 3.8 Potential labour force participation and employment rate, aged 15-74**




Note: Per cent of population of working age, annual data

## 3.5 Are the results plausible?

The Ministry of Finance's assessment of the development of equilibrium unemployment, the potential labour force and the potential employment up to 2020 has been described above. The development and the final level in 2020 depend on:

- the level of equilibrium unemployment in 2006 which has been defined using econometric models combined with a check made against diverse indicators,
- the effects of reforms implemented before 2006,
- the size and adjustment paths for the effects of the Government's structural reforms since 2006, and
- demographic developments up to 2020.

The level in 2006 has been derived using a UC-model for unemployment and the real exchange rate by Lindblad and Sellin (2008). The equilibrium level in 2006 is obviously uncertain but equilibrium unemployment of 6.6 per cent in 2006 is considered reasonable based on the available indicators of resource utilisation in the labour market in 2006.

The magnitude of the structural reforms' effects is obviously open to discussion. The impact assessments are the Ministry of Finance's best assessment in the light of available theory and empirical data. However, considerable uncertainty is attached to these estimates. For example, impact assessments have not been made for a substantial number of the reforms implemented since 2006. A number of these non-quantified reforms are likely to have an impact on employment and equilibrium unemployment.[28] Impact assessments have not been made for these reforms because there is no background material to base the estimates on. These reforms are likely to have a positive net effect on sustainable employment, but this has not been taken into account in this report.

The impact assessments are also based on studies of the effects of previous reforms. It is not certain that the results of these

[28] Examples of such reforms are measures targeting those born abroad (including new introduction programmes, validation of foreign education, and Swedish courses for immigrants), the research bill (a permanent increase in research funds of SEK 5 billion), education initiatives (for example, for teachers, teaching hours, a new upper secondary school, and apprenticeship training), lower corporate taxes, infrastructure investments, childraising allowance, abolition of the wealth tax, pension system reforms and the reforms in the business sector.

studies can be fully extrapolated to the labour market as it exists today and in the coming period. Another aspect which has not been taken into account in this report is the possibility of synergy effects when reforms are implemented in several areas at the same time. It is, for example, possible that the total effect of unemployment insurance and labour market policy is greater than the parts. It is also possible that the broad approach in the work-first principle has led to a shift in norms, i.e. in addition to the direct effects of the rule changes, people's behaviour has changed. One contributing factor sometimes used to explain the reduced sick leave is that there is less inclination in general to take sick leave.

At the same time, most of the reforms focus on getting more people in work and there is a limit to the total number of people whom the reforms can affect. It is therefore conceivable that there might be a diminishing effect if additional reforms were to be implemented (for example, we cannot expect equilibrium unemployment to approach zero). Possible diminishing effects have, however, been taken into account in the choice of elasticity in the impact assessments for the in-work tax credit and unemployment insurance reforms.

The effect of demographic developments on the potential variables depends on Statistics Sweden's population forecast and on an assumption of a marginal upward trend in labour force participation and the employment rate for the age group 55–74. This method does not take into consideration, inter alia, that the employment rate in certain groups may change during the period in question. If, for example, the labour market integration of the foreign born or young people's situation in the labour market were to improve, the unemployment rate for these groups would decline in this period. Likewise, changes in the rules on the retirement age may lead to behavioural changes in the 65–74 age group over time. Impact assessments of policies take this into account implicitly, however, as a number of these reforms entail that precisely these groups begin working more.

The impact on equilibrium unemployment for different age groups is not explicitly analysed in the project. However, as part of the assessment of whether the changes in equilibrium unemployment are plausible, how equilibrium unemployment might look in different groups in 2020 is of interest. Figure 3.9 shows equilibrium unemployment in different age groups if total unemployment for each group is held constant at its 2007 level (i.e.

the distribution of the stock of unemployment is assumed to be constant at 2007 levels, meaning that the decline in unemployment will be the same in all age groups). A distribution like this would result in a decrease in equilibrium unemployment among young people from nearly 21 per cent to slightly over 15 per cent[29] while equilibrium unemployment in the age group 25–64 would decrease from about 4.5 per cent to about 3.5 per cent. Figure 3.10 shows how lower equilibrium unemployment could affect unemployment in different age groups, broken down by the length of the unemployment spell.

[29] Also in an equilibrium a large percentage of unemployed young people will be full-time students looking for work. In December 2010, more than 40 per cent of all young people looking for work were full-time students (LFS).

**Figure 3.9 Equilibrium unemployment by age group**

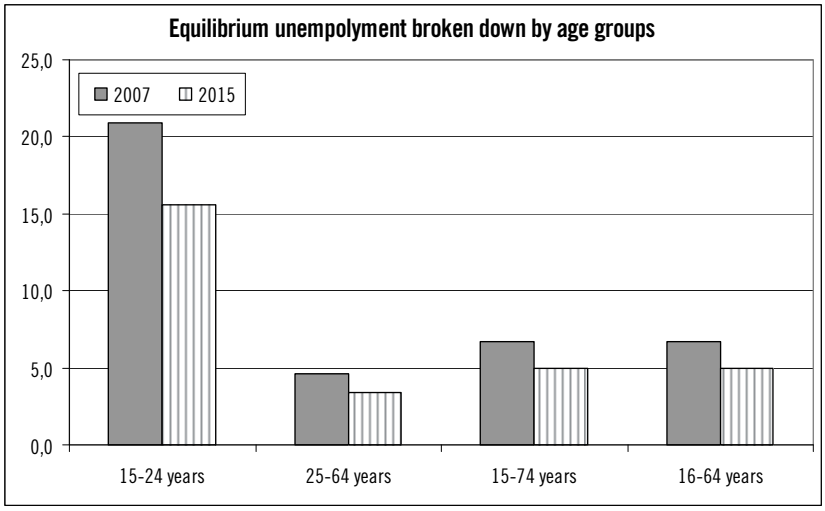
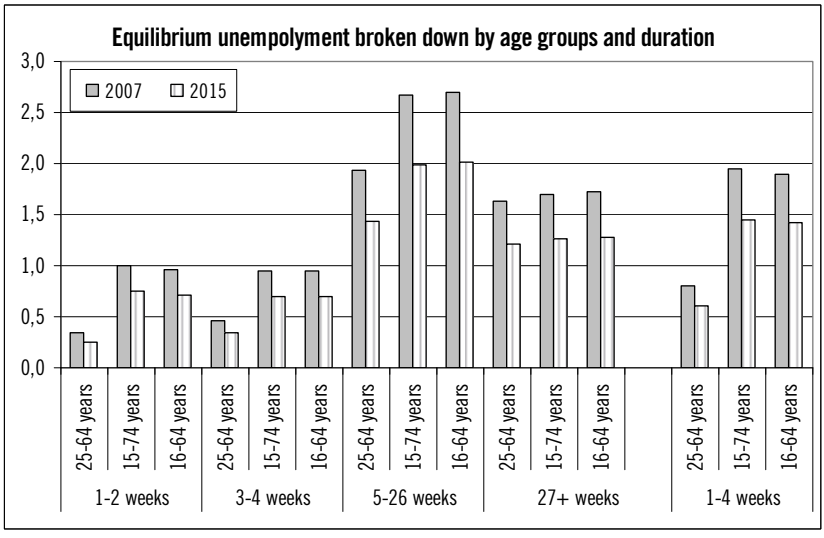
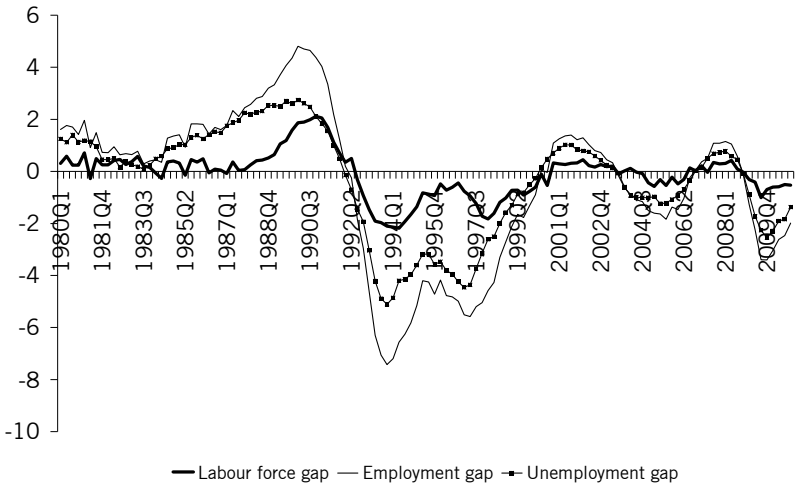



**Figure 3.10 Equilibrium unemployment by age group and length of the unemployment spell (25–64, 15–74 and 16–64)**



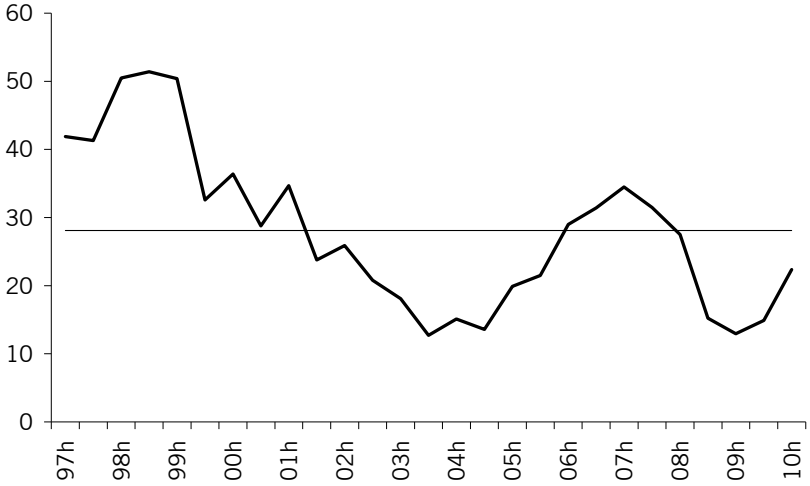

Towards the end of 2010 (quarter 4), the employment gap and the unemployment gap were negative, while the labour force gap was only weakly negative (see Figure 3.11).

**Figure 3.11 Gap in the labour market, quarterly data**




How does this agree with the indicators for resource utilisation? Unfortunately, no data are available for 2010 to analyse the micro indicators with the registration periods shown in Chapter 2. Most macro indicators indicate, however, that there were still unutilised resources in the labour market in the fourth quarter of 2010. Statistics Sweden's statistics for the time that it takes firms to recruit and the Public Employment Service's survey on firms' ability to find appropriate staff members together indicate that there were still unutilised resources in the labour market (see Figure 3.12).

**Figure 3.12 Recruitment problems in the business sector according to the Public Employment Service's business survey**




Note. Percentage of workplaces that have experienced labour shortages in the past six months

Source: Public Employment Service.

Bearing in mind that the economy is still in a downturn, the fact that the unemployment gap is close to zero may indicate that the potential labour force is somewhat underestimated in the current calculations. The assessment presented in this chapter will be regularly followed up and evaluated in the light of new information.

# References

Lindblad, H. & Sellin, P. (2008) The Equilibrium Rate of Unemployment and the Real Exchange Rate: An Unobserved Components System Approach (November 2008). Riksbank Working Paper No. 221; Riksbank Research Paper Series No. 52. Available at SSRN: http://ssrn.com/abstract=1099942.

Mossfeldt, M. & P. Österholm (2010) The Persistent Labour-Market Effects of the Financial Crisis, National Institute of Economic Research, Working Paper No. 117.

# Appendix: Summary table of estimates of policy effects

**Table 3.8 Summary of all the reforms estimated**

| | Labour force (%) | Employment (%) | Unemployment (p. p.) | Hours worked (%) | Notes |
|---|---|---|---|---|---|
| **In-work tax credit** | **1.6** | **2.3** | **-0.6** | **2.9** | |
| **Unemployment insurance** | | | | | |
| Reduced benefit level[1] | 0.21 | 1.10 | -0.83 | 0.99 | |
| Unemployment contribution[2] | 0 | 0 | 0 | 0 | |
| Fewer benefit days for part-time employees[3] | -0.03 | -0.12 | 0.09 | -0.03 | |
| Study condition terminated | | - | + | | Fewer youth to AF; more receive social assistance with high marginal effects |
| Tax credit for unemployment insurance fees terminated | | - | + | | Increased threshold effect |
| Stricter work conditions | | + | - | | Stricter benefit |
| Right to unemployment benefit during breaks in study periods terminated | | + | - | | Stricter benefit |

| | Labour force (%) | Employment (%) | Unemploy-ment (p.p.) | Hours worked (%) | Notes |
|---|---|---|---|---|---|
| Change in calculating income on which benefit is based[1] | | + | - | | Stricter benefit |
| **Unemployment insurance** | **0.2** | **1.0** | **-0.7** | **1.0** | |
| **Sickness insurance** | | | | | |
| Rehabilitation chain including defined time limit | 0 | -0.07 | 0.07 | 0.04 | |
| Downward factor adjustment of sickness benefit qualifying income | -0.02 | -0.03 | 0.01 | 0.06 | |
| Changed sickness and activity compensation | 0.9 | 0.5 | 0.4 | 0.4 | |
| **Sickness insurance** | **0.88** | **0.4** | **0.48** | **0.5** | Many of those on sick leave are counted as employed in the Labour Force Survey |

| | Labour force (%) | Employment (%) | Unemploy-ment (p.p.) | Hours worked (%) | Notes |
|---|---|---|---|---|---|
| **Active labour market policy** | | | | | |
| Private contractors | | 0 | 0 | 0 | |
| Job and development guarantee | | 0 | 0 | 0 | |
| Job guarantee for young people | | + | - | + | |
| New start jobs | + | 12 200 | -12 200 | 17 600 | Number |
| Special employment subsidy | + | 2 200 | -2 200 | 3 200 | Number |
| Step-in jobs | + | 4 200 | -4 200 | 6 000 | Number |
| Work experience placements (reduced volume) | - | 900 | -900 | 1 300 | Number |
| Labour mar ket training(reduced volume) | - | -9 300 | 9 300 | -13 400 | Number |
| Other terminated programmes | | 0/+ | 0/- | 0/+ | |
| Participation in programmes reduces unemployment benefit days | | **+** | **-** | **+** | |
| New working condition to be met before new period of unemployment benefits | | + | - | + | |
| **Active labour market policy** | **0.1** | **0.3** | **-0.2** | **0.3** | Labour force effect due to lower equili-brium employment |
| **RMI/Houshold services** | | | | | |
| RMI | 0.1 | 0.1 | 0 | 0.1 | |
| Household services | 0.1 | 0.3 | -0.2 | 0.4 | |

| | Labour | Employment | Unemploy- | Hours | Notes |
|---|---|---|---|---|---|

| | force (%) | (%) | ment (p.p.) | worked (%) |
|---|---|---|---|---|
| **Reduced social security contributions** | | | | |
| General reduction | 0.1 | 0.1 | | 0.1 |
| Reductionfor young people | 0.1 | 0.1 | - | 0.1 |
| Reduction for older workers | + | + | 0 | + |
| **Reduced social security contributions** | **0.2** | **0.2** | **0** | **0.2** |
| Threshold | 0 | 0 | 0 | 0.3 |
| **Total effect** | **3.1** | **4.6** | **-1.4** | **5.7** |

# 4 Effects of the in-work tax credit

## 4.1 Summary

To increase the incentives to work, a first step in the in-work tax credit was introduced on 1 January 2007. It has subsequently been strengthened three times, most recently on 1 January 2010. The in-work tax credit provides a general tax credit for everyone who is gainfully employed.[30] For broad income groups (those earning approximately SEK 135 000 to SEK 300 000 a year), the marginal tax has been reduced by about six percentage points and the average tax by about seven percentage points.[31]

This report is intended to document how the Ministry of Finance calculates the long-term effects of the in-work tax credit on labour force participation, potential employment and equilibrium unemployment. Based on various theoretical models, the channels through which the in-work tax credit can be expected to affect various labour market variables are identified. A number of different tools are used to quantify the effects of the in-work tax credit, including the Ministry of Finance's micro-simulation model for labour force participation and hours worked and parameters which have been estimated in previous empirical studies. The analysis is intended to lead to an assessment of the effects in labour market equilibrium including possible effects via wage formation. For pedagogical reasons, it may, however, also be of interest to

[30] The Swedish in-work tax credit differs in this respect from the construction in the United States, for example. Unlike the Swedish in-work tax credit, the US EITC (Earned Income Tax Credit) is phased out as income rises. The advantage of a construction of this kind is that it is less costly for the public finances. The disadvantage is that it creates potentially high marginal effects in the income intervals where the tax subsidy is phased out.

[31] See Ministry of Finance (2010). The four steps have had a different design but the overall effect is that the marginal tax has been reduced both by raising the threshold at which income tax starts to be paid on earned income and by reducing tax rates on earned income of up to about SEK 300 000 a year. The total short-term cost to public finances of the four steps in the in-work tax credit is about SEK 70 billion. The first step accounts for about SEK 40 billion, the second, third and fourth steps for about SEK 10 billion each.

identify the effects of the in-work tax credit on labour supply at a given before-tax wage and the effects in labour market equilibrium excluding the effects via wage formation.

**Table 4.1 Effects of the in-work tax credit**

| | Employment (%) | Unemployment (p.p.) | Labour force (%) | Hours worked (%) | Average working hours employed (%) |
|---|---|---|---|---|---|
| 1. Labour supply effects | | -0.17[1] | 1.57 | 2.40[2] | |
| 2. Labour market equilibrium excluding wage formation | 1.81 | -0.17 | 1.62 | 2.39 | 0.57 |
| 3. Labour market equilibrium including wage formation | 2.28 | -0.61 | 1.63 | 2.92 | 0.62 |

Note: 1 The change in unemployment is measured holding labour force participation constant. 2 The change in working hours is the *desired* change, i.e. we do not take into account that part of the increase in the labour supply is realised as increased unemployment rather than increased employment.

The results are shown in Table 4.1. At given before-tax wages and without taking into account the demand side of the economy, the four steps in the in-work tax credit are expected to lead to an increase in the labour force of almost 1.6 per cent. The desired number of working hours is estimated to increase by 2.4 per cent. Increased search intensity and lower reservation wages lead to shorter unemployment spells, which are estimated to reduce unemployment by almost 0.2 percentage points.

To calculate the effects of the in-work tax credit in labour market equilibrium *excluding* the effects via wage formation, the supply calculations have to be supplemented by additional calculations. First, some of those who decide to enter the labour force will become unemployed. Second, we should expect labour force participation to be affected by the labour market conditions – more people decide to participate in the labour force when unemployment decreases and employment increases. All in all, the

results indicate that employment can be expected to increase by about 1.8 per cent.

The effects of the in-work tax credit in equilibrium *including* the effects via wage formation are obtained by supplementing the calculations with the expected effects of the in-work tax credit on wages. The results in Table 4.1 (the bottom line) show that equilibrium unemployment is expected to fall by around 0.6 per cent after wage formation effects have been taken into account. This is a larger drop than was obtained when the before-tax wage was held constant. The expected increase in employment and the increase in the number of hours worked will thus also be greater. In the long run, employment is expected to rise by about 2.3 per cent and hours worked by about 2.9 per cent.

A considerable element of uncertainty is attached to the calculations in this report. In addition to the statistical uncertainty built into various estimated relationships, there are several potential sources of error. The calculations, for example, consistently assume that those choosing to enter the labour market on average have the same risk of unemployment as those already in the labour market. Or, in other words, the calculations do not take into account that individuals with a low probability of obtaining a job may possibly be overrepresented among those entering the labour market as a result of the in-work tax credit. If this is the case, we would thus overestimate the effect on equilibrium unemployment and employment. Another potential source of error relates to labour force participation. The Ministry of Finance's micro-simulation model for labour force participation and hours worked does not take into account that students may choose to vary their labour supply due to the in-work tax credit. This probably means that the effect on labour force participation and employment is slightly underestimated. In our opinion, we currently cannot quantify these two counteracting effects on employment in a credible way.

The rest of the chapter is arranged as follows. Section 4.2 contains a brief discussion, based on a few different theoretical models, of the mechanisms through which the in-work tax credit may be expected to affect labour force participation, potential employment and equilibrium unemployment. Section 4.3 presents the applications and assumptions underlying the Ministry of Finance's quantitative estimates of the effects of the in-work tax credit.

## 4.2 Theoretical analytical frameworks

### 4.2.1 Supply effects at a given before-tax wage

It is usually said that taxes affect two important labour supply decisions: whether to work at all, and, having decided to work, how much to work.

*Labour market participation and unemployment spells*

Labour market participation is usually analysed as a choice for the individual between paid work and leisure. The individual chooses paid work in preference to leisure if it provides greater utility. This means that the market wage must exceed the individual's *reservation wage*, i.e. the wage at which the individual's utility from work is the same as his or her utility from not working. The reservation wage is likely to depend on, inter alia, the leisure value of not working, the parameters of the tax and transfer system and unearned income. The reservation wage therefore differs from individual to individual. An in-work tax credit increases the return – after tax – to paid work and consequently reduces the reservation wage. A given market wage will therefore exceed the reservation wage for more people, who will therefore choose to participate in the labour force.

The labour market decisions of people whose alternative to paid work is unemployment with unemployment benefits are often analysed using models for search unemployment. It is assumed that over time, an unemployed person receives job offers with different rates of pay. Also with this approach, the optimal decision rule for a worker is to accept a job offer only if the wage exceeds the reservation wage. This depends, inter alia, on the unemployment benefit and the labour market situation (which determines the rate at which job offers are received). However, the reservation wage is also affected by an in-work tax credit: the higher the in-work tax credit, the greater after-tax earned income will be relative to the unemployment benefit and consequently the lower the reservation wage will be. A lower reservation wage in turn increases the likelihood that an unemployed person will receive job offers with a higher wage than the reservation wage. This shortens unemployment spells and thus reduces unemployment. An additional mechanism is that an in-work tax credit is likely to

contribute to an increase in unemployed people's search intensity, as the credit will increase the return – after tax – to finding a job.

*Hours worked for those already in work*

According to labour supply theory, an in-work tax credit will increase labour force participation. However, it is not clear what the effect will be on working hours for those already in work. In a phase-in interval, the credit increases with earned income, causing the marginal tax to fall. At the same time, the average tax rate in this interval is reduced. In the next higher income bracket, the credit is fixed and does not affect marginal tax rates. However, the credit reduces the average tax rate in this case as well.

There are two counteracting effects in the phasing-in interval. On the one hand, the lower marginal tax results in an increase in the after-tax return for each hour worked. This *substitution effect* tends to increase the number of hours the individual wishes to work. On the other hand, the lower average tax means that the employee earns more and thus may be able to afford to work less. This is usually referred to as the *income effect*. As these two effects operate in opposite directions, it is not possible from a purely theoretical standpoint to predict what the net effect will be on working hours for a person who is already in paid employment in the phasing-in interval. In the interval where the credit is fixed, and thus independent of income, the in-work tax credit does not change marginal tax rates. There is therefore no substitution effect in this interval. The only effect is the income effect, which unambiguously reduces the desired working hours.

### 4.2.2 Labour market equilibrium without wage adjustment

The analysis of individuals' supply decisions explains why an in-work tax credit is likely to increase the number of people who want to have a job but not why any new jobs are created. The latter also requires an analysis of labour demand and wage formation.

Kolm & Tonin (2010) analyse the effects of an in-work tax credit in a model based on the matching model developed by Pissarides (2000). In this model, an in-work tax credit has an impact on employment through its affect on both the share of the

population in the labour force (labour force participation) and the share of the labour force that is employed (equilibrium unemployment).

According to the model, an in-work tax credit will increase the value of being employed compared with being outside the labour force. Labour force participation will therefore increase for a given before-tax wage. The individual firm's decision to post a vacancy takes into account both expected future wage costs and the length of time it may take to fill a vacancy. An increased number of jobseekers reduces the time it takes to fill the vacancy. This makes it profitable for the employer to post more vacancies. There will then be more successful matchings, which will lead to an increase in employment. It should be noted that increased labour force participation leads to increased employment even if wages are kept constant (supply creates its own demand). Under certain assumptions (including a homogenous labour force), it can be shown that for a given wage, equilibrium unemployment among those choosing to join the labour force will be the same as it is for those already in the labour market.

For given wages, however, equilibrium unemployment in the model will also be affected by an in-work tax credit. The in-work tax credit makes work relatively more profitable, creating an incentive for the unemployed to increase their search intensity. This in itself increases employment already at a given number of vacancies, but it also has the indirect effect of stimulating firms to post more vacancies, as the expected vacancy duration decreases when the unemployed seek work more intensively. The improved labour market situation will also affect labour force participation – in the theoretical model more choose to participate in the labour force when the expected search time decreases.

For given wages, the analysis in Kolm & Tonin (2010) thus leads to the conclusion that an in-work tax credit increases the proportion of employed in the population both because the percentage choosing to participate in the labour force increases and because the share that is unemployed decreases.

### 4.2.3 Labour market equilibrium with wage adjustment

In the matching model, it is assumed that wages will be determined by bargaining between employers and individual employees, so that

the two parties share the common surplus created by employment. An in-work tax credit increases the return – after tax – from paid work. As work becomes relatively more profitable, it tends to lead to a temporary moderation in wage demands. When the employer receives a larger part of the common surplus, it will be profitable to post more vacancies, which increases employment and reduces unemployment at a given labour force participation. However, labour force participation will also increase. In the model, this takes place both because the after-tax wage is higher and because the probability that a person entering the labour market will find a job increases (as firms are posting more vacancies). On the other hand, a temporarily lower growth rate in gross wages tends to partly counteract the increase in labour force participation.[32]

To sum up, the theoretical analysis shows that wage costs will likely decrease. Compared with the analysis that does not take wage formation into account, this would lead to higher employment, lower unemployment and higher labour force participation.

## 4.3 Impact assessments in practice

### 4.3.1 Supply effects at a given before-tax wage

*Model*

Documentation showing how the Ministry of Finance calculates the labour supply effects of government policy can be found in the Ministry of Finance (2009). The expected long-term labour supply effects are analysed using a micro-simulation model. The effects are estimated at a given wage before tax. Micro-simulation means that the calculations are made with detailed information at the individual and household level. As the focus is on the long-term effects, two states of equilibrium are compared: a hypothetical state without the Government's reforms and the state after all simulated behaviour changes have had their full impact. However, no analysis is made of the adjustment path to the new equilibrium.

The model is based on the availability of micro data at the individual and household level. The model also includes detailed

[32] In the model, the value of participating in the labour force due to more vacancies will, however, always predominate over the effect of a temporary reduction in the rate of before-tax wage increases.

rules for taxes and transfers (the FASIT model). In this model, individuals are first assigned an observed labour market status based on their main source of income. Those who mainly have income from paid employment are classified as being "in work", those who mainly have unemployment benefits are classified as unemployed, etc. The model distinguishes between nine different labour market situations for individuals: children, pensioners, students, those with sickness or activity compensation, those on parental leave, the unemployed, those on sick leave, those working and others (individuals without earned income or social insurance system benefits). This categorisation applies for a whole year and an individual may thus have only one status during a particular year. The categories children, pensioners, students and those on parental leave are not included in the analysis. These retain their observed status, their hours worked are set at zero and they are not allowed to change their labour supply.

Individuals who are likely to be able to change their labour supply are assigned a *predicted* labour market status given the tax and transfer systems that apply in a base scenario (before reform). Three estimated probability models are used to determine whether an individual is unemployed or on sick leave or has sickness/activity compensation. The replacement rate (disposable income when not working in relation to disposable income when working) is a key explanatory variable in these probability models. Including the replacement rate makes it possible to take into account that financial incentives may affect a person's employment status. For an individual, who according to the model is not unemployed or on sick leave or who does not have sickness/activity compensation, the desired hours worked are instead determined in an estimated structural labour supply model. The structural labour supply model takes into account that different types of households – single women, single women with children, single men and cohabiting partners – may have different preferences for paid work. If utility maximisation implies zero hours worked, the individual is assigned the predicted status "other" (outside the labour force), otherwise, the predicted status "in work" is assigned.

The effects of a change in rules are simulated by repeating the procedure described for assigning a predicted labour market status to individuals but taking into consideration the changes in the tax system. In this model, a rule change will stimulate behavioural changes by both those in work (for example, via changes in

marginal taxes) and those who are not working (via changes in replacement rates). By comparing outcomes before and after the reform, we can analyse the effects on the desired number of hours worked, labour force participation, the transition rate from unemployment to work, income and income distribution.

*Results*

To simplify the analysis, we treat the four steps of the in-work tax credit as an integrated reform implemented in 2010. HEK data from 2008 are used in the calculations. To enable the data to be applied to the rule year 2010, a projection is made of the economic and demographic conditions in the sample year 2008.

To sum up, the four steps of the in-work tax credit are expected to lead to an increase in the labour force of 1.5 per cent at given wages. The desired number of hours worked increases by around 2.3 per cent and over 80 per cent of this increase can be explained by more individuals wanting to work after the reform. The increase in the desired number of hours worked is larger for women (2.6 per cent) than for men (2.1 per cent). Of the total increase in the desired number of hours worked, almost 60 per cent can be attributed to behavioural effects in the lowest income quartile. Qualitatively, the results generated by the model are in line with what we would expect based on what is known from empirical research. For example, the labour supply for women and low-income earners is more sensitive to financial incentives than the labour supply for men and high-income earners. The analysis in Ministry of Finance (2009) (Section 5.3) indicates that the size of the calculated effects also seems to be reasonable compared to research findings.

Unemployment is expected to decrease by almost 0.2 percentage points at a given level of labour force participation. This decrease should be interpreted in terms of shorter unemployment spells (disregarding any wage formation effects). The in-work tax credit is likely to contribute to the unemployed increasing their search intensity, as the credit increases the net benefit of finding a job. However, the reservation wage is also affected by the in-work tax credit. According to economic theory, a lower reservation wage means an increased probability of the unemployed receiving job

offers with a wage that exceeds the reservation wage. This shortens the unemployment spells and thus reduces unemployment.

The results are based on statistical models, and it probably goes without saying that there is considerable uncertainty attached to an analysis of this kind. In addition to the purely statistical uncertainty, there are also other potential sources of error. In its current state, the micro-simulation model does not, for example, permit old age pensioners and students to change their labour supply. If they were to be included in the model and treated similarly to the way in which we currently treat the unemployed, those on sick leave and persons with sickness/activity compensation, there would probably be some further increase in labour force participation and employment.[33] Flood (2010) uses a model which is similar to the one used by the Ministry of Finance, but which also includes a simple sub-model where the pension decision is affected by the replacement rate in the pension system. The calculations do not show any great effect from including the pension decision – the labour force increases (and the number of old age pensioners decreases) by about 3 000 individuals compared with a scenario without an in-work tax credit.[34] The top row in Table 4.1 summarises the results when the micro-simulation model's outcome has been corrected for the effect on the number of old age pensioners.

### 4.3.2 Labour market equilibrium without wage adjustment

As discussed in Section 4.2.2, the matching model used by Kolm & Tonin (2010) implies that those who choose to enter the labour force when the labour market is in equilibrium will be unemployed to the same extent as those already in the labour market. If the supply calculations in the previous section are supplemented with this result, the increased labour force participation and lower

[33] From the point of view of evaluation, it is, of course, interesting to shed light on the effects of the in-work tax credit on older individuals' labour supply, partly because there may be assumed to be a large potential for increased labour supply and because the credit is larger for individuals aged over 65. At present, development work is in process to expand the Ministry of Finance's micro-simulation model to include the pension decision as well.

[34] The limited effect possibly reflects the fact that during the period used in estimation of the pension model – 2000 to 2007 – the effects of the in-work tax credit have not been internalised. Even though 2007 is not included, it is not probable that there will have been sufficient time for any behavioural effects to have had an impact in the estimated probability model on which the calculations are based.

equilibrium unemployment imply a long-term increase in employment of 1.75 per cent. This also leads to a downward adjustment of the change in hours worked compared with the pure labour supply effects, from 2.40 per cent (the desired change without taking into account the risk of unemployment) to 2.33 per cent.

In the theoretical model, more choose to participate in the labour force when the expected search period decreases (more vacancies are posted when the unemployeds' search activity increases). In the Ministry of Finance's micro-simulation model, there is, however, no link between labour force participation and the state of the labour market, which may lead us to underestimate the effect on labour force participation and employment. According to internal working papers at the Ministry of Finance, which estimated the relationship between changes in the trend-adjusted (HP filter) labour force and employment using Swedish data (1980–2008), an increase in employment of one unit (persons) leads to an increase in the labour force of around 0.25 units. Thus, all else being equal, labour force participation will change by about 1/3 of the change in unemployment. If this effect is included in the calculations, there will be a further increase in the size of the labour force, employment and annual working hours of just over 0.05 per cent. The middle row in Table 4.1 shows the results in equilibrium excluding wage formation effects when taking into account both that labour market participation is affected by the labour market situation and that part of the increase in the labour force leads to an increase in unemployment rather than in employment.

### 4.3.3 Labour market equilibrium with wage adjustment

The micro-simulation model used by the Ministry of Finance does not take into account that the in-work tax credit may affect wage formation. In the preceding theoretical review, it was shown that the in-work tax credit makes work relatively more profitable, but when the replacement rate in the event of unemployment decreases, wage demands will temporarily moderate. To estimate the expected effects of the in-work tax credit, including the effects via wage formation, parameters which have been estimated in previous empirical studies are used in this section. It is evidence

from two types of studies in particular that can be used in making an estimate: macro studies of unemployment/wage formation for panels of OECD countries and macro studies of Swedish wage formation. These estimates capture both individual effects and wage formation effects, and can therefore be used to calculate the effect on unemployment including the effects via wage formation.

The empirical model in the OECD panel studies consists of an equation in reduced form where unemployment is the dependent variable and policy variables/institutional factors explanatory variables.[35] Usually, time- and country-specific effects and output gaps are also controlled for. This general specification is consistent with a number of theoretical labour market models, for example, matching models (Pissarides (2000) and wage-setting/price-setting models (Layard *et al* (1991). Table 4.2 summarises the results from a limited but probably representative sample of OECD panel studies. The effect of a change in the replacement rate is usually described in terms of a quasi-elasticity, which shows how many percentage points unemployment changes when the replacement rate increases by one percentage point. All studies find that a reduction of the replacement rate has a negative effect on unemployment. The estimated effects (quasi-elasticities) vary between 0.08 and 0.16 percentage points.

[35] The determining factors usually included are, for example, unemployment benefit schemes, trade union bargaining power, the extent of centralisation of wage formation, labour legislation, product market rules, ALMP, minimum wages and housing policy.

**Table 4.2 The effect (percentage points) on equilibrium unemployment of a benefit reduction of 1 percentage point**

| Study | Data | Method | Effect |
|---|---|---|---|
| Bassanini & Duval (2006) | 20 OECD countries, 1982–2003 | Fixed effects panel; OLS | 0.12 p.p. |
| Nickell *et al* (2005) | 20 OECD countries, 1961–1995 | Random effects panel, FGLS | 0.14 p.p.[b] |
| Boone & Van Ours (2004) | 19 OECD countries, 1985-1999 | Fixed effects panel, OLS | 0.08 p.p. |
| Nunziata (2002) | 20 OECD countries, 1960–1995 | Fixed effects panel, FGLS | 0.16 p.p.[b] |
| Daveri & Tabellini (2000) | 14 OECD countries, 1965–1995 | Fixed effects panel, OLS | 0.14 p.p. |
| Elmeskov *et al* (1998) | 19 OECD countries, 1983–1995 | Random effects panel, FGLS | 0.11 p.p. |
| Scarpetta (1996) | 17 OECD countries, 1983–1993 | Random effects panel, FGLS | 0.13 p.p.[a] |

Note: The replacement rate is measured, unless otherwise stated, as an average (across differing lengths of unemployment, income levels and household composition) of before-tax benefits divided by previous before-tax income.

a. The replacement rate is in this study the after-tax benefit as a percentage of previous after-tax income.

b. Quasi-elasticities have been calculated by evaluating reported elasticities at a level of unemployment of five per cent and a replacement rate of 70 per cent.

A number of studies of Swedish wage formation have attempted to estimate the effects of the degree of generosity of the unemployment benefits. Most of these studies have not succeeded in estimating significant effects on wage formation from the benefit level (see, for example, Forslund & Kolm (2004)). Two relatively new Swedish studies indicate, however, that the effects in Sweden may be larger than those estimated in Bassanini & Duval (2006), Nickell *et al* (2005) and other studies referred to in Table 4.2. Forslund *et al* (2008) estimate wage formation effects of changes in the replacement rate by estimating a model with a wage setting equation and an equation for labour demand. The results

show that the elasticity of equilibrium unemployment with respect to the replacement rate may be as large as 3, which corresponds to a quasi-elasticity of just over 0.2. The results in Fredriksson & Söderström (2006), which use regional panel data, also indicate that the elasticity of Swedish equilibrium unemployment may be considerably higher than that in the OECD panel studies. The reported elasticity of 3.4 indicates that a reduction of the replacement rate of 10 percentage points would reduce equilibrium unemployment by around 2.5 percentage points.

Even if we disregard the fact that there is uncertainty attached to the estimates of all the parameters discussed in this section and that they therefore have more or less broad confidence intervals, we can see that there is considerable uncertainty about how a reduction in the replacement rate will affect equilibrium unemployment. While the results in some studies based on Swedish data indicate that Swedish unemployment could be more sensitive than average for changes in the replacement rate[36], there is so far too little empirical support for this to serve as the basis for a credible estimate of the effect. The OECD panel studies should also be treated with caution. The econometric specification with pooled data means, with some specific exceptions, that the effects of changes in policy variables/institutions are assumed to be the same for all countries. The fact that the estimates do not seem to be particularly robust also confirms that this specification is problematic. Bassanini & Duval (2006) find, for example, that a change in the replacement rate only has moderate (and insignificant) effects on employment in countries with a relatively ambitious ALMP. Elmeskov *et al* (1998) find on the other hand that the replacement rate has a *greater* effect on employment in countries with a relatively ambitious ALMP.

The existing uncertainty calls for some caution when estimating the elasticity in Sweden. While it is unclear how Sweden compares to an "average country", it appears reasonable to use the relatively extensive and well-established research using panel data for different OECD countries as a basis for determining elasticity. In the studies referred to in Table 4.2, the estimated quasi-elasticities

[36] One possible explanation for the large effects in Sweden may be that the replacement rate is high in an international comparison. Simulation studies which analyse the characteristics of standard models show a clear non-linear correlation between unemployment and the replacement rate – the equilibrium effects on employment of changes to the replacement rate are higher the greater the replacement rate is to begin with (see, for example, Holmlund (1998) and Hornstein *et al* (2005)).

vary between 0.08 and 0.16 percentage points. The Ministry of Finance estimates that the effect on equilibrium unemployment of a change in replacement rate lies in the middle of this interval, i.e. 0.12. This can thus be interpreted to mean that a reduction in the replacement rate of one percentage point is expected to reduce equilibrium unemployment by 0.12 percentage points.

The next step is to calculate how the in-work tax credit affects the financial return to work compared with being unemployed with unemployment benefits, i.e. how the reform affects the replacement rate. These calculations are based on a sample from HEK2008 of around 18 000 individuals aged between 19 and 64 (about 4.5 million individuals taking into consideration sampling weights).[37] We have calculated the disposable income (after-tax income and transfers) for this sample using the micro-simulation model when the individual collects unemployment benefits the whole year and when the individual works full time (1 800 hours per year). The replacement rate is the ratio between these incomes. The in-work tax credit reduces the replacement rate by increasing the denominator (disposable income in work) of the ratio. The numerator, i.e. disposable income in unemployment, is, however, unchanged.

The calculations show that the in-work tax credit reduces the replacement rate by 5.1 percentage points from 65.7 per cent to 60.6 per cent. If we multiply this change of 5.1 percentage points by the selected quasi-elasticity of 0.12, the result obtained is that the in-work tax credit can be expected to reduce equilibrium unemployment by 0.61 percentage points. When we take into account the effects on equilibrium unemployment via wage formation, we thus obtain a considerably larger effect on equilibrium unemployment than the 0.17 per cent reported above in the case without effects on wage formation. The larger effect on equilibrium unemployment means in turn that the effect on employment and annual hours worked will be considerably greater.

A temporary moderation in the gross wage growth can, however, as discussed in Section 4.2.3 above, partly counteract the increase in labour force participation that occurs because the in-work tax credit increases the return to paid employment after tax.

[37] Hushållens ekonomi, HEK, [Household finances] is an annual survey carried out by Statistics Sweden. HEK is based on an annual cross-section of the population, and thus it is not the same individuals who are studied over time. The sample size has varied over the years from about 10 000 to about 19 000. Both the individuals sampled and members of their households are included in the survey.

To include the effect that this is expected to have on labour force participation, the analysis takes into consideration that the four steps of the in-work tax credit are expected to lead to wages in general being around 1.1 per cent lower than without the in-work tax credit (see the section on the wage effects of government policy in Chapter 3).[38] As a result, the increase in labour force participation in the micro-simulation model will be adjusted downwards by 0.14 per cent (about 6 500 individuals).

To take into consideration the link between labour force participation and the labour market situation, the same rule is applied that was used in the previous section, i.e. that the labour supply is changed by 1/3 of the change in unemployment. This operation results in an additional increase in the size of the labour force of almost 0.2 per cent.

The effects of the in-work tax credit in equilibrium including the effects through wage formation are thus obtained by supplementing the supply calculations in Section 4.3.1 with

- an expected decrease in equilibrium unemployment of 0.61 percentage points,
- a reduction in labour force participation of 0.14 per cent due to a temporary moderation in wage growth, and
- an increase in labour force participation of just under 0.2 per cent due to the improved labour market situation.

The results are shown in Table 4.1 (the lowest row) and show, inter alia, that the labour force is expected to increase by 1.63 per cent and employment by 2.28 per cent.

Finally, it should again be emphasised that a not inconsiderable degree of uncertainty is attached to the estimates in this report. To illustrate this, it may be of interest to study how sensitive the results are to the elasticity of equilibrium unemployment with respect to the replacement rate. In the studies referred to in Table 4.2, the estimated quasi-elasticities vary between 0.08 and 0.16 percentage points. The calculations in Table 4.1 are based on the assumption that the effect on equilibrium unemployment of a change in the replacement rate is in the middle of this range, i.e.

[38] Westermark (2007) estimates an empirical model for wage formation in Sweden and calculates that wages during the period 2007 to 2009 would have increased by 1–1.5 per cent more had the first two steps in the in-work tax credits and the unemployment insurance benefit reforms not been implemented.

0.12. In Table 4.3, calculations are also presented for the end points in the range 0.08–0.16. With a quasi-elasticity of 0.08, the reduction in equilibrium unemployment will be around 0.2 percentage points less than if we apply a quasi-elasticity of 0.12. The increase in employment and the increase in hours worked are reduced by about 0.3 per cent because of the lower elasticity. With a quasi-elasticity of 0.16, the decrease in equilibrium unemployment is strengthened by just over 0.2 percentage points compared with if we apply a quasi-elasticity of 0.12. The increase in employment and the increase in hours worked will be strengthened by about 0.3 per cent due to the higher elasticity.

**Table 4.3** **Effects of the in-work tax credit. Labour market equilibrium including effects via wage formation. Sensitivity depending on choice of unemployment elasticity with respect to a change in the replacement rate**

| (Quasi)elasticity | Em-ploy-ment (%) | Unemp-loyment (p.p.) | Labour force (%) | Hours worked (%) | Average working hours employed (%) |
|---|---|---|---|---|---|
| 0.08 | 2.00 | -0.41 | 1.56 | 2.61 | 0.60 |
| 0.12 | 2.28 | -0.61 | 1.63 | 2.92 | 0.62 |
| 0.16 | 2.57 | -0.82 | 1.70 | 3.23 | 0.64 |

In addition to the purely statistical uncertainty, there are a number of potential sources of error. For example, the in-work tax credit could possibly lead to an increased inflow into the labour force of individuals who want to work but who have a low probability of finding a job. If so, it would mean an overestimation of the effect on equilibrium unemployment and employment. On the other hand, we do not take into account that students may choose to change their labour supply due to the in-work tax credit. Thus, the effects on labour force participation and employment are probably somewhat underestimated. In our opinion, we currently cannot quantify these two counteracting effects on employment in a credible way.

# References

Bassanini, A. & R. Duval (2006), "Employment Patterns in OECD Countries: Reassessing the Role of Policies and Institutions", OECD Economics Department Working Papers 486, OECD Economics Department.

Boone, J. & J. Van Ours (2004), "Effective Active Labor Market Policies", IZA Discussion Paper, No. 1335, November.

Daveri, F. & G. Tabellini (2000), "Unemployment, Growth and Taxation in Industrial Countries", *Economic Policy*, vol. 15(30), 47–104.

Elmeskov, J., J. Martin & S. Scarpetta (1998), "Key Lessons for Labour Market Reforms: Evidence from OECD Countries' Experience", *Swedish Economic Policy Review*, Vol.5, No. 2.

The Ministry of Finance (2009), "Arbetsutbudseffekter av reformer på inkomstskatteområdet 2007–2009", Report from the Economic Affairs Department 2009:1.

The Ministry of Finance (2010), "Arbetsutbudseffekter av ett förstärkt jobbskatteavdraget och förändrad statlig inkomstskatt", Ds 2010:37.

Flood, L. (2010), *En skattepolitik för både innan- och utanförskapet*, SNS.

Forslund, A. & A-S. Kolm, (2004), "Active Labour Market Policies and Real-Wage Determination – Swedish Evidence, Accounting for Worker Well-Being", in S. Polachek (ed.), *Research in Labor Economics*, Vol. 23, Elsevier, North-Holland.

Forslund, A., N. Gottfries & A. Westermark (2008),"Prices, Productivity and Wage Bargaining in Open Economies", *Scandinavian Journal of Economics* 110.

Fredriksson, P. & M. Söderström (2008), "Do Unemployment Benefits Increase Unemployment? New Evidence on an Old Question", IFAU Working Paper 2008:15.

Holmlund, B. (1998), "Unemployment Insurance in Theory and Practice", *Scandinavian Journal of Economics* 100(1), 113–141.

Hornstein, A, P. Krusell & G. Violante (2005), "Unemployment and Vacancy Fluctuations in the Matching Model: Inspecting the Mechanism", *Federal Reserve Bank of Richmond Economic Quarterly* Vol 91.

Kolm, A-S. & M. Tonin (2010) "In-Work Benefits and Unemployment", in course of publication in *International Tax and Public Finance.*

Layard, R., S. Nickell & R. Jackman (1991), *Unemployment: Macroeconomic Performance and the Labour Market*, Oxford University Press, Oxford.

Nickell, S., L. Nunziata & W. Ochel (2005), "Unemployment in the OECD since the 1960s. What do we know?", *Economic Journal*, 115, 1–27.

Nunziata, L. (2002), "Unemployment, Labour Market Institutions and Shocks", Nuffield College, University of Oxford, Working paper 2002-W16.

Pissarides, C. (2000), *Equilibrium Unemployment Theory*, MIT Press, Cambridge.

Scarpetta, S. (1996), "Assessing the Role of Labour Market Policies and Institutional Settings on Unemployment: A Cross-Country Study", OECD Economic Studies, no. 26.

Westermark, A. (2008), "Lönebildningen i Sverige 1966–2009", *Studier i Finanspolitik* 2008/6, Finanspolitiska rådet.

# 5 Effects of reforms in unemployment insurance

## 5.1 Summary

During its previous term of office, the Government made extensive reforms to the unemployment insurance system. The aim was to increase insurability and to strengthen the role of insurance as adjustment insurance between two jobs. The goal was to increase employment.

This report presents the Ministry of Finance's estimates of the effects of the reforms on employment and equilibrium unemployment. This policy is expected to help reduce equilibrium unemployment by about 0.7 percentage points and to increase employment by about 1.0 per cent in the long run. In addition, equilibrium unemployment is expected to decrease by about 0.6 percentage points in the long run due to the unchanged ceiling in the insurance until the end of 2011. It should be noted that considerable uncertainty is attached to these estimates.

**Table 5.1 Summary long-term estimate, age group 15-74**

| | Labour force participation (%) | Employment (%) | Unemployment (p.p.) | Hours worked (%) |
|---|---|---|---|---|
| Reduced benefit level | 0.21 | 1.10 | -0.83 | 0.99 |
| Unemployment contribution | 0 | 0 | 0 | 0 |
| Fewer benefit days for part-time unemployed | -0.03 | -0.12 | 0.09 | -0.03 |
| Total policy effects | 0.18 | 0.98 | -0.74 | 0.96 |
| Unchanged ceiling 2006–2011 | 0.15 | 0.78 | -0.59 | 0.70 |

Note: The effects are interpreted in Labour Force Survey (LFS) terms.This means, for example, that a part-time unemployed person who goes up to full time will affect hours worked but not employment. The effects on equilibrium unemployment are calculated for those aged 65 or younger (see text). The age group 65-74 is assumed to be unaffected by the reforms. The effect for those aged 15-74 is then obtained by scaling by a factor of 0.98, which reflects the relationship in the LFS figure between the groups younger than 16–64 and aged 15–74. The newly employed are estimated to work 90 per cent of the time worked by those already employed. The effect on hours worked is thus 0.9*the change in employment.

A number of reforms have contributed to lowering the replacement rate in unemployment: the reduced ceiling during the first 100 benefit days, the decrease in the benefit level, the maximum of 300 benefit days and more qualifying days. A reduction in the number of members of the unemployment funds also reduces the replacement rate when individuals no longer qualify for income-related benefits. The reduced benefit levels affect unemployment via a number of channels, mainly via the unemployed person's search behaviour and wage formation. The replacement rate is expected to decrease overall by about 7.1 percentage points due to the reforms and equilibrium unemployment to decrease by more than 0.8 percentage points in the long run.

Labour market participation is expected to be affected by a change in equilibrium unemployment. If equilibrium unemployment decreases it is, all else being equal, more attractive to enter the labour market. With a reduced replacement rate, there is, however, a counteracting qualification effect, i.e. it is less attractive to be part of the labour force when the replacement rate decreases. The effect on the labour force of changed equilibrium unemployment is estimated to be ¼ of the change in equilibrium

unemployment.[39] It is assumed that the increase in labour will be distributed between employment and unemployment in accordance with their relationship in equilibrium.

The replacement rate and thus equilibrium unemployment are also affected by the lack of change in the ceiling in nominal terms over time because increasing wages decrease the actual replacement rate. This is regarded as a regulatory and not a policy effect. An unchanged ceiling between 2006 and 2011 means a decrease in the replacement rate of about five percentage points and a decrease in equilibrium unemployment of about 0.6 percentage points. This is regarded as a regulatory and not a policy effect. It should be noted that the ceiling was unchanged between 2002 and 2006, which also affected the actual replacement rate. The starting point for calculating estimates in this report is, however, estimates based on what has taken place since 2006. Previous developments are discussed in Chapter 3.

The differentiated contributions to the Unemployment Funds (the unemployment contribution) affect the labour market in several ways. First, the threshold effect increases (replacement rate) as the contribution is only paid by employed members. A higher replacement rate is expected to lead to a long-term decline in employment of about 1 000 people. Second, there will be stronger incentives for moderate wage formation from a macroeconomic perspective as part of the cost of an additional unemployed member will be borne by the unemployment funds' employed members. Counteracting this wage formation effect, however, there is not enough overlap between the funds and the collective bargaining areas, many agreements do not specify any wage increase and the unemployment contribution does not cover activity support (i.e. the long-term unemployed and those in ALMP programmes). It is very difficult to assess the impact of the wage formation effect on employment, but it is probably small. The positive effects on employment via wage formation are estimated to be of the same magnitude as the negative threshold effects, i.e. the net effect of the reform is expected to be zero.

[39] According to internal working papers at the Ministry of Finance which has estimated the relationship between changes in the trend-adjusted (HP filter) labour force and employment using Swedish data (1980–2008), an increase in employment of one unit (individuals) will lead to an increase in the labour force of around 0.25 units. All else being equal, this will lead to labour force participation changing by around 1/3 of the change in unemployment. The method captures cyclical relationships rather than structural covariation, but is used as the best approximation of labour force participation. The effect has been decreased to ¼ due to the qualification effect.

The Ministry of Finance expects a decrease in the number of part-time unemployed after the restriction in the number of benefit days, but the effect is relatively small. There is no empirical basis for estimating this effect. The estimate thus cannot be more than an educated guess. All in all, the number of part-time unemployed is estimated to decrease by 6 000 people in the long run; 3 000 due to the reduced inflow from unemployment and 3 000 due to the increased outflow. The outflow is expected to go in equal parts to the full-time employed and unemployment.

### *Demarcations*

The reforms in unemployment insurance affect the labour market in several ways and it is very difficult to make a complete estimate of overall policy effects. First, there are the effects of the quantified reforms in Table 5.1 which it has not been possible to take into account (see Table 5.2). Secondly, there are the reforms that have not been quantified at all (see Table 5.3).

**Table 5.2 Unestimated effects of the quantified reforms**

| | Comments | Employment | Unemployment |
|---|---|---|---|
| *Benefit level* | Productivity | 0 | 0 |
| *Unemployment fee* | Loss of members affects the insurance's legitimacy and may lead to undermining the Swedish collective agreement model | - | + |
| | The loss of members can contribute to more individuals receiving financial assistance with high marginal effects | - | + |
| *Part-time unemployment* | Wage formation | ? | ? |
| | Flow unemployment to full time | ? | ? |

There is some evidence that a higher replacement rate contributes to higher productivity. However, what effect higher productivity might have on employment and equilibrium unemployment is unclear, but in the long run it is probably small. The number of members in the unemployment insurance funds has decreased, which is probably partly because the insurance has become less attractive. A smaller number of members undermines the

legitimacy of unemployment insurance and may also through reduced trade union membership rates undermine the position of collective agreements in the Swedish labour market. It has not been possible to quantity effects of this kind, but they probably have a negative effect on the labour market, wage formation and employment. To the extent that individuals without income-related benefits become unemployed, there is also a risk that they will receive financial assistance, a benefit system with high marginal effects, which in this case probably affects employment negatively. The limitation in the number of benefit days for part-time unemployment may affect wage formation. It is not clear how much and to what extent this in turn affects employment and unemployment. It is also possible that the limitation may affect the direct flow from unemployment to full-time work.

Table 5.3 summarises the major reforms in unemployment insurance that have not been quantified. The Ministry of Finance has not been able to quantify these reforms as the empirical basis is too limited (or non-existent). However, it is possible to discuss qualitatively how the reforms affect employment. The abolition of student conditions and the termination of the tax reduction for unemployment insurance fees may conceivably affect employment negatively, while other reforms in Table 5.3 probably affect employment positively. An educated guess on the net effect of the non-quantified reforms is that it is probably small.

**Table 5.3 Unquantified reforms in unemployment insurance**

| | Comment | Employment | Unemployment |
|---|---|---|---|
| Terminated student condition | Fewer young people go to the Public Employment Service; more receive financial assistance with high marginal effects | - | + |
| Terminated tax reduction for unemployment fund fees | Increases the threshold effect | - | + |
| Stricter work conditions | Benefit restrictions | + | - |
| Termination of the right to unemployment benefits during breaks in studies | Benefit restrictions | + | - |
| Reduced exempt period from 7 to 5 years | Benefit restrictions | + | - |
| Changed basis for calculating the income on which the benefit is based[1] | Benefit restrictions | + | - |

Note: [1] The basis for calculation has been changed so that the benefit is calculated according to the past 12 months' income. Previously, only months with income had been used for these calculations.

Finally, it is worth noting that the report is a basis for calculation with the aim of estimating the impact on unemployment and employment. No attempts have been made to calculate welfare effects or to strike a balance between efficiency and distribution aspects.

*Arrangement*

The report is arranged as follows. Section 5.2 briefly describes the design of unemployment insurance. Section 5.3 analyses the changes in the benefit level. Section 5.4 contains an assessment of the effects of the changes in the financing of unemployment insurance and Section 5.5 discusses the limitation in the number of benefit days for part-time unemployment.

## 5.2 Unemployment insurance in brief

The aim of unemployment insurance is to provide individuals with income security in the event of unemployment. Unemployment has a high cost for the affected individuals and an insurance solution is therefore financially beneficial for the individual. However, effective income protection is also in the public interest; in addition to the distribution aspects, marked variations in individuals' income and consumption possibilities damage the economy.

In most countries, unemployment insurance is run or subsidised by the state. One reason is that it is difficult to organise private market solutions. With limited information about individuals' risk of employment, private insurance companies would set their premiums according to an average risk of unemployment. Individuals with a high risk would find it profitable to take out insurance while individuals with a low risk would choose not to do so. The existence of "asymmetric" information and adverse selection would lead to the insurance company making a loss.

### *Organisation*

The first unemployment insurance funds in Sweden were established by trade union organisations. These early insurances were wholly financed by the trade unions' members. Later these voluntary systems developed into state subsidised insurance schemes administered by the trade unions, a system which we have largely had since the 1930s. This model of unemployment insurance is called the Ghent model, after the city where it originated. It is highly probable that the Ghent system has contributed to the high level of unionisation, particularly bearing in mind that the model involves substantial state subsidies. (Björklund *et al*, 2006)

### *Membership rates in the unemployment insurance funds*

A person who becomes a member of a trade union also automatically becomes a member of an unemployment insurance fund, although it is possible to be a member of a fund without at the same time being a member of a trade union. But relatively few

fund members have chosen the direct membership option. However, the number of fund members not belonging to trade unions has risen in recent years.[40]

Between 1975 and 2000, the percentage of the labour force in unemployment insurance funds increased from 67 to almost 90 per cent. The number of members has subsequently decreased: in 2006, 82 per cent of the labour force belonged to a fund (or about 3.8 million members) and in 2010, the membership accounted for about 72 per cent of the labour force (3.4 million members).[41] There are probably several explanations for the decline in membership: a strong economy, the reduced propensity among young people to apply for membership in a fund, reduced benefits, stricter conditions and perhaps, above all, higher fees.

In January 2011, the 32 unemployment insurance funds had 3 371 250 members. The size of the UIAs varies: the three largest funds, i.e. Akademikernas (AEA), Unionen and Kommunalarbetarnas, have over a half million members while the smallest funds only have a thousand members.

### *Financing*

Unemployment insurance has to a great extent been financed by grants from the state. In 2005, these grants amounted to around 90 per cent of the actual disbursements; unemployment insurance payments amounted to around SEK 30 billion and contributions from unemployment insurance funds to the state totalled around SEK 3 billion. Self-financing in 2005 was thus approximately 10 per cent. State grants decreased as a result of the government bill "En arbetslöshetsförsäkring för arbete" (An Unemployment Insurance for Work).[42] In January 2007, a higher financing contribution was introduced, which was replaced in 2008 by an unemployment contribution. These contributions are only paid by employed members and differ from one fund to another. Self-financing was around 36 per cent in 2010.[43]

[40] Since 1998, there is also "Alfakassan" a fund which is independent of the trade unions. In June 2010, Alfakassan had around 74 000 members.
[41] See Forslund (2008) and Kjellberg (2008, 2010) for an analysis of membership changes.
[42] See Government Bill 2006/07:15.
[43] Disbursements were SEK 17.6 billion and financing and unemployment contributions totalled SEK 6.4 billion.

*Benefit terms*

Unemployment benefits consist of two parts: the basic benefit and the income-related benefit. To obtain the basic benefit, two conditions must be met. The *work condition* requires that a person must have worked at least 80 hours per month for at least six months during the past 12 months.[44] *The basic condition* stipulates the conditions for the unemployed. The unemployed person must: (1) be willing and able to take employment for at least three hours per working day (17 hours a week), (2) be willing and able to take suitable work, (3) be registered as looking for work at the Public Employment Service, (4) draw up an action plan with the Public Employment Service and (5) actively search for work.

To receive the income-related benefit, the unemployed person must also belong to an unemployment nsurance fund. This is expressed in a *membership condition* which means that the unemployed person must have been a member of a fund for a continuous period of 12 months.

## 5.3 The benefit level

### 5.3.1 Estimated changes

Before 2007, the unemployment benefit was 80 per cent of the previous income up to a maximum daily benefit, the "ceiling". The ceiling was SEK 730 for the first hundred benefit days and SEK 680 subsequently. On 1 January 2007, the higher ceiling for the first hundred benefit days was eliminated, i.e. this ceiling was reduced from SEK 730 to SEK 680. As of March 2007, the benefit level was reduced after 200 benefit days, from 80 to 70 per cent, and it was no longer possible to qualify for a new benefit period after 300 days. People with dependants were entitled to benefits for 450 benefit days. Since July 2007, once the benefit period is finished, the unemployed person is transferred to the job and development guarantee with a benefit level of 65 per cent.[45]

For young people (under the age of 25), the benefit level is reduced more quickly: from 80 to 70 per cent after 100 benefit days

[44] If the individual does not meet this condition, he or she must have worked for at least 480 hours during a continuous period of six months with at least 50 hours of work per month.
[45] Benefits paid in the form of activity support are also taken into account in this section, i.e. within the framework of unemployment insurance.

and from 70 to 65 per cent after 200 benefit days. The faster phasing out applies to young people in the job guarantee scheme with activity support. The ceiling is the same as for older people, i.e. SEK 680.

No unemployment benefit is paid for the first days of an unemployment spell, the qualifying period. In July 2008, the government increased the number of qualifying days in unemployment insurance from five to seven.

Table 5.4 summarises the changes in rules made in 2007 and 2008.

**Table 5.4 Benefit rules before and after the reforms**

| | Before | After | |
|---|---|---|---|
| | | <25 years old: | ≥25 years old: |
| Maximum daily benefit (SEK per day) | day 1–100: 730<br>day 101–: 680 | 680 | 680 |
| Basic benefit (SEK per day) | 320 | 320 | 320 |
| Benefit level | 80 % | day 1–100: 80 %<br>day 101–200: 70 %<br>day 201–: 65 % | day 1–200: 80 %<br>day 201–300: 70 %<br>day 301–: 65 % |
| Qualifying days | 5 | 7 | 7 |

Note: Individuals with dependants receive 70% of the benefit for 450 days.

Since 2007, the ceiling in the insurance scheme has been unchanged. The estimate also includes a regulatory effect of rising wages and the unchanged ceiling until the end of 2011.

### 5.3.2 Calculation principle

The size of the unemployment benefit has been shown both theoretically and empirically to affect the level of employment. The amount by which unemployment is affected by changes in the unemployment benefit is usually shown by an elasticity. This elasticity shows how large a percentage change in unemployment follows from a one percentage change in the replacement rate, see equation (1). In empirical research, the replacement rate usually

refers to the proportion of gross wage compensated for in the event of unemployment.

(1)

$$Elasticity = \frac{\% \Delta\ unemployment}{\% \Delta\ replacement\ rate}$$

The effect on employment can be quantified, given an idea of the effect of the reforms on the replacement rate and an estimate of the elasticity. It should be borne in mind here that the focus is on the effects on unemployment (and employment).[46]

The replacement rate affects a number of margins in the labour market. The total effect on unemployment can, put simply, be described as a sum of different parts. Equation (2) describes schematically what affects the level of unemployment. Unemployment is determined by how many become unemployed (the inflow) and how long they remain unemployed (the duration). The inflow to unemployment is determined in this simplified model by how much individuals exert themselves at work (effort) and the prevailing wage. The duration is determined by the unemployeds' search activity and the wage.

(2) Unemployment = Inflow * Duration =
I("effort", wage) * V(search activity, wage)

The extent to which unemployment changes in response to changes in the replacement rate can then be schematically decomposed as expressed in equation (3). The total elasticity consists, besides the partial elasticities "effort" and search activity, of a wage formation elasticity. When the replacement rate changes, the labour market eventually adjusts to a new equilibrium, where wages and firms' recruitment behaviour and propensity to create new jobs are adjusted.

(3) $$e^{\text{total}} = e^{\text{effort}} + e^{\text{search activity}} + e^{\text{wage formation}}$$

[46] There is some support indicating that the replacement rate affects matching quality but this effect will not be estimated in this chapter.

The empirical research can be used to quantify the different components. Research can in principle be categorised into microstudies that calculate the search elasticity and macrostudies that calculate the total elasticity.

### 5.3.3 Empirical studies of elasticities

*Search elasticity*

Holmlund (1998) summarised the empirical research at the end of the 1990s and at that time drew the conclusion that there was fairly strong support indicating that the benefit level affected the outflow from unemployment (the duration), but there is no consensus in the research about the size of this effect.

There are three relatively new studies (based on Swedish data) of how the unemployment benefit affects the flow from unemployment to work. Carling *et al* (2001) estimate the effects of the the unemployment insurance benefit reduction in 1996 from 80 to 75 per cent of previous income on the flow from unemployment to work. This effect is identified by a comparison with a group that was not affected by the reform – the unemployed with sufficiently high previous income to be subject to the ceiling for daily benefit rather than the maximum replacement rate. The results imply that the elasticity of equilibrium unemployment with respect to changes in the benefit level is around 1.5. Harkman (1997) uses a group without unemployment benefits as a control group to study the reduction of the benefit level in 1993. The results showed effects that were barely significant. Røed *et al* (2002) identify the effect by differences between the benefit systems in Norway and Sweden. They found that the benefit level had a significant, with an elasticity of around 0.5.

Forslund (2008) discusses these three studies and his conclusion is that Carling *et al* (2001) is the most credible study, but he also notes that the estimated elasticity is high in comparison with that found in other studies.[47]

There are also a number of foreign studies, mainly American, which calculate the partial search elasticity. Krueger and Meyer (2002) review international research studies and conclude, despite a

[47] See also Bennmarker et al (2007). Johansson & Selén (2000) have called into question the large effects (and identification) in Carling et al (2001).

considerable spread in the results, that the (search) elasticity of unemployment with respect to changes in the benefit level is approximately equal to one.[48]

#### *5.3.3.1.1 Total elasticity*

Macrostudies capture the total effect on unemployment of changes in the replacement rate, i.e. the total of wage formation effects and the partial effort and search effects. Even though the replacement rate is estimated slightly differently in the macrostudies, the starting point is usually the share of gross wage replaced in the event of unemployment.

There are a number of macrostudies which use panel data for different countries, making use of the variation in institutions and reforms to draw conclusions about unemployment and employment. Several OECD studies show that lower unemployment insurance benefit levels covary with lower levels of unemployment.[49] The results measure how much unemployment changes in percentage points for a one percentage point change in the replacement rate, which we refer to here as quasi-elasticity. According to Layard *et al* (1991), one of the earliest studies in this field, the quasi-elasticity is between 0.2 and 1. Later studies find smaller effects; Bassanini & Duval (2006) find a quasi-elasticity of around 0.12 while Nickell *et al* (2005) find a slightly larger effect. The latter studyalso takes into account whether the benefit decreases with the duration of unemployment. These quasi-elasticities can be converted into elasticities by being evaluated at average levels of unemployment and benefits. For example, Nickell *et al's* quasi-elasticity for Sweden corresponds to an elasticity of about 1.9 and Bassanini & Duval's of about 1.5 (Forslund, 2008). It should be noted that Bassanini & Duval's average effect is less in countries with ALMP, such as Sweden.

Two relatively new Swedish studies indicate that the effects in Sweden may be greater than those estimated in Bassanini & Duval (2006) and Nickell *et al* (2005). Fredriksson & Söderström (2008) and Forslund *et al* (2008) show that the total elasticity may be as large

[48] There are also studies that show that the importance of the benefit level depends on the extent to which individuals have limited liquidity; see, for example, Chetty (2008).
[49] See the background report on the in-work tax credit for a more detailed discussion of these studies.

as 3.4 and 3 respectively.[50] One conceivable explanation for these large effects in Sweden could be that the benefit is high by international standards. Standard models show that the general equilibrium effects on unemployment of changed benefit levels are greater the higher the replacement rate is to begin with (Holmlund, 1998, and Hornstein *et al*, 2005). However, according to Forslund (2008), an elasticity of 3 is higher than that found in any later studies.

### 5.3.4 Elasticity estimates

The Ministry of Finance has estimated that the total quasi-elasticity is 0.12 (corresponding to an elasticity of around 1.5). This means that if the replacement rate decreases by 10 percentage points, equilibrium unemployment will decrease by 1.2 percentage points. It should be noted that this is the same elasticity as that used to evaluate the effects of the in-work tax credit on the change in the replacement rate.

The level of quasi-elasticity is set at an average value of the existing international studies. The existing uncertainty urges some caution when estimating the elasticities for Sweden. While it is unclear how Sweden compares to an "average country", it seems reasonable to base the estimate on the relatively extensive and well-established corpus of research that uses panel data for different subsets of OECD countries to determine the elasticity. While the results in some studies using Swedish data indicate that Swedish unemployment might be more than usually sensitive to changes in the replacement rate, the empirical support is still too thin to be able to serve as the basis for a credible impact assessment.

In the following calculations, only the total elasticity will be used, but it is still possible to decompose this as expressed in equation (3). The Ministry of Finance's estimate is that the parts appear to be as follows:

Total elasticity = 1.5 = 0(effort) + 0.5(search) + 1(wage formation)

[50] Fredriksson & Söderström (2008) use a regional equilibrium level.

### 5.3.5 The effect of the reforms on the replacement rate

The replacement rate affects both the unemployed and employed. As there is reason to believe that unemployed individuals appear to be different from those employed, the actual replacement rate will also differ between unemployed and employed. This is because the employed can not only be expected to have higher wages but also may have expected unemployment spells of different duration than the unemployed.

Accordingly, there are arguments for calculating the effect of the replacement rate separately for the unemployed and employed. In order to be able to determine the change in the replacement rate, we must, however know the individuals' *previous wage* and *duration of unemployment*. Information about the duration of unemployment for the unemployed can be found in Public Employment Service records and previous wages can be matched from the Wage Structure Statistics (Lönestrukturstatistiken). However, the employed have no observed unemployment spells. The assumption is made in this calculation that the average change in the replacement rate that can be calculated for the unemployed is representative for the whole of the labour market.[51] The following section contains a description of how the Ministry of Finance has calculated the change in the average replacement rate.

To determine the duration of unemployment for the unemployed, individual data are used from Public Employment Service records. These records include the date when individuals are registered at the Employment Service and the date they are deregistered.

The following strategy is used to determine the duration of unemployment. The sample consists of all individuals registered by the Employment Service as *unemployed* and *entitled to benefit* between 2004 and 2006. Every individual is then followed until she is deregistered by the Employment Service.[52] In this way, a registration period (calendar days) is established for all individuals. When the registration period is established, a gap of up to 30 days is

[51] This is a strong assumption. A perhaps slightly less strong assumption would be to estimate a duration model for the unemployed where the registration period at the Public Employment Service is explained by observable characteristics such as wage, age, gender, education etc. Assuming that the parameters are the same for the unemployed and the employed, the duration of unemployment can be predicted for the employed.

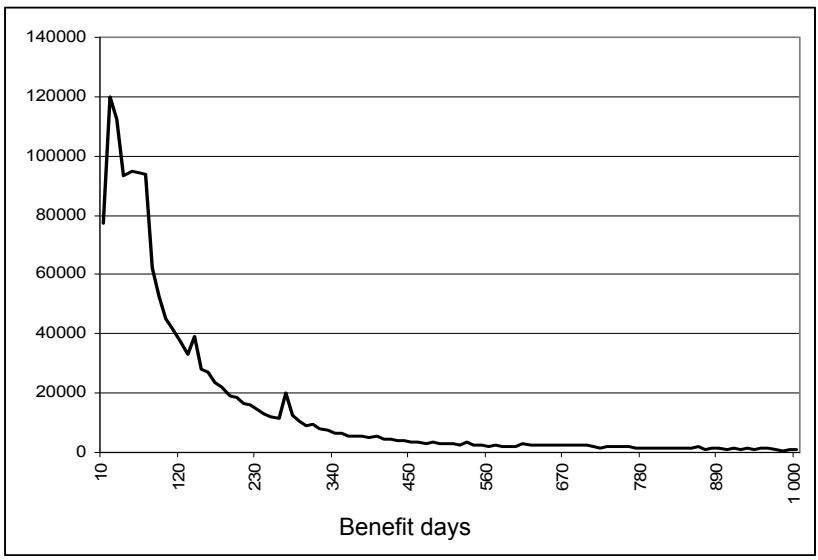
[52] In a strict sense, registration periods are used. As an individual can flow into and out of unemployment, the number of registration periods may exceed the number of individuals. The data contain a total of 778 373 unemployment spells.

permitted, i.e. if an individual is deregistered by the Employment Service for a short period and then re-registered, this is treated as a continuous period.[53] To apply the regulation, registration days must be converted into benefit days. This is done by assuming that all individuals draw five benefit days per week.

The duration of unemployment created by this method is assumed to be representative for individuals who become unemployed before and after the reforms. As the effects of the unchanged ceiling through to the end of 2011 will then also be estimated, it is assumed that the duration of unemployment is constant over time, i.e. unemployed individuals have the same expected duration of unemployment in 2006 and 2011.

Figure 5.1 shows the distribution of benefit days. As expected, the figure shows very clearly that most unemployment spells are of short duration.

**Figure 5.1 Distribution of unemployment spells**




*Source:* The Public Employment Service.

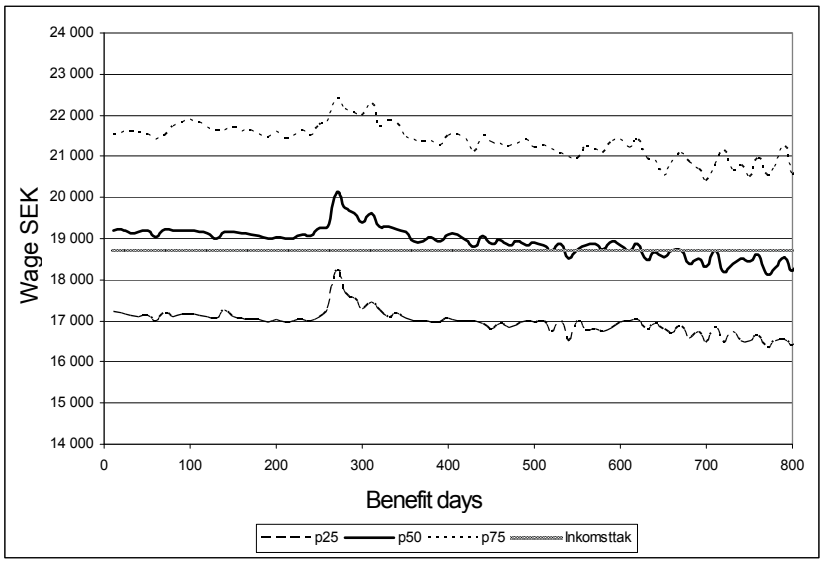
Wages from the Wage Structure Statistics are matched with the data. The Wage Structure Statistics are comprehensive statistics for the public sector, but with a 50 per cent sample from the private sector. There will thus be individuals in the data whose wage

[53] That a benefit period may continue for up to a year has not been taken into account.

cannot be observed. To increase the proportion of individuals with an observed wage, we use not only observed wages for the year of inflow to unemployment, but also the individual's wage from adjacent years, which are adjusted by wage growth in the economy to 2006 levels. All in all, wage observation is available for approximately 50 per cent of the observations in the data.[54]

Figure 5.2 shows the wage (25th, 50th and 75th percentile) for individuals grouped according to different benefit periods. The income limit at which an individual reaches the benefit ceiling is equivalent to about SEK 18 700; in 2006, 57 per cent of the unemployed reached the ceiling (the corresponding figure for 2011 is 79 per cent)[55].

**Figure 5.2 Wages according to benefit days**




*Source:* PES and Wage Structure Statistics, own estimates. The horizontal line (Inkomsttak) marks the income ceiling.

Not all individuals are entitled to income-related benefits: about 20 per cent of the unemployed receive only the basic benefit, approximately the same percentage as that for the employed. In

[54] Systematic non-response in the private sector may affect the calculations to some extent, as persons in the private sector on average earn more than those in the public sector. This may affect the level of the replacement rate, although it is unclear how it will affect the change in the replacement rate due to the reforms.

[55] It should be noted that the calculation method used means that the percentage reaching the benefit ceiling may differ slightly from the actual disbursements made.

2006, the unemployment insurance funds had about 3.8 million members, or about 80 per cent of the labour force. During 2007 and 2008, the number of fund members decreased by almost 500 000. Different individuals have probably had different reasons for leaving the funds, with both the economic situation and the attractiveness of the insurance playing a part. Since 2008, the number of members has risen by around 50 000. The Ministry of Finance estimates that the decline in membership to around 90 per cent (400 000 of 450 000) is attributable to the insurance being considered less attractive and membership a lower priority. This means that individuals who previously qualified for the income-related benefit now receive only the basic amount, i.e. the replacement rate falls sharply for these individuals. We cannot see from the data who leaves the unemployment insurance funds, but we simulate a decrease in membership of about 8 percentage points, corresponding to an aggregate membership reduction of about 400 000. It should be noted that a decline in the number of members has more effects in the labour market than decreasing the replacement rate. This is discussed in the next section in conjunction with the introduction of the unemployment contribution, which is probably the main explanation for the decrease in membership (even though the tax reduction through the in-work tax credit was greater than the increase in the contribution).

The average replacement rate is calculated for the the individual using wages, the number of benefit days and benefit rules (see Table 5.4). This calculation relates a projected average benefit per month to the monthly wage.

Table 5.5 shows how policies and the unchanged ceiling change the replacement rate.[56] The change in the rules reduces the replacement rate by about five percentage points, from 61.7 to 56.7 per cent. It is the reduction of the ceiling in particular that drives the average change, as most benefit periods are short. The decline in the number of members in the unemployment insurance funds lowers the replacement rate by about 2.1 percentage points. In all, the replacement rate decreases by about 7.1 percentage points due to the policies.

[56] It should be noted that group insurance through collective agreements has not been taken into account.

**Table 5.5 Changes in the replacement rate**

| | Benefit coverage (%) |
|---|---|
| 2006 | 61.7 |
| New rules | 56.7 |
| New rules, membership drop | 54.6 |
| **Total policy change, p.p.** | **- 7.1 p.p.** |
| New rules, membership drop, 2011 wages | 49.6 |
| **Unchanged ceiling to the end of 2011, p.p.** | **- 5.0 p.p.** |

The replacement rate and equilibrium unemployment are also affected by the ceiling remaining unchanged over time. This is because rising wages reduce the actual replacement rate.[57] This is regarded as a regulatory and not a policy effect. In all, the unchanged ceiling up to the end of 2011 means a 5.0 percentage point reduction in the replacement rate.

### 5.3.6 The reforms' expected effect

Between 2006 and 2015, both policies (benefit regulations and the membership drop), and the unchanged ceiling (regulations) are expected to affect the replacement rate. Policies reduce the replacement rate by about 7.1 percentage points which, with a quasi-elasticity of 0.12, means that unemployment will in the long run decrease by about 0.85 percentage points.

The unchanged ceiling to the end of 2011 will reduce the replacement rate by about 5.0 percentage points which, with the same quasi-elasticity, will decrease equilibrium unemployment by about 0.6 percentage points.

The effects on equilibrium unemployment are attributable to the group affected by the rules, i.e. those aged 65 or younger. The Ministry of Finance makes forecasts, however, for the age group 15-74. Thus, an estimate of how the rules affect the age group 65-74 is needed. Search intensity will hardly be affected as those over 65 are not entitled to benefits. Effects via wage formation could affect older workers, but the assumption is made here that the age group 65-74 is not affected by the reforms. This means that the effect on

[57] It is assumed that wages develop in line with the national average as measured in the national accounts for 2007–2009, and in accordance with the Ministry of Finance forecast for 2010–2011. All in all, wages are expected to increase by about 14 per centfrom 2006 to 2011.

equilibrium unemployment for the age group 15-74 is obtained by scaling the effect for those younger than 65 by a factor of 0.98, which relates to the respective proportions of the groups in the LFS.

An elasticity is used mainly to evaluate marginal changes in the underlying variable. The change in the replacement rate ensuing from the changes in unemployment insurance may be regarded as relatively significant All in all, the replacement rate decreases by about 12 percentage points (see Table 5.5).[58] A considerable degree of uncertainty is attached to estimating elasticity based on current research. Moreover, it is uncertain whether this elasticity can be used to make a correct calculation of the effects of large changes in the replacement rate. Both these considerations have been taken into account in the Ministry of Finance's elasticity estimates.

There are arguments that the effect of changes in the replacement rate should be diminishing. For example, the chosen elasticity implies that a reduction in the replacement rate of 50 percentage points would in principle eliminate equilibrium unemployment. This can hardly be considered realistic. It should, however, be noted that elasticity has possibly been set slightly low which could be justified based on a diminishing effect. This also means that further reductions in the replacement rate would probably lead to a revised and slightly lower elasticity.

## 5.4 Financing unemployment insurance

### 5.4.1 Estimated changes

The financing of unemployment insurance has been reformed in three steps: January 2007, July 2008 and July 2009. On 1 January 2007, the state subsidy for unemployment insurance was reduced. An increased financing contribution of SEK 240 a month was then introduced for employed members of the unemployment insurance funds. At the same time, the membership fees were differentiated between funds so that these fees depended on unemployment in the fund. However, the differentiation introduced in 2007 was moderate. The raised financing contribution was replaced by an *unemployment contribution* in July 2008. With the unemployment

[58] The in-work tax credit also affects the replacement rate. The replacement rate decreases by about five percentage points due to the in-work tax credit.

contribution, the employed members pay 33 per cent of the costs for these unemployed members. This change entails a reduction in the average fee of SEK 50–100 per month for most UIAs. From July 2009 onwards, the unemployment contribution was reduced by SEK 50 per month for employed members of funds that were not at the ceiling. The monthly contributions to the funds can at present be described according to the following formula: it should be noted that both the administration fee and the financing contribution[59] vary between funds:

$$\text{Contribution for employed} = \text{F} + \underbrace{\max\left[\min\left(\frac{0{,}33 * \text{payments}}{\text{number of employed}} - 50, 300\right), 0\right]}_{\textit{unemployment contribution}}$$

*Fee for unemployed* = *F* = administration fee + financing fee

The equations show that the employed, in addition to the administration fee and financing contribution, also pay an unemployment contribution which depends on disbursements under loss of income insurance for unemployment in the unemployment insurance fund to a maximum of SEK 300/month (and a minimum of SEK 0 /month).

### 5.4.2 Theoretical bases

A differentiation of membership fees in the unemployment insurance funds depending on unemployment within the fund can affect a number of margins in the labour market: wage formation, the fund's control and supervision of its unemployed members, insurability, the threshold effect (replacement rate) and the number of members in the funds.

[59] The financing contribution is 131 per cent of the average daily benefit paid by the unemployment insurance fund.

#### *5.4.2.1.1 Wage formation*

Employment and unemployment in an economy are determined by the labour supply and demand and the wage level. It has been well established in research that too high wage growth is a factor in causingcreating unemployment. Strong trade unions that are able to push through their wage demands can contribute to more wage pressure and thus higher unemployment (see, for example, Björklund et al, 2006).

There are arguments that the incentives for moderate wage growth from an economic perspective are too weak in a system in which those engaged in wage bargaining do not have to bear the costs of the unemployment wage increases generate.[60] Before 2007, unemployment insurance was subsidised by tax revenue at about 90 per cent and thus unemployment costs were largely distributed among all taxpayers. The financing reform aimed to strengthen the incentives for moderate wage formation from an economic perspective by internalising the costs of unemployment among those engaged in wage bargaining. However, the state's total subsidy level is not important for wage formation; it is instead the subsidy level at the margin, which is decisive.[61] The *marginal level of internalisation* shows how large a part of the cost of one more unemployed member the unemployment insurance fund has to bear.[62]

There are unfortunately no empirical studies that investigate whether and if so, how much the marginal internalisation rate affects wage formation and unemployment. However, current research provides some guidance on how progressivity in the income tax system affects wage formation as does the research on *experience rating*. Experience rating refers to the system for financing unemployment insurance used in the United States, where the employer pays a tax depending on their previous dismissals. Experience rating and a progressive income tax system both have the result that the higher the wage, the more the value of gross wage increases diminishes. The existence of unemployment costs or taxes means that the value of further marginal wage increases

[60] See, for example, Lindblad (2010), Calmfors (1995) and Holmlund & Lundborg (1999).
[61] Indirectly, however, the total extent of subsidy can play a role for wage formation as the subsidy must be financed.
[62] There are welfare arguments for not fully differentiating the fees and allowing the marginal internalisation level to be 100 per cent as an industry affected by a temporary shock should not have to bear the whole cost but can insure against part of the risk.

will decline, i.e. the same mechanism that operates through the differentiated membership fees. Several studies indicate that the progressivity of the income tax system has a moderating effect on wages.[63] Holmlund & Kolm (1995) show using Swedish data that progressivity affects both wage formation and unemployment and there is a trade-off between the wage moderating effect of progressivity and incentives for the number hours worked.[64]

There are thus theoretical reasons to believe that differentiated fees and a marginal internalisation rate can contribute to a more moderate wage growth from an economic perspective. However, there are also factors that weaken the *wage formation effect*. First, the individuals who have to bear the cost of unemployment are not the same individuals that negotiate wages. This is because the collective bargaining area does not always overlap with membership in the unemployment insurance funds. That the trade unions and the funds do not completely overlap is a result of there being more than 600 collective agreements in the Swedish labour market and 32 unemployment insurance funds. Second, agreements without specified wage rates are common, i.e. agreements where wage increases are determined in local bargaining between employers and individual employees.[65] In local negotiations, the individual employee has no incentive to take into account how excessively high wage demands will affect unemployment in the unemployment insurance fund. Thus this part of the labour market will probably not moderate wage demands as a result of the reform (see also IFAU, 2006). Third, there is considerable coordination in the Swedish labour market where the collective agreements of many trade unions are similar. If the intention is to create increased differentiation in wage growth through different unemployment rates, this co-ordination mechanism will operate in the opposite direction. Fourth, it is only the cost of short-term unemployed members the funds internalise. The unemployed who enter the job and development guarantee start to receive activity support and the unemployment contribution is only linked to the unemployment benefit. The fees will accordingly decrease when the wage moderating effect is most needed, i.e. when there is a rise in long-term unemployment.

[63] See, for example, Jackman & Layard (1990) and Lockwood & Manning (1993).
[64] There are studies that discuss the optimal level of progressivity in the tax system, see, for example, Sörensen (1999) and Koskela & Schöb (2007).
[65] About 10 per cent of all employees were covered by agreements that did not specify a wage rate in 2007, Swedish National Mediation Office (2008).

All in all, there are reasons to believe that differentiated fees may have a moderating influence on wage demands and thus affect employment positively, but it is very uncertain how strong this effect is. Given the factors that limit the impact of the contributions in practice, the effect is probably relatively small.

### *Control*

The Public Employment Service is responsible for control of unemployment insurance. It notifies the unemployment insurance fund if a person does not meet the conditions for the benefit. An increased marginal internalisation rate strengthens the incentive for the funds to check that individuals comply with the conditions for the income-related unemployment benefit as the cost of an additional unemployed member has to be borne by the employed members. Accordingly, fund requirements for unemployed members to actively look for work ("peer pressure") will increase and checks for incorrect payments will be more careful and effective. Furthermore, there will be more incentive for the funds to help their unemployed members find jobs and ensure that jobseekers receive more effective assistance within the framework of ALMP. Differentiated fees can thus be expected to increase employment through the *control effect*.

### *Insurability*

The insurability of the system increases when contributions are more clearly linked to disbursements. Increased insurability makes clear the costs of unemployment and can thus contribute, at least at the margin, to themore efficient allocation of labour. In a longer perspective, the signal value of the unemployment contribution can contribute, at least at the margin, to a more socially optimal choice of education and training. Sectors or occupations with high unemployment will, all else being equal, not seem as attractive for students.

*Threshold effect*

The increased financing contribution and the unemployment contribution are designed so that they are paid only by employed members. This means that the contributions directly affect the replacement rate, i.e. the return to work decreases. An increased *threshold effect* (replacement rate) reduces employment.

*Number of members*

Because of higher contributions, some individuals will choose to forgo membership of an unemployment insurance fund. The introduction of the higher financing contribution and unemployment contribution can thus be expected to have affected the total number of members of the UIAs. The increased fees in 2007 have in all probability contributed to the decrease in membership in 2007 and 2008 (see Forslund, 2006, and Kjellberg, 2010) even though the tax reduction through the in-work tax credit was greater than the increase in fees.

The effects of the decrease in membership members on the average replacement rate were discussed in the previous section. A decline in the number of members has, however, more effects on the labour market, for example, on wage formation. The effect of a change in the number of members on employment and unemployment depends mainly on how the relationship between insiders and outsiders changes in wage bargaining. Kjellberg (2010) shows that both individuals with a strong position in the labour market and those with a weak position have left the unemployment insurance funds and it is therefore difficult to determine how wage formation is affected.

The most important effect of a decrease in the number of members is probably that the legitimacy of the unemployment insurance funds deteriorates, and a decrease in the number of members in the funds may also, via decrease in trade union membership, undermine the position of collective agreements in the Swedish labour market.[66] To the extent that the position of collective agreements is undermined, this may be expected to have negative effects on employment.

[66] To counteract this, the Government has announced compulsory unemployment insurance fund membership.

### 5.4.3 Estimates

The unemployment contribution is only paid by the employed and therefore affects the replacement rate. The effect on the replacement rate can be estimated using the same method as in the previous section, where the benefit is related to wage as follows:

$$replacement\ rate^{2010}_{without\ contributions} = \frac{benefit}{wage}$$

$$replacement\ rate^{2010}_{with\ contributions} = \frac{benefit}{wage - contribution}$$

The size of the contribution varies over the business cycle. To calculate a long-term effect, it is necessary to have an idea of the contributions' size in a normal cyclical situation. It is not self-evident how this is to be done, but for these calculations, contributions are used that correspond to the labour market situation in early 2008 and the contribution arrangement that has applied since July 2009.

The introduction of the unemployment contribution increases the replacement rate by about 0.1 percentage point. At an elasticity of 0.12, this means that equilibrium unemployment increases by 0.012 percentage points, or almost 1 000 people.

The Ministry of Finance estimates that the unemployment contribution creates incentives for moderate wage growth from from a macroeconomic perspective. Even though the overlap between the funds and the collective bargaining areas is not complete, there are collective bargaining areas where the overlap is good. Similarly, control of unemployed members in the funds can be strengthened. However, it is difficult – not to say impossible – to quantify these effects exactly. The Ministry of Finance estimates that the positive effect on employment via a more moderate wage growth and better control in the long run is positive but small. It is expected to be in the same range as the negative threshold effect. The net effect on employment of introducing differentiated contributions is thus expected to be zero.

## 5.5 Limitation in the number of benefit days for part-time employment

### 5.5.1 Estimated changes

As from April 2008, the benefit for part-time unemployment was reduced from a 300 to 75 days. Single persons with dependent children under the age of 18 can be referred to the job and development guarantee after the 75 days of benefit have been exhausted.

### 5.5.2 Theory

The possibility of receiving part-time benefits is intended to support individuals who work part-time but who can and want to work full-time in their search for a full-time job.

The part-time benefit is justified in that it provides a stimulus to work, i.e. it is better to work a little than not to work at all. Part-time work can be regarded as a springboard into the labour market, i.e. the part-time employed remain in contact with the labour market and improve/maintain their work capacity (the *skills effect*). The part-time benefit is also in practice a wage subsidy for firms that use part-time workers, giving rise to a *demand effect*. There are thus good arguments indicating that the part-time benefit maystrengthen the labour supply.

However, the part-time benefit can also have a negative effect on labour supply. The benefit may have *a lock-in* effect as search intensity is limited during the period that the individual is employed part time. Part-time employment can also lead to a *habituation effect*. This means that individuals who accept part-time work eventually become accustomed to it and find it more and more difficult to conceive of working full time. The possibility of a part-time benefit may also mean that the employer and employee reach agreement on part-time work combined with a part-time benefit, so-called *implicit contracts* (Holmlund, 1996).

Part-time work and the possibilities of part-time benefit can thus have both positive and negative effects for the individual's labour supply. The existence of a part-time benefit stimulates part-time work, but the possibilities of receiving part-time benefits for a long

time may also decrease the probability of the individual obtaining a full-time job.

Changes in the possibilities of part-time benefits affect unemployment and employment through several channels, mainly through the inflows into and outflows from part-time unemployment.[67] The financial incentives for part-time unemployed then change, affecting the outflow from part-time unemployment. Some individuals will *increase* their working hours by putting a higher value on the wage than on leisure. Others who place a higher value on leisure relative to wages are, however, likely to *reduce* their working hours. Full-time unemployment may appear as a more profitable alternative for these individuals. The flows into part-time unemployment are also affected as the value of starting part-time employment decreases with this reform.

### 5.5.3 Empirical aspects

In 2006, there were 4.3 million employed in Sweden, almost a million of whom worked part time.[68] Of these, about 740 000 were women and 260 000 men. This means that 36 per cent of employed women and 11 per cent of employed men work part time.[69] Jönsson & Hartman (2008) think that there is an adjustment in certain industries and professions to part-time work as the norm. A large demand for part-time posts, particularly among women with small children, seems to have contributed to whole industries adjusting to part-time work, leading to involuntary part-time work. Adjustment may also be driven by the individual getting used to working part-time. The social security systems may also contribute to this adjustment by supplying weak financial incentives to leave part-time unemployment.

[67] There are also a number of conceivable effects on wage formation. The number of full-time employees and full-time unemployed will probably both increase after the reform which affects wage demands and wage formation. The total effect depends partly on how many go up to full-time work or become full-time unemployed, and which kind of individual this concerns. As part-time benefits should be regarded as a wage subsidy, wages are expected to increase for those individuals who remain in part-time employment when the value of the subsidy decreases.

[68] According to the LFS, around 800 000 people work part time, i.e. 20–34 hours a week, and around 200 000 individuals work short part-time, i.e. 1–19 hours per week.

[69] The occurrence of part-time work differs markedly between sectors, industries and occupations. Part-time work is usual in purely male-dominated occupations (for example, construction and industry), and comparatively rare in public administration. However, part-time work is a frequent occurrence in certain occupations where women predominate, and, in particular, in health care and social services (Jönsson & Hartman, 2008).

There are very few studies of the effects of the part-time benefit. Månsson *et al* (2008) show that the part-time unemployed who receive unemployment benefits have a 23 per cent lower chance of obtaining full-time work within two years from the first observation date compared with those who do not have benefits from unemployment insurance. This study also shows that women are and remain part-time unemployed to a much greater extent than men who are otherwise comparable; the probability of leaving part-time unemployment for full-time work is 24 percentage points lower for women than for men.

There are a few international studies of the effects of part-time work. Farber (1999) shows that both voluntary and involuntary part-time work can be a step towards full-time work and McCall (1996) shows that more generous part-time unemployment benefits can improve the probability for the full-time unemployed to find a job (both full-time and part-time). Both these studies indicate that part-time work can be a springboard towards full-time work and a stronger position in the labour market. However, there are also studies that show that part-time work can be a dead end (see, for example, Tam (1997) and Conolly & Gregory (2007)).

There is a Swedish report with information that is of interest in this context. An important observation in *Deltautredningen* (SOU 1999:27) (Delta Commission) is that the percentage of part-time employment has been relatively constant since 1980 at between 23 and 25 per cent of the employed even though the right to part-time benefits has varied sharply over the years; see Table 5.6. The findings of the commission thus indicate that the restriction in the number of benefit days does not seem to have any significant effect on the number of part-time employees.

**Table 5.6 Limit on the number of benefit days for part-time unemployment**

| Year | Limit on number of benefit days |
|---|---|
| –1984 | 50 |
| 1984–1987 | 0 |
| 1987–1993 | 150 |
| 1993–1996 | 0 |
| 1996–2008 | 300 (+300) |
| 2008– | 75 |

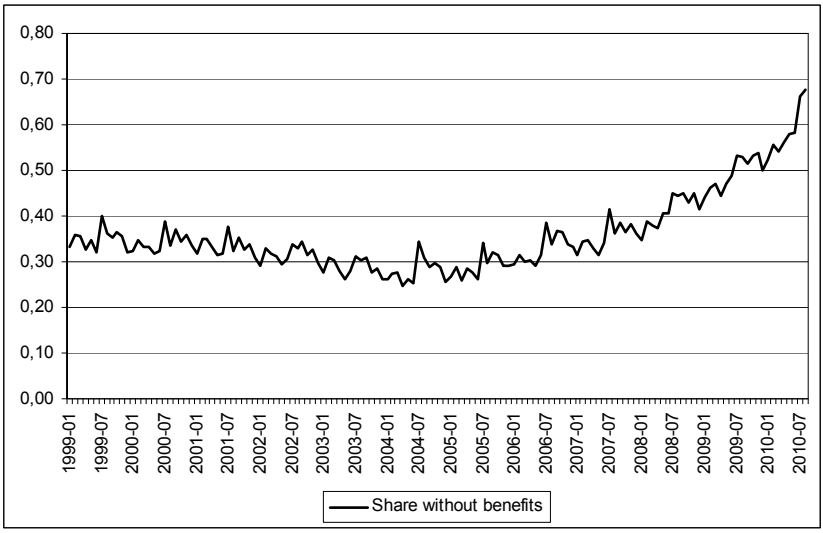
### 5.5.4 Assessment

This section presents the Ministry of Finance's estimates of the effects of the part-time reform on unemployment and employment. It is worth noting, however, that the reasons for the reform, which were stated in the 2008 Budget Bill, were to restrict the possibilities of receiving part-time benefit for a long time and to reduce overuse. With the construction that existed prior to 2008, it was possible to obtain part-time benefits for up to six years for those who had benefits for one day a week. There were also indications that many part-time workers received benefits even though they did not want to work full-time. The aim of the reform was thus mainly to increase the insurability and legitimacy of the system.

It is difficult to assess the effects of the reform on aggregate employment and unemployment; there are no obvious methods of calculation. However, it is now more than 2½ years since the reform was introduced, and outcome data from the Public Employment Service and Statistics Sweden (the Labour Force Surveys) can be used to obtain an educated guess of the effects of the reform. A further difficulty, however, is that the reform was implemented at about the same time as the economic downturn.

A clear indication that the part-time unemployed were affected by the reform can be found in Figure 5.3 which shows the percentage of the remaining part-time unemployed at the Public Employment Service who were not entitled to benefits. The percentage of the part-time unemployed not receiving benefits increased from almost 40 per cent in April 2008 to nearly 70 per cent in October 2010.

**Figure 5.3 Proportion of the remaining part-time unemployed who do not receive either the basic benefit or the income-related unemployment benefit**

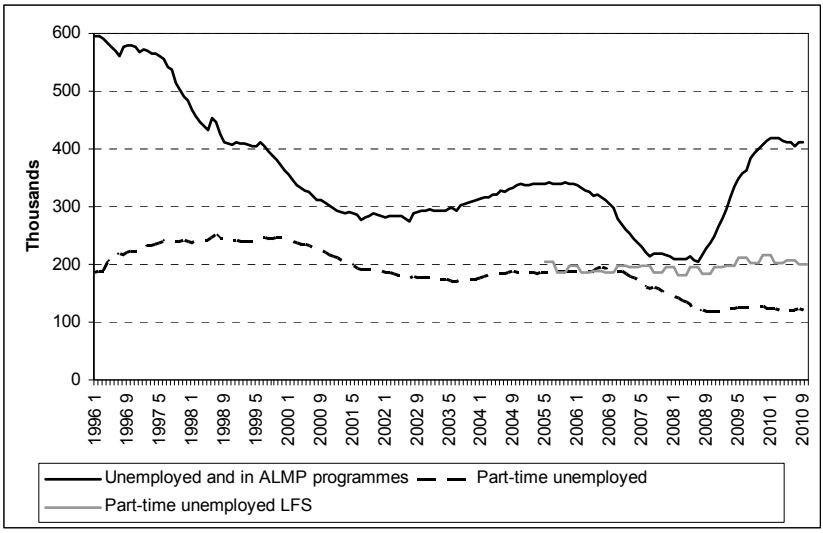



*Source:* PES

Figure 5.4 shows how the number of thos who remained part-time unemployed and the number who remained unemployed and in programmes at the Public Employment Service developed between 1996 and 2010. The figure also shows, for 2005–2010, the number of part-time unemployed (age group 16 to 64) according to the LFS.[70]

[70] Part-time unemployed in the LFS means here the part-time employed (<35 hours/week) who would like to work more.

**Figure 5.4 The number of unemployed and in ALMP programmes, the number of part-time unemployed (Public Employment Service) and the number of part-time unemployed (LFS). Age group 16 to 64**




*Source:* PES and LFS (special processing).

Three clear patterns can be discerned in Figure 5.4. First, there are very small variations in the number of part-time unemployed over time, according to LFS. Nor did the number of part-time employed change significantly during the upswing between 2006 and 2008 nor during the downturn in 2008–2009; rather the number fluctuates around 200 000.

Second, the number of part-time unemployed at the Public Employment Service decreased sharply from 2006 to 2008, unlike part-time unemployed measured according to the LFS. The difference between the number of part-time unemployed at the Employment Service andin LFS ought to be linked to benefit-related factors, since it is benefit-related factors in particular, which distinguish unemployment measured according to LFS and the Employment Service.

Third, the number of part-time unemployed registered by thePublic Employment Service did not increase significantly between 2008 and 2009, unlike the number of people remaining unemployed and in programmes, which more than doubled between 2008 and 2010. As the reform was introduced at the same time as the business cycle turned downward, it is very difficult to

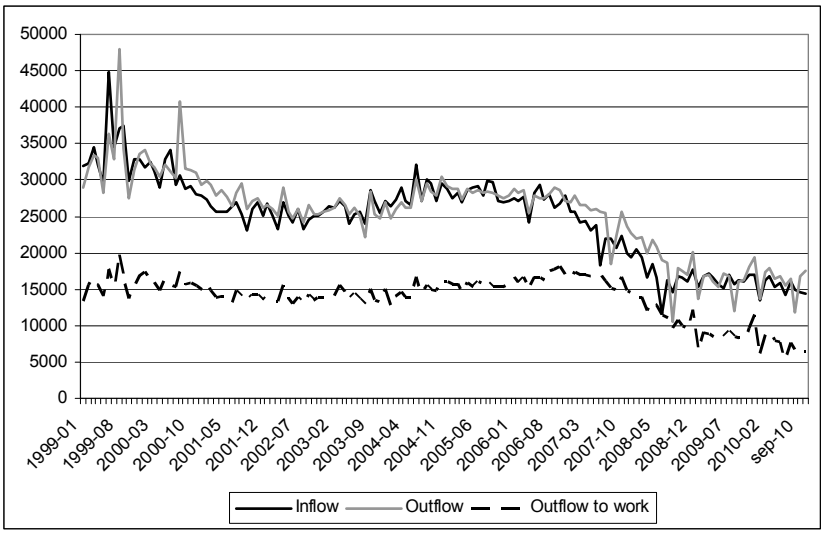
separate the cyclical effects from those of the reform. The lack of increase in part-time unemployment between 2008 and 2009 could, for example, be an effect of the reform. It is also possible that cyclical factors play a part in whether the part-time unemployed look for work, i.e. in a downturn, the part-time unemployed are less apt to look for work.

All in all, the small variations in the number of part-time unemployed measured according to LFS indicate that the total effects of the reform are small. This is also supported by the findings of the Delta Commission which showed that the percentage of those employed working part time has been relatively constant even though the right to part-time benefit has varied considerably over the years.

However Figures 5.3 and 5.4 indicate that the part-time unemployed are affected by reforms linked to the benefit. One conceivable effect of the reform may be that many part-time unemployed remain part-time unemployed even without the benefit; some of these people continue to be registered by the Employment Service while others leave.

Figure 5.5 shows the inflows and outflows from part-time unemployment as measured by the Employment Service. The figure shows that the outflow is greater than the inflow between 1999 and 2002 and between 2006 and 2008. These were periods when the number of people who were part-time unemployed decreased. In terms of total flows, the levels are very similar after the reform, i.e. after April 2008, when both inflow and outflow are at historically low levels. Even if this can undoubtedly be attributed to a great extent to the weak economic situation, it cannot be excluded that the limitation in the number of benefit days had some effect on the flows. The outflow is also shown separately for those who go to work, and the figure shows that the outflow to work has declined more or less continuously between 2006 and 2010.

**Figure 5.5 Inflow to part-time unemployment, outflow from part-time unemployment and outflow from part-time unemployment to work**




*Source:* The Public Employment Service.

The Ministry of Finance bases its estimate of the effects of the reform on the outcome data presented in this section. Given that the reform took place at the same time as the downturn and, in the absence of a counterfactual state, the assessment cannot be other than an educated guess.

It is the Ministry's opinion that the reform affects both the inflow and outflow from part-time unemployment in the long term. The influence on aggregate employment and unemployment is expected to be limited, however, partly because the reform is thought to have relatively small effects on the individuals affected by the part-time reforms, and partly because these individuals only make up a small part of the labour market.

When the number of benefit days decreases, it is, all else being equal, less attractive to take part-time work and the inflow is therefore expected to decrease. Data also show a decreased inflow, but it is very difficult to determine how much of the decreased inflow is driven by the business cycle and how much by the reform. The Ministry of Finance estimates that the inflow to part-time unemployment (and thus employment) will decrease; the number of part-time employees is expected to decline by 3 000 in the long run.

The outflow is also expected to be affected. Both the probability for the part-time employed to go up to full-time employment and the probability for part-time employees to be full-time unemployed are expected to increase slightly after the reform. It should be noted that part-time employees who lose their benefit after 75 days can choose to be full-time unemployed if benefits from full-time unemployment are greater than the income from part-time work. Overall, the flow from part-time work to full-time work is expected to increase, and the number of full-time employees to be 1 500 more in the long run. The flow from part-time work to full-time unemployment is also expected to increase, and there will be 1 500 more full-time unemployed people in the long run. An increased outflow will thus lead to 3 000 fewer part-time employed people in the long run.

Overall, the number of part-time employed people are expected to decrease (and unemployed increase) by 4 500.

To conclude, it should be noted that the reform probably leads to an increase in legitimacy for unemployment insurance, given the limited opportunities for overuse.

# References

Bassanini, A. & R. Duval (2006), "Employment Patterns in OECD Countries: Reassessing the role of Policies and Institutions", OECD Social, Employment and Migration Working Papers No. 35.

Bennmarker, H., K. Carling & B. Holmlund (2007), "Do Benefit Hikes Damage Job Finding? Evidence from Swedish Unemployment Insurance reforms", *Labour: Review of Labour Economics and Industrial Relations* 21.

Björklund, A., P-A Edin, B. Holmlund & E Wadensjö (2006), *Arbetsmarknaden*, SNS Förlag.

Calmfors L. (1995), "Labor market policy and unemployment", *European Economic Review*, 39, 583-592.

Carling, K., B. Holmlund & A. Vejsiu (2001), "Do Benefit Cuts Boost Job Findings? Swedish Evidence from the 1990s", *The Economic Journal* 111.

Chetty, R. (2008), "Moral Hazard versus Liquidity and Optimal Unemployment Insurance", *Journal of Political Economy* 116.

Conzeroy, S & M. Gregory (2007), "Part-Time Employment Can be a Life-Time Setback for Earnings: A Study of British Women 1975-2001", *IZA Discussion Papers* No. 3101.

Farber, H.S. (1999), "Alternative and Part-Time Employment Arrangements as a Response to Job Loss", *Journal of Labour Economics vol* 17.

Forslund, A. (2008), "Den svenska jämviktsarbetslösheten: en översikt", Finanspolitiska Rådet, Studier i Finanspolitik 2008/4.

Forslund, A., N. Gottfries & A. Westermark (2008), "Prices, productivity, and wage bargaining in open economies", *Scandinavian Journal of Economics* 110.

Fredriksson, P. & B. Holmlund (2004) "Hur ser en optimal arbetslöshetsförsäkring ut?", *Ekonomisk Debatt* 2004:4.

Fredriksson, P. & M. Söderström (2008), "Do Unemployment Benefits increase Unemployment? New evidence on an old question", IFAU Working Paper 2008:15.

Harkman, A. (1997), "Arbetslöshetsersättning och arbetslöshetstid – vilken effect hade minskningen från 90 till 80 procents ersättningsnivå?", in A. Harkman, F. Jansson, K. Källberg and L. Öhrn (ed.), *Arbetslöshetsersättning och arbetsmarknadens funktionssätt*, Ams, Stockholm.

Holmlund, B. (1996), "Arbetslöshetsförsäkringen och arbetslöshet", *Ekonomisk Debatt* 24.

Holmlund, B. (1998), "Unemployment Insurance in Theory and Practice", *Scandinavian Journal of Economics* 100(1), 113–141.

Holmlund, B. & A-S. Kolm (1995), "Progressive Taxation, Wage Setting, and Unemployment: Theory and Swedish Evidence", *Swedish Economic Policy Review* 2, 423-460.

Holmlund, B. & P. Lundborg (1999), "Wage Bargaining, Union Membership, and the Organization of Unemployment Insurance", *Labour Economics*, Vol 6.

Hornstein, A, P. Krusell & G. Violante (2005), "Unemployment and Vacancy Fluctuations in the Matching Model: Inspecting the Mechanism", *Federal Reserve Bank of Richmond Economic Quarterly* Vol 91.

IFAU (2006), En arbetslöshetsförsäkring för arbete, Remissvar (referral response).

Jackman, R. & R. Layard (1990), "The Real Effects of Tax-based Incomes Policies", Scandinavian Journal of Economics 92.

Johansson, S. & J. Selén, (2000), "Arbetslöshetsförsäkringen och arbetslöshet – En reanalys av IFAUs studie". Arbetsrapportserie no. 162, FIEF, Stockholm.

Jönsson, L. & L Hartman (2008), "Deltidsarbete och deltidsförmåner i Sverige", in L. Hartman (ed), *Välfärd på deltid*, SNS Förlag.

Kjellberg, A. (2008), "Det fackliga medlemsraset i Sverige under 2007", Report, Department of Sociology, Lund University.

Kjellberg, A. (2010), "Vilka hoppade av a-kassan eller avstod från att gå med? En studie av a-kassornas medlemsras", Report, Department of Sociology, Lund University.

Koskela, E. & R. Schöb (2007), "How Tax Progression Affects Effort and Employment", IZA Discussion Paper No. 2861.

Krueger, A. & B. Meyer (2002), "Labor Supply Effects of Social Insurance", NBER Working Paper 9014.

Layard R., S. Nickell & R. Jackman (1991), "Unemployment: Macroeconomic Performance and the Labour Market", Oxford University Press, New York.

Lindblad, H. (2010), "Essays on Unemployment and Real Exchange Rates", Doctoral thesis, Stockholm University.

Lockwood, B. & A. Manning (1993), Wage Setting and the Tax System - Theory and Evidence for the United Kingdom, Journal of Public Economics 52.

McCall (1996), Unemployment Insurance Rules, Joblessness and Part-Time Work", *Econometrica*, Vol. 64, No. 3, 647-682.

Medlingsinstitutet (2008), *Avtalsrörelsen och lönebildningen 2007*.

Månsson, J., J. Ottosson & K. Lundequist (2008), "Deltidsarbete och deltidsarbetslöshet" in L. Hartman (ed), *Välfärd på deltid*, SNS Förlag.

Nickell S., L. Nunziata & W. Ochel (2005), "Unemployment in the OECD Since the 1960s. What Do We Know?", *The Economic Journa*l, Volume 115 Issue 500.

Røed, K., P. Jensen, & A. Thoursie (2002), "Unemployment Duration, Incentives And Institutions – A Micro-Econometric Analysis Based on Scandinavian Countries", Memorandum 9/2002, Department of Economics, University of Oslo.

SOU (1999), Delta utredningen, SOU 1999:27.

Sörensen, P. (1999), "Optimal tax progressivity in imperfect labor markets", Labor Economics

Tam, M. (1997), Part-Time Employment: A Bridge or a Trap?, Avebury Publisher

# 6 Effects of the active labour market policy reforms

## 6.1 Summary

This chapter broadly outlines how active labour market policy (ALMP) has changed since 2006 and the conceivable impact of these changes in ALMP programmes and ALMP on employment and unemployment. The chapter focuses on the changes in structural ALMP. The effects relate to differences in employment and unemployment in equilibrium compared with previous ALMP (i.e. the net effects).

Since 2006, a number of reforms have been made in ALMP. ALMP resources have increasingly targeted the long-term unemployed and there has been a greater emphasis on the unemployeds' job search. Previously, participation in ALMP was exempt when counting unemployment benefit days. This has now been changed and the number of benefit days available is now reduced by the time spent in programmes. It is no longer possible to qualify for a new period of unemployment benefits without fulfilling a new work condition. New start jobs and step-in jobs have replaced various forms of employment support, the job and development guarantee has replaced the activity guarantee and the job guarantee for young people has replaced the municipal youth programmes. The Public Employment Service has become a single authority and started to use private employment services to complement its own activity. A number of ALMP programmes have been terminated and the volumes of labour market training and work experience placements outside the guarantees have been scaled back.

Table 6.1 summarises the structural reforms carried out in ALMP and their long-term effects on the labour force, employment, unemployment and hours worked. Of the structural changes in

ALMP which have been possible to quantify, new start jobs are considered to have had the greatest positive effect and decreased volumes in labour market training the greatest negative effect on employment and unemployment in the long term. The quantitative calculations have been based on expected volumes in 2014, but the volumes in ALMP programmes are assumed to follow the changes in the labour force in the long run. The quantifiable structural reforms of ALMP are estimated in the long run to increase the number of employed by 0.3 per cent and reduce equilibrium unemployment by 0.2 percentage points. The number of hours worked is expected to increase by 0.3 per cent in the long term. The labour force is expected to increase by 0.1 per cent due to the decrease in equilibrium unemployment.

The effects of ALMP for programme participants can be broken down into different effects occurring at different times. An expected referral to a programme affects the unemployed person's search behaviour and the probability of obtaining a job before the programme starts (the announcement effect). During the programme period, there will normally be a lock-in effect because the programme participant has less time to look for work. The programme may also have a treatment effect that affects the unemployed person's probability of obtaining work after the programme. These individual effects must then be translated into effects on employment and unemployment at the macro level. However, ALMP programmes do not only affect (potential) participants but others as well. Accordingly, there are also other general equilibrium effects of ALMP in addition to the individual effects. Many ALMP programmes displace unsubsidised jobs and ALMP can have an impact on matching between the unemployed and vacancies in the labour market. ALMP can moreover affect the functioning of the labour market through wage formation and labour force participation. Different ALMP programmes are likely to have different macro effects.

Considerable uncertainty is attached to the impact assessments shown in the chapter, and the assessments do not take into account all the above-mentioned possible effects of ALMP on employment and unemployment. The impact assessments in this chapter are based on the individual effects for participants in different programmes and estimates of direct displacement effects. With this method of assessment, we make the implicit assumption that all other potential effects of ALMP programmes, i.e. announcement

effects, wage formation effects and effects on matching and labour force participation (to the extent that they are not captured by individual and displacement effects) are zero in equilibrium. There is no strong empirical support for the hypothesis that ALMPs improve matching (Forslund and Vikström, 2010). Calmfors et al (2004) examine a large number of studies that investigate the correlation between wages and labour market policy and find either wage-driven or no effect on wage formation. Calmfors et al (2004) conclude also that ALMPs appear to have reduced open unemployment but have also led to lower regular employment. ALMP programmes seem at least in the 1990s to have had a positive effect on labour force participation. At that time, however, it was possible to re-qualify for a new period of unemployment benefits through participation in ALMP programmes. It is therefore not certain that the same result still applies. The assumption that all these potential indirect equilibrium effects are zero is strong, but there is insufficient empirical evidence to quantify these effects.

However, since higher equilibrium employment and lower equilibrium unemployment contribute to higher labour force participation, we calculate this effect by a rule of thumb based on estimates using Swedish data. According to this rule of thumb, the labour force increases by 0.25 times the increase in employment. This effect is added only to the total effect of ALMP (the totals line in Table 6.1), not separately for each particular reform.

The main purpose of this chapter is to calculate the effects of changes in the structural ALMP. During the downturn, temporary cyclical measures were introduced to counteract persistence, but these measures have no long-term effects on the functioning of the labour market. These effects are therefore treated in more detail in the chapter on persistence effects (Chapter 11). However, as the method of calculation is the same as in the structural ALMP programmes, the effects of the temporary ALMP measures are also presented in this chapter. Table 6.2 presents the effects of crisis measures in active labour market policy on employment, unemployment and hours worked in the short term.

**Table 6.1 Long-term effects of structural reforms in ALMP**

| Programme | Number in the labour force | Number of employed | Number of unemployed | Hours worked (thousands)[1] |
|---|---|---|---|---|
| Private contractors | ? | 0 | 0 | 0 |
| Job and development guarantee | ? | 0 | 0 | 0 |
| Lower benefit level in the guarantees | * | * | * | * |
| Job guarantee for young people | ? | + | - | + |
| New start jobs | + | 12 200 | -12 200 | 17 600 |
| Special employment support | + | 2 200 | -2 200 | 3 200 |
| Step-in jobs | + | 4 200 | -4 200 | 6 000 |
| Work experience placements (reduced volume) | - | 900 | -900 | 1 300 |
| Labour market training (reduced volume) | - | -9 300 | 9 300 | -13 400 |
| Other terminated programmes | ? | 0/+ | 0/- | 0/+ |
| Participation in programmes reduces unemployment benefit days | ? | + | - | + |
| New working condition to be met before new period of unemployment benefits | ? | + | - | + |
| Raised age limit from 20 to 25 years for programme participation | ? | ? | ? | ? |
| The Public Employment Service a single authority | ? | ? | ? | ? |
| Lower programme volumes outside the guarantees | ? | ? | ? | ? |
| Total (number) [2] | 2 600 | 12 600 | -10 000 | 18 100 |
| **Total (percentage change) [3]** | **0.1** | **0.3** | **-0.2[3]** | **0.3** |

Note: The quantified effects refer to 2014 levels; these are assumed to follow the increase in population during the years after 2014.

[1] Hours worked per employed are assumed to be 90 per cent of the annual average hours worked (0.9*1600h).
[2] The effect on the labour force follows from lower equilibrium unemployment and higher equilibrium employment, not as an effect of ALMP as such. We assume that the increase in the labour force has the same risk of unemployment in equilibrium as others in the labour market (6 per cent).
[3] Percentage points * The effect is included in the calculation of reforms in unemployment insurance.

**Table 6.2 Short-term effects of temporary crisis measures in ALMP**

| Programme | Number in the labour force | Number of employed | Number of unemployed | Hours worked (thousands) [1] |
|---|---|---|---|---|
| Labour market training | + | 500 | -500 | 700 |
| Work experience programmes | + | 1 900 | -1 900 | 2 700 |
| Coaching/ job search assistance for short-term unemployed | + | 6 400 | -6 400 | 9 200 |
| **Total (number) [2]** | **2 200** | **10 800** | **-8 600** | **15 600** |

Note: These effects are dealt with in more detail in the chapter on persistence. 1 Hours worked per employed are assumed to be 90 per cent of the average annual working hours (0.9*1600h). 2 The effect on the labour force follows from lower equilibrium unemployment. We assume that the increase in the labour force has the same risk of unemployment as others in the labour market during the crisis (8 per cent).

## 6.2 Possible effects of ALMP

The most important objective of ALMP is to contribute to sustainable higher employment and lower unemployment. ALMP can also help keep up consumption during downturns and thus be regarded as part of stabilisation policy. An important task for ALMP is to keep labour force participation high during downturns, even if this contributes to higher unemployment for a time. Higher unemployment due to higher labour force participation is positive because the unemployed are more likely to find work than those not participating in the labour force. To create a labour market that functions optimally, ALMP should play a contributing role so that there are jobs to look for, the unemployed look for jobs and are employable and the unemployed accept the job offers that they receive.

The programme effects for participants can be divided into the different effects that arise at different times. First, there is often an announcement effect (pre-programme effect). An expected referral to a programme affects the jobseeker's search behaviour and thus the probability of obtaining work. During the programme period, there is normally a lock-in effect as the programme participant has less time to apply for jobs than when in open unemployment. The

programme may also have a treatment effect, which affects, for example, the unemployed person's probability of obtaining work after the programme or the future wage.

ALMP programmes affect not only programme participants. One example of this is that ALMPs must be financed by taxes that affect all taxpayers. Many ALMP programmes displace unsubsidised jobs, but ALMP also has other indirect effects which affect equilibrium employment and unemployment. Different programmes also have potentially different macro effects. ALMP can affect how matching between the unemployed and job vacancies functions. ALMP can also affect the functioning of the labour market through wage formation and labour force participation.

### 6.2.1 Calculation method for the employment effects of ALMP programmes

The individual effects i.e. the treatment effects for programme participants derived from evaluations of different programmes are usually stated in terms of how much programme participation shortens the expected period of time before obtaining work. These differences in survival functions in unemployment cannot be directly translated into the number of employed according to Statistics Sweden's Labour Force Surveys (LFS). However, it is possible to estimate how many more days in employment the programme leads to for the whole economy by multiplying the number of individuals participating in the programme by the treatment effect in days. We divide the increase in days of employment in the economy by 365 to obtain an estimate of the increase in the number of employed. This is a measure of the full-year employed and probably somewhat underestimates LFS employment. On the other hand, this method of calculation assumes that programme participants remain in employment to the same extent as non-participants, which is probably an overestimate. In the event that the programmes lead to displacement, this increase in employment should be reduced by the number of jobs displaced. The calculations refer to long-term employment effects.

If the participants are not treated as employed during the programme period, the employment effects are calculated as follows.

The employment effect = -(the number of average annual places*displacement) + the number of participants*treatment effect in days/365

For example, if a programme increases days worked by 20 days for participants and 10 000 individuals are referred to the programme, employment will increase by 10 000*20/365=around 500 persons if no displacement takes place.

If the participants are treated as employed during the programme period, this shall be taken into account in the calculation. The employment effect will then be greater.

Employment effect = the number of average annual places *(1-displacement) + the number of participants*treatment effect in days/365

The above definition of the employment effect does not take into account that employment is subsidised if the participants are treated as employed during the programme period. No distinction is made in LFS between subsidised and unsubsidised employment and the forecasts are based on the LFS definition. It is also of interest to show whether the programmes increase unsubsidised, regular employment. The subsidies very rarely cover the employer's whole wage cost, for example, the rate of subsidy for new start jobs for the age group 26-54 is 48 per cent. One way of estimating the effect on regular employment is to multiply the number of subsidised jobs by the share of the wage cost that the employer actually pays (unsubsidised portion=1-subsidy rate). The unsubsidised employment is estimated as follows:

Unsubsidised employment= the number of average annual places*unsubsidised component – displacement*the number of average annual places + the number of participants*treatment effect in days/365.

According to this method of calculation, the employment effects are based on the individual effects[71] for those participating in different programmes and estimates of direct displacement effects. The estimates for the individual effects are obtained from different empirical studies of varying quality. With this method of calculation, we implicitly assume that all other potential effects of

[71] The estimated treatment effects also take into account lock-in effects, and sometimes also announcement effects.

ALMP programmes, i.e. wage formation, matching and labour force participation effects (to the extent that these are not captured by the individual and displacement effects) are zero. There is no strong empirical support for the hypothesis that ALMP programmes improve matching (Forslund and Vikström, 2010). Calmfors et al (2004) examine a large number of studies that investigate the relationship between wages and ALMP and find either wage-driving effects or no effect at all on wage formation. Calmfors et al (2004) also conclude that ALMPs appear to have reduced open unemployment but have also led to lower regular employment. ALMPs, at least in the 1990s, seem to have had a positive effect on labour force participation. At that time, however, it was possible to re-qualify for a new period of unemployment benefits through participation in ALMP programmes. It is therefore not certain that the same result still applies. To our knowledge there are no studies using more recent data. The assumption that all these potential indirect equilibrium effects are zero is strong but there is insufficient empirical evidence to quantify these effects.

There is, however, an effect on labour force participation as a result of higher equilibrium employment and lower equilibrium unemployment. We calculate this effect on the labour force by a rule of thumb based on estimates using Swedish data. According to this rule of thumb, the labour force increases by 0.25 times the increase in equilibrium employment. This effect is added only to the total effect of ALMP (the totals line in Table 6.1), not separately for each particular reform.

### 6.2.2 How has ALMP changed since 2006?

When the Government took office in 2006, it redesigned ALMP. The Public Employment Service was given a clearer role in job search assistance. Since 1 January 2008, the Employment Service has been a single integrated authority, which is to contribute to increased efficiency and a more uniform service for individual jobseekers regardless of where in Sweden they live. ALMP resources to a greater extent target those with the greatest need. The cyclical programmes have been given a clearer focus on job search. Since 2007, the number of benefit days in unemployment insurance also decrease when participating in labour market

programmes. Furthermore, it is no longer possible to obtain a new benefit period in unemployment insurance without fulfilling a new work condition. These reforms should make the ALMP programmes more effective because they provide a greater incentive to participate in programmes expected to improve employability and remove the incentive to participate only in order to accumulate unemployment benefit days.

A number of ALMP programmes have been terminated or replaced by other programmes. In autumn 2006, the sabbatical year (a subsidised career break programme), educational leave replacement positions, plus jobs and the jobs for recent graduates scheme were terminated. In 2007, general and enhanced employment support, computer activity centres and international work placements (for young people) were terminated. New start jobs and step-in jobs were introduced in 2007. In 2007, the activity guarantee was replaced by the job and development guarantee and the municipal youth programmes and the youth guarantee were replaced by the job guarantee for young people. The minimum age for those who can be referred to an ALMP programme outside the guarantees was raised on 1 July 2007 from 20 to 25. Since 2007, the Public Employment Service has used private contractors to improve matching and provide better service to the unemployed. Lyft, a temporary initiative for work experience for the unemployed, was introduced in 2010.

Table 6.3 provides a summary picture of the changes implemented since 2006 and how the programmes introduced differ from the earlier programmes.

**Table 6.3 ALMP programmes after 2006**

| Current programmes | Previous programmes that have been terminated | Main difference compared with previous programmes |
|---|---|---|
| Job search assistance, coaching (new) | | Also private job coaches |
| Private contractors (new) | | Public Employment Service job search assistance activities are also performed by private employment services; previously only AMU was procured |
| New start jobs (NSJ) | General employment support, enhanced employment support, employment support for individuals on long-term sick leave, plus jobs | NSJ often higher subsidy rates, longer subsidy period, no ceiling, broader target group, covered by employment protection legislation, entitlement is based on elapsed time without work instead of referral |
| Special employment support | | Higher ceiling and financial subsidy for supervision, extended qualifying period to 24 months |
| Job guarantee for young people (JOG) | Youth guarantee and municipal youth programmes | More focus on job search at an early stage, Public Employment Service responsible instead of the municipalities |
| Labour market training | | Young people no longer a target group, young people in the target group for step-in jobs may be referred since 2010 |

| Current programmes | Previous programmes that have been terminated | Main difference compared with previous programmes |
|---|---|---|
| Work experience placements | | Young people no longer a target group, payment to providers terminated in 2007 |
| Lyft (new programme) | | Work experience at public employers, state-owned companies or companies owned by non-profit organisations, combined with job search activities, 3 months, temporary measure in 2010 |
| Preparatory measures | | Young people no longer a target group, computer activity centres initiative has been abolished, studies in compulsory or upper secondary school max 6 months. |
| Business start-ups | | Young people no longer a target group, young people in the job guarantee scheme included in the target group since January 2010 |
| | Computer activity centres, international work placements, sabbatical years (subsidised career break), educational leave replacement positions, jobs for recent graduates | |

Note: Programmes for individuals with disabilities have been excluded.

## 6.3 What do we know about the employment effects of the ALMP programmes?

### 6.3.1 Job search assistance

The Government has put more stress on the need for the unemployed to search for jobs more actively and improved job search assistance in the form of coaching has been introduced. The Public Employment Service's job seeker surveys also show that the

number of job searches and the number of hours per week that the unemployed search for work have increased since 2007. There are good reasons to believe that intensified job search assistance is an effective way of shortening unemployment spells and increasing employment. However, it is very difficult to evaluate the effects of job search assistance because most job search assistance activities are part of the basic services offered by the Public Employment Service and are therefore provided to most unemployed individuals. There is therefore no clear control group. There is very limited Swedish evidence of how effective job search assistance is for broad groups of unemployed people. The results from the available studies are described below.

In 2004, a number of experiments took place at some of Sweden's Employment Services' offices to test intensified job search assistance for groups of unemployed people with particular difficulties in finding work. Participants and non-participants were selected randomly, making it possible to evaluate the effects of measures (even though the number of participants was small, which means that there is considerable statistical uncertainty in the estimates). Hägglund (2009) finds that the outflow to work increased significantly in four of five experiments. In three of five experiments there were also clear signs that earned income and/or employment status significantly improved in subsequent years. The results also show that job search activities together with increased monitoring of search activity are better than increased monitoring alone. The programme also seems to have had significant announcement effects, which have shortened unemployment spells but at the same time make it harder to evaluate the programme.[72] The selection problems that arise due to the announcement effects are not dealt with in Hägglund (2009).

Liljeberg and Lundin (2010) evaluated the job network scheme for the long-term unemployed. The job network scheme can in substance be described as improved job search assistance with a work experience placement component. Public Employment Service case workers used half of their work time for contacts with employers. Liljeberg and Lundin (2010) find that this method of work shortens the time that it takes for a long-term unemployed

[72] Between 12 and 57 per cent of the participants in the experiment left unemployment between the referral and the start of the programme. How large a proportion left unemployment before the programme started was affected by how far in advance the referral was made.

person to obtain unsubsidised work by roughly 6 per cent over a one-year follow-up period. This corresponds to a 22-day reduction in the unemployment spell due to the job network. The effect of the job network scheme is slightly less if permanent jobs are analysed, although the project still has an overall positive effect. Improved job search assistance based on the same method is also used in the first phase of the job and development guarantee, although with fewer case workers per participant than in the job network. It is therefore not entirely clear that the effect from the job network scheme can be transferred to the job and development guarantee, but the findings in Liljeberg and Lundin (2010) indicate that job search assistance works well for the long-term employed. This evaluation was made in an upturn. There is no empirical evidence that job search activities are as effective in a downturn.

Johansson and Åslund (2006) and Andersson Joona and Nekby (2009) study different programmes with elements of intensified job search assistance for immigrants. Johansson and Åslund (2006) analyse the measure "Work place introduction for immigrants" (SIN) which was carried out as a trial in 20 municipalities between 2003 and 2006. SIN seems largely to have been a measure with greatly intensified counselling and job search assistance. Its clearest effect in the empirical analysis is that SIN increases participation in work experience programmes for the target group, and that work experience programmes involve greater possibilities of working during SIN than otherwise. Andersson Joona and Nekby (2009) study the introduction programme for newly-arrived immigrants (TIP) that provided randomly chosen participants between 2006 and 2008 with intensified job search assistance, coaching and flexible access to Swedish language tuition. They found that the participants' were more likely to have unsubsidised work after the measure and were more likely to participate in other ALMP programmes than the control group. Participants in TIP had about a 4–5 percentage point greater chance of obtaining unsubsidised work than participants in the control group 15 months after registration by the Public Employment Service. The percentage of the control group obtaining unsubsidised work was just over 9 per cent which means that the programme increased the probability of obtaining unsubsidised work by between 44 and 55 per cent. The results from these two studies concern fairly small and specific groups, but indicate that intensified job search assistance can help the unemployed find a job. If Employment Service case workers

have more time with the unemployed, they are probably better able to identify the measures the unemployed need to find work quickly.

Forslund and Vikström (2010) review the international evidence on the effectiveness of job search assistance. Their conclusion from the international research is that job search assistance can increase employment, particularly when combined with monitoring. Various types of job search assistance are included in the basic services offered by the Employment Service but are only made available to certain unemployed individuals in many other countries, which makes it difficult to interpret international experience in a Swedish context.

To sum up, there is support indicating that improved job search assistance shortens unemployment spells for those receiving this assistance. This seems to be the case at least for weak groups. In the job network scheme and in SIN, Public Employment Service case workers devoted considerable time to contact employers. This may explain why job search assistance activities were effective and why it may require a relatively large amount of resources to get an effect.

### *Assessment of the effects of job search assistance*

When intensified job search assistance targets smaller groups, some of the positive effects are probably due to the displacement of other jobseekers. There are no studies of how effective job search assistance is for broad groups. It is therefore difficult to quantify the effects of job search assistance for the short-term unemployed[73]. One way of attempting to estimate the size of these effects is to use the experiments with job search assistance in Hägglund (2009). One of the experiments in Hägglund (2009) was directed at openly unemployed youth in Skellefteå. Young people are typically short-term unemployed and therefore the result from this experiment could be used to calculate the employment effect of coaching for the short-term unemployed. Hägglund (2009) finds that job search activities shortened unemployment spells by 2.2 weeks (15 days). The density of supervisors in the trial was, however, probably higher than in the current coaching efforts for the short-term unemployed. The administrative cost of the trial in Skellefteå was

[73] Coaching is offered to all who risk being or are openly unemployed and are registered at PES.

about SEK 3 200 per participant (recalculated to 2011 prices with wage growth because the experiment took place during 2004). The administrative unit price in the coaching measures for the short-term unemployed provided by the Public Employment Service in 2011 is estimated at about SEK 2 200.[74] We assume that the effects are linear and scale down the treatment effect from Hägglund (2009) with the unit costs. This would give a treatment effect corresponding to an unemployment spell about 10 days shorter. Furthermore, some of the positive effects for participants in small-scale experiments are due to the displacement of other jobseekers, who thus receive less assistance. This motivates an even lower treatment effect for coaching efforts for the short-term unemployed. A reasonable treatment effect is thus considered to be a seven-day reduction in the unemployment spell.

Intensified job search assistance does not give rise to the displacement of regular employment. The total coaching efforts between 2009 and 2011 amount to 83 400 places[75]. According to Employment Service calculations, the average period in coaching is two months when provided by the Employment Service and three months when provided by a private coach. It is assumed here that the programme time is two months, which means that 333 600 individuals per year take part in coaching. Coaching efforts for the short-term unemployed are expected to increase employment by about 6 400 persons in the short term (333 600*7/365=6 400). Coaching efforts for the short-term unemployed only exist because of the crisis and affect persistence, but not employment in the long run.

The only structural job search assistance provided (i.e. not due to the crisis) is job search activities in the job and development guarantee and the job guarantee for young people. The effects of job search assistance in the job and development guarantee and the job guarantee for young people are analysed under these programmes.

[74] This amount refers to the administrative unit price according to the 2011 Budget Bill and consists of wage costs for coaches employed by the Public Employment Service, i.e. it is a measure of case worker density.
[75] Outcome for 2009 and 2011 Budget Bill forecast for 2010–2011.

### 6.3.2 Private contractors

Since 2007, the Public Employment Service has used private contractors as a supplement to its job search assistance activities. These private contractors are used to improve matching by providing the jobseeker with individually customised services and access to the knowledge and experience of other actors (The Public Employment Service, 2009a). The Public Employment Service has previously procured labour market training, but the private contractors are now also responsible for a number of activities for the employed instead of only providing them with training. The private provider is to investigate the individual's need of measures and draw up an action plan, arrange work experience placement and notify the Employment Service about the participant's attendance and job search activities, which have a bearing on the participant's benefits. Furthermore, the payment to the private contractors is now to some extent performance-based.

The question of whether Employment Service activities should be provided in the public or private sector cannot be answered in purely theoretical terms. There are arguments both for and against privatisation of job search assistance.[76] The main reason for privatisation is that private actors have a greater financial incentive to invest in cost-saving and quality-improving innovations as the profit from these investments will benefit the owner. Cost savings may, however, have adverse effects on the quality of the service and the quality requirements can normally not be fully regulated in a contract. This can be counteracted if the unemployed can choose an actor in a market with sufficient competition and if the actors are dependent on a good reputation to obtain contracts by procurement in the future. The problem is that it can be difficult for the Employment Service to assess how good the various actors are. Private actors can also make it more difficult for the Employment Service to check if the unemployed are actually looking for work. Private actors also have an incentive to choose the unemployed that require less intensive efforts (*cream skimming* or *cherry picking*) and make the least possible effort for the unemployed who are most detached from the labour market (*parking*). How the contracts with the private providers are designed is of crucial importance in counteracting these problems.

[76] See Forslund and Vikström (2010) and references there for a more detailed theoretical and empirical analysis of the advantages and disadvantages of private actors.

Whether the private providers serve their purpose is thus an empirical issue.

At least two Swedish studies have attempted to answer the question of how private providers affect the unemployeds' probability of employment. Bennmarker et al (2009) have evaluated the experiment with private providers that took place in 2007 and 2008 in Skåne, Östergötland and Västernorrland. The target groups involved in the experiment were the disabled with a reduced work capacity, foreign born persons who had been unemployed for longer than six months and young people (aged 20-24) who had been unemployed for more than three months. To take part in the experiment, the unemployed should be "matchable", i.e. have occupations and education that were viable in the labour market. The evaluation does not find any differences in employment or income on average between unemployed who used a private or public employment service. However, the private employment services succeeded better in providing jobs for the foreign born than the Employment Service did. At the same time, they tend to be less good at helping young people out of unemployment. Bennmarker et al (2009) consider that the results of the experiment can possibly be generalised for private providers within the job and development guarantee and the job guarantee for young people, since these have a number of similarities with the experiment with respect to the selection of providers, payment model and target group. However, the extensive procurement of external job coaches for the short-term unemployed is different in character to the experiment and the results can probably not be generalised to them.

Harkman et al (2010) follow the growth in the percentage of participants in the job and development guarantee (JUG) that have found work and compare the result between the Employment Service offices that have worked with private providers and those that have not. This study shows no lasting effects from the collaboration with private providers on the outflow to work within JUG. Initially, the outflow to work increases on average more for offices working with private providers, but the effect decreases the second quarter after the introduction and disappears completely by the fourth quarter after the introduction. Thus it may have been simply an effect of trying something new and not an effect of private providers as such.

There are only a few credible international studies on the effects of private employment services. Forslund and Vikström (2010) refer to a French study[77] which evaluated the effects of an extensive experiment with private providers in France. In the experiment, intensified job search assistance by public and private providers was compared with a control group which received the ordinary support from the French employment service. The intensified job search assistance decreased the duration of unemployment, but the effect was much larger in the public sector compared with private providers. One reason for this was that the French employment service focused on helping all the unemployed, while the private service put more resources into helping the unemployed who provided them greater payment. Evaluations for Germany show mixed results. Winterhager (2006) finds negative employment effects when the German employment service refers jobseekers to a private job search assistance service while Winterhager et al (2006) find positive effects when jobseekers receive a voucher and choose a private employment service themselves. Bernhard and Wolff (2008) find positive average employment effects for the unemployed who have exhausted their benefits and social welfare recipients who were referred to private employment services. The effects varied considerably, however, for different groups and Bernhard and Wolff (2008) are of the opinion that referrals to private employment services are generally not an effective way of increasing the likelihood of employment or decreasing unemployment among the participants. Evaluations of *employment zones* in the United Kingdom show positive effects from private providers for long-term unemployed people in some weaker regions compared with the employment services (Hasluck et al 2003).

Forslund and Vikström (2010) conclude in their analysis that neither theoretical reasoning nor empirical studies are entirely clear about the effects of private providers. There is only one Swedish and one French experiment that have succeeded in systematically identifying causal effects. Neither of the studies indicates that private providers would be better at getting the unemployed back to work compared with the public employment service. However, it is possible that the effects change over time since the private providers probably need time to test their working methods and it

[77] Behaghel et al (2009).

takes time to sort out the best private providers. The driving forces created by different contracts reflect how difficult it is to specify in contracts what the private contractor is to provide, and this can naturally differ from one context to another. It is also reasonable that it takes time to build up the expertise to handle the procurements and the results may therefore depend on how long a time the public authorities have had to build up this competence.

*Assessment of the effects of private providers*

The empirical literature on private employment services is limited and the effects depend on how the contracts with the private providers have been designed. However, a system with extensive use of private providers does not offer any simple efficiency gains and there is currently no evidence that private providers would have any marked effect on employment or unemployment.

### 6.3.3 The job and development guarantee (JUG)

The previous programme for the long-term unemployed, the activity guarantee, was replaced by the job and development guarantee (JUG) in 2007. Like the activity guarantee the objective of JUG is to improve the jobseeker's employment possibilities and to contribute to strengthening the role of unemployment insurance as adjustment insurance. JUG consists of individually designed measures and has three phases. Initially, the focus is on identifying the needs and on intensified job search assistance. The first phase lasts for at most 150 days. In phase two, access is provided to a broader range of ALMP programmes including work experience placements, subsidised employment and skills enhancement (for example, labour market training). In the third phase, the participants who have not obtained work after 450 benefit days in JUG are offered a socially useful work placement corresponding to the individual's labour supply.

The major difference between the activity guarantee and JUG is that JUG takes place earlier during the unemployment spell. An unemployed person qualified for the activity guarantee after 300 or 600 benefit days in open unemployment. The time that he or she took part in a programme with activity support is not included in

the qualifying period. Currently, an unemployed person is referred to JUG after 300 days in unemployment regardless of whether this time was spent in open unemployment or participating in ALMP programmes (450 days for those with children under 18).[78] A shorter qualifying period probably leads to shorter unemployment spells, even if it theoretically depends on how the jobseeker values participation in JUG compared with being openly unemployed. Depending on the activities offered in JUG, there is also a risk of locking-in because search activity may decrease during programme participation. The benefit level in JUG is lower than in the activity guarantee (JUG provides at most 65 per cent of previous income[79]). The lower replacement rate indicates that the unemployment can be expected to decrease due to an increased incentive to look for work and accept job offers. This effect is analysed in the chapter estimating the effects of unemployment insurance.

Participants in the activity guarantee with general or enhanced employment support could earn a new work condition and thus leave the activity guarantee. JUG does not re-qualify participants for a new benefit period nor does employment with special employment support. However, participants in JUG who obtain new start jobs can earn a new work condition and qualify for a new benefit period. In this respect, the difference between the activity guarantee and JUG is not very large.

Experience with the activity guarantee shows that participants were relatively often referred to the programme only after an extended period of unemployment benefits (27 months). This was partly because there was not any nationwide guidance given to Public Employment Service case workers for referral to the activity guarantee. It was moreover difficult to offer the participants full-time

[78] 300 completed benefit days is not the only way of qualifying for JUG. Also single part-time unemployed people with children who have used up their 75 part-time unemployment benefit days, the unemployed who are in prison release preparation programmes or who have been conditionally released, unemployed with at least 18 months' continuous unemployment at the Public Employment Service regardless of the type of benefits they receive, young people who have participated in JOG for 15 months and individuals over 25 years of age who have participated in working life introduction can be referred to JUG.

[79] In phase 1 and phase 2, activity support or development benefits are received that are equivalent to 65 per cent of previous income (max SEK 680 per day) if the individual has previously had unemployment benefits. If the individual has not been entitled to unemployment benefits before entering JUG, the lowest support is SEK 223/day. Benefits in phase 3 are only paid to those entitled to activity support based on unemployment benefits. Others in phase 3 receive no compensation from the public employment service, but can obtain social assistance from the municipality.

activity. The level of activity in JUG has also been low and far from full-time employment. In a questionnaire, 65 per cent stated that they applied for jobs and participated in activities for at most 10 hours a week (Martinson and Sibbmark, 2010a). On average, the participants applied for work or participated in activities for 12 hours a week, or 30 per cent of full time. JUG thus seems to take less of the participants' time than the activity guarantee did. In 2002, 66 per cent of the participants in the activity guarantee responded that they were employed full time in the guarantee (Fröberg and Lindqvist, 2002). However, the JUG participants seem to apply for more jobs than the participants in the activity guarantee did (Martinson and Sibbmark, 2010a), which may be an effect of the lower replacement rate.

In December 2010, about 18 per cent (nearly 25 000 people) of the JUG participants were in phase 3 which is to offer socially useful work placements. Every work placement period is to continue for a longer period, but there is a maximum of two years. There should also be scope for the participant's own job search. In a report to the Government, the Public Employment Service states that there was a substantial increase in the number of participants in phase 3 in a short time and that this increase is expected to continue in the near future (Public Employment Service, 2010a). Participants in phase 3 are employed to a large extent in municipal and public service activities. The most common employment is in the field of care/schools/social services, administration and shops/sale/service. Of the vacancies posted between March 2009 and May 2010, 42 per cent were in the category service work not demanding special occupational training. The most common occupations in this group were caretaker and general workers. Other frequently occurring occupations in phase 3 are school hostess, nursing assistant and pupil assistant (Public Employment Service, 2010a).

One question is whether individuals who end up in the activity guarantee or JUG for a long period are helped by the programmes available. Previous direct job creation measures in the public sector and voluntary organisations that resemble phase 3 do not seem to have increased the chances that the participants will later obtain unsubsidised work.[80] Despite the low effectiveness, phase 3 can nevertheless be justified in order to test willingness to work and

[80] See, for example, evaluations of ALMP programmes during the 1990s in Sianesi (2001) and Carling and Richardson (2004).

prevent social exclusion by maintaining contact with the labour market.[81] Announcement effects of this type of programme may be important, but it has not been possible to evaluate these effects.

Hägglund (2002), which is the first evaluation of the activity guarantee, finds that applicants obtain work more rapidly because of the activity guarantee. The probability of having employment a year after the start of the programme was 35 per cent higher for participants in the activity guarantee compared with those who did not participate. This positive effect is, however, solely explained by jobs that were subsidised by employment support. The activity guarantee did not help increase chances getting unsubsidised jobs and applicants who obtained unsubsidised work were subsequently more apt to become unemployed again. However, there are substantial problems associated with Hägglund's study. The first problem is that the study looks at the unemployed who participated in the activity guarantee only a couple of months after it was introduced. It is possible that the effects would not be the same after this start-up period. The other problem is that the follow-up period was short, which means that effects that occur with a time lag are not visible. The third problem is that Hägglund points out that participants in the activity guarantee used relatively fewer informal channels in their job search. If this was an effect of increased supervision instead of increased job search assistance, it can indicate that participants used too much time for ineffective search methods.

The guarantees are very difficult to evaluate as there is no obvious control group which has never participated and the empirical knowledge about the effects of the guarantees is therefore limited. Differences in the design of JUG and the activity guarantee can, however, be used to assess the expected effect of the change in policy. JUG has a lower benefit level than the activity guarantee, which should increase the outflow from unemployment.[82] The unemployed are referred to JUG much earlier in the period of unemployment than was the case for the activity guarantee. This can theoretically prolong or shorten unemployment spells but it most likely leads to shorter unemployment spells. Compared with for example, labour market

[81] This is also emphasised by the Swedish Fiscal Policy Council (2010) and by Forslund and Vikström (2010).
[82] This effect is included in the calculation of the effects of the reform of unemployment benefits and the effect of a lower benefit level is therefore not quantified in this chapter.

training which can raise the expected wage and which the unemployed may thus regard as positive, it is considered less probable that the unemployed would decrease their job search to enter the guarantee, which initially consists mostly of job search activities. The actual level of activity is lower in JUG than in the activity guarantee but participants in JUG apply for more jobs. This should mean the locking-in effect is less in JUG than in the activity guarantee, but the treatment effect may possibly be worse due to the lower level of activity.

*Assessment of the effects of the job and development guarantee*

There have been major problems in the implementation of JUG, partly due to the financial crisis which came a year after the introduction of the guarantee and led to a rapid increase in unemployment. Because of the downturn, the number of participants in the guarantee is expected to increase until the end of 2011. Since 1 January 2010, it is also possible for the Public Employment Service to refer individuals who have participated in work life introduction to JUG directly after the introduction, which is expected to further contribute to an increase in the number of participants in the guarantee.
As a result of implementation problems, participants have not been offered activities to the extent intended. JUG may, however, have positive announcement effects. Currently, however, the effects of JUG on employment and employment in equilibrium are estimated to be zero.

JUG may possibly start to function better when unemployment goes down to more normal levels. If JUG and its content were to function as intended, it is highly possible that there would be positive effects on employment and unemployment. One way of attempting to estimate the difference between the ambitions in JUG and the activity guarantee is to use the result from Liljeberg and Lundin (2010), who compared participants in the job network with participants in the activity guarantee. The job network scheme was intensified job search assistance with elements of work experience placement and it has been used as a model in the design of the first two phases of the job and development guarantee. Liljeberg and Lundin (2010) found that the job network shortened the time it took to obtain unsubsidised work by 22 days (6 per

cent) in a follow-up horizon of one year. This is, however, probably too high a treatment effect for JUG even if it were to meet the targets for the scheme that existed when JUG was introduced. The job network had considerably more supervisory resources (10–20 participants per case worker) than both the activity guarantee (around 35) and JUG's target (at most 15–20 jobseekers per caser worker) (Liljeberg and Lundin, 2010). The evaluation of the job network moreover took place in a very favourable labour market situation, which can lead to an excessively high treatment effect in a more normal economic situation. Part of the positive individual effects in small-scale experiments is probably because the participants displace other jobseekers who thus receive less help. Individual effects obtained from experiments therefore risk overestimating equilibrium effects when the programme is used on a larger scale, which also justifies a lower treatment effect for JUG. We therefore assume a treatment effect of 18 days for JUG when it works as intended.

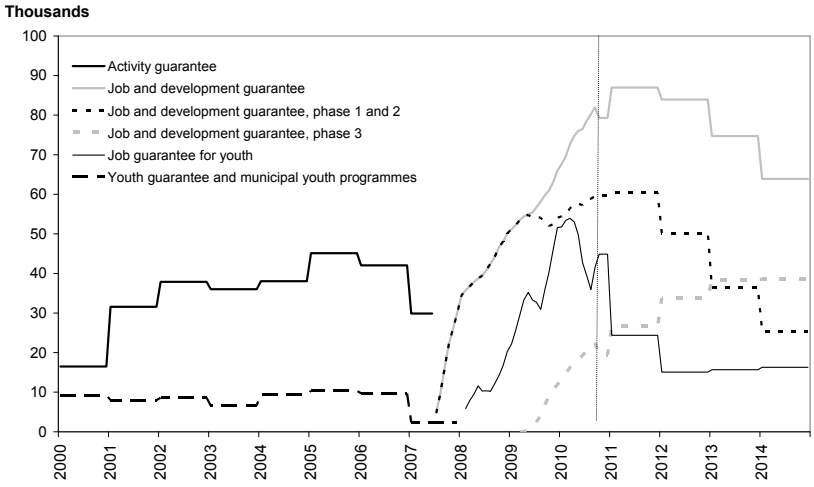
JUG phase 3 entails full-time employment with tasks that would otherwise have not been performed. The previous evaluations[83] of direct job-creation measures in the public sector have shown small effects on employment, but phase 3 is nonetheless thought to contribute to keeping up the labour supply. Due to the low outflow from phase 3, a larger proportion of participants in JUG will consist of individuals in phase 3 in the next few years.

With faster entry, the volume in JUG should be higher than in the activity guarantee. This is offset, however, by the announcement effects and strict time limits for entry, which probably decrease the inflow to JUG. Our assessment is that there are around 20 000 more places per month in JUG than in the activity guarantee (see Figure 6.1). According to Public Employment Service calculations, the average period in JUG for those who finished the programme during 2010 was about 10 months. JUG is thought to be associated with only marginal displacement as it primarily consists of job search assistance. JUG is expected, based on these very rough assumptions and given the ambitions for JUG content, to increase employment by around 1 200 people (20 000*12/10*18/365=1 200). For JUG to increase employment

[83] See for example, Sianesi (2001) and Carling and Richardson (2004).

by 1 200 people in the long run, its content would have to live up to its aims and that it is not yet the case. This increase in employment is therefore not currently included in the impact assessment. It should be noted that the lower benefit in JUG is not included in the assessment.

**Figure 6.1 The number of participants in the job and development guarantee and the job guarantee for young people**




Sources: The Public Employment Service and own estimates. 2011 Budget Bill forecast for October 2010–2014.

### 6.3.4 Job Guarantee for young People (JOG)

The aim of the job guarantee for young people is to offer young people (aged 16-24) special ALMP measures at an early stage of their unemployment to ensure that they as rapidly as possible obtain work or start education or training within the regular education system. Young people qualify for JOG after having been registered as unemployed at the Public Employment Service for three months. In the job guarantee for young people, the first three months are normally to be used for intensified support with a detailed skills assessment, study and occupational guidance and coaching. After the initial period, matching can be complemented with a work experience placement or a shorter period of education or training. Due to the difficult labour market situation, young

people may now participate in the latter measures already from their first day in the guarantee.

Due to the deterioration in the labour market situation, the Government has also from January 2010 expanded the activities in the job guarantee for young people. Participants now can also obtain support for starting a business, vocational rehabilitation and courses with study incentives conducted by folk high schools targeting young people without a compulsory or upper secondary school leaving certificate. From 1 January 2010, activities in the guarantee can also be combined with Swedish courses for immigrants or other municipal adult education. After 15 months in the job guarantee, young people are referred to the job and development guarantee.

Hall and Liljeberg (2011) is the first evaluation of JOG. It compares unemployed 24-year-olds referred to JOG after 90 days unemployment with unemployed young people born the same year who have turned 25 and who are thus offered normal Public Employment Service assistance for adults.[84] Furthermore, the analysis is limited to individuals who have become unemployed for the first time for at least a year. Accordingly, Hall and Liljeberg (2011) study unemployed people who have a stronger position in the labour market than the average jobseeker of the same age and who are older than the average participant in JOG. The results may not be representative for younger age groups and for jobseekers with a longer record of unemployment. The results show that JOG had a positive effect on the transition to work in 2008, relative to measures for older people. The effect occurs after about three months of unemployment, i.e. directly after entry into JOG, and corresponds to an approximately nine-day reduction in the time before finding work for 24-year-olds compared with 25-year-olds. The equivalent positive treatment effect does not seem to exist for 2009, which may be because job search activities function less well in a poor labour market situation and because young people did not participate in activities to any greater extent when the number of participants in JOG tripled.[85] The fact that the effect occurs almost immediately after entering JOG indicates that some unemployed people accelerate their job seeking already at the time of referral to

[84] As the programme volumes outside the guarantees are not large, this often means that the alternative is open unemployment until referral is made to JUG.

[85] According to a questionnaire carried out in November-December 2009, the participants in JOG only used an average of about 14 hours per week per week to look for work and participate in activities (Martinson and Sibbmark, 2010b).

the programme, simply to avoid having to participate. This could indicate that it is the threat of referral to JOG rather than the content that shortened unemployment spells. The effect may also be due to the more rapid reduction in the unemployment benefit for 24-year-olds than for 25-year-olds. The findings in Hall and Liljeberg (2011) show that JOG also had positive announcement effects in 2009. Hall and Liljeberg (2011) do not find any long-term effects of JOG on the probability of being registered at the Public Employment Service.

JOG has been operating for a short period and the deep downturn makes it difficult to assess its effects. Some lessons can be drawn from evaluations of previous programmes for young people and the youth guarantee. Larsson (2003) found that young people who participated in labour market training or work experience placement for young people in the early 1990s had a lower probability of obtaining work, lower income and a lower probability of participating in regular education than openly unemployed youth. Carling and Larsson (2005) studied the job guarantee for young people and found that young people were more apt to get a job before the guarantee (announcement effect) but because of the lock-in effect during the programme, the overall effect of the guarantee on the probability of going from unemployment to employment was zero. Forslund and Nordström Skans (2006) also found large announcement effects from this programme but, unlike Carling and Larsson (2005), they also found that it shortens the unemployment period for young people. Forslund and Nordström Skans (2006) also show that the Public Employment Service programmes (labour market training and work experience placements) were more effective than the municipal youth programmes in getting young people working.

An important question is also whether the benefit level in JOG is so low that young people register with the Public Employment Service to a lesser extent than previously. This would have an adverse effect on employment, if we believe that the Employment Service can help young people get a job. According to forecast, however, the volumes in 2012–2014 will not be lower in JOG than they were in the old guarantee for young people and the municipal programmes for young people (see Figure 6.1), if we assume that the level of youth unemployment in 2012–2014 will be approximately as high as it was between 2000 and 2006.

*Assessment of the effects of the job guarantee for young people*

The job guarantee for young people differs from previous programmes for young people in certain respects. First, it is run by the Public Employment Service, not by the municipalities. This should mean that the change in policy has increased the chances for young people to leave unemployment since Forslund and Nordström Skans (2006) found that the Employment Service programmes were more effective. Second, the content of the job guarantee is more structured with an increased focus initially on support and monitoring of the jobseeker. The lock-in effects are accordingly probably less in JOG than in the previous guarantee for young people. Furthermore, the benefit decreases more rapidly for those entitled to unemployment benefits.[86] This change should also have led to increased effectiveness. The benefit for young people participating in JOG who do not have unemployment benefits is harmonised with the study allowance the young person would have received for studies providing an entitlement to a study allowance. It is intended to create incentives for young people to complete or resume their studies. It is, however, possible that the relatively low benefit for participation in JOG has caused young people to refrain from registering at the Public Employment Service

Hall and Liljeberg (2011) use the same method to evaluate JOG that Forslund and Nordström Skans (2006) used to evaluate the previous guarantee for young people. They both find that measures for young people may have positive effects for 24-year olds compared with the measures offered to those born in the same year but who have reached the age of 25 after 90 days of unemployment. The findings from both studies also indicate that it is primarily the announcement effects that shorten unemployment spells. The guarantee for young people and the job guarantee have been evaluated in different labour market situations which can potentially influence the effects of the measures. To sum up, there are probably positive effects from the introduction of JOG. However, these effects are considered to be relatively small and difficult to quantify.

[86] The effect of lower benefit is included in the calculation of the effects of the reform of unemployment insurance and is therefore not included in the calculation here.

### 6.3.5 Subsidised employment

Different types of subsidised employment, new start jobs, employment subsidies and step-in jobs, function using the same mechanisms and can be expected to have approximately the same treatment effects and displacement effects even though they target slightly different groups. The general effects that subsidised employment may have on employment and unemployment are thus described first followed by a more detailed description of each form of support.

A person with subsidised employment, such as a new start job, is treated as employed in LFS. As the subsidy can be paid over a very long period in certain cases (up to 10 years in new start jobs for those over 55), the primary intention does not seem to be increase employability after the period of subsidy; rather it is a more or less permanent subsidy. In addition to the employment effect during the period of subsidy, there is obviously also a treatment effect that affects employment after the programme.

Different types of employment subsidies are intended to facilitate the transition to ordinary jobs for the long-term unemployed and those who have been not been in the labour market for a long time due to illness. Research has found that the effects of subsidised employment vary for participants in the programmes, but the overall picture is that the programmes that are closest to ordinary employment have the largest treatment effects. In this context, the most relevant evaluation is Forslund et al (2004) which analyses whether employment subsidy hastened the flow to unsubsidised work. The effect that they find has a reasonable and expected time profile, a lock-in effect during the first six months (employment subsidy was awarded for six months) and after that, a higher probability of finding work compared with control group. Summing the effects over all participants shows that employment subsidy shortened unemployment spells by eight per cent during a three-year follow-up period. The effects were qualitatively similar for those who received employment subsidy after a year than for those who received employment subsidy three years later in the unemployment spell.

In this chapter the treatment effect of subsidised employment is based on the evaluation of employment subsidy for the unemployed in Forslund et al (2004). An 8 per cent shortening of the expected unemployment spell has been translated here as 120

days, calculated from the date of entry into the programme until the jobseeker has found a job.[87]

In the absence of adequate evaluations of the new programmes, i.e. new start jobs and step-in jobs, we assume that the treatment effects of new start jobs, step-in jobs and special employment support are the same. This is likely to be true of the effects for the unemployed. However, it is not certain that the effects can be generalised to cover those who qualify for new start jobs through sick leave[88] or for newly-arrived immigrants. But there are not any better estimates on which to base the calculations and moreover, most of those receiving new start jobs have qualified for them via unemployment.

Subsidised employment gives rise to direct displacement, i.e. employers replace ordinary employees with subsidised employees. The entire programme volume cannot therefore be regarded as increased employment. Displacement can be broken down into dead-weight effects (the same person would also have been employed without a subsidy) and substitution effects (the same work would have also been performed without a subsidy). Displacement is usually greater the closer to the ordinary labour market the programmes are. Direct displacement for new start jobs is assumed here to be 65 per cent, which accords well with the econometric studies on displacement made using Swedish data (see Calmfors et al 2002). Displacement problems are less if the programmes target the individuals who are most detached from the labour market. Displacement is therefore estimated at 60 per cent for step-in jobs and for special employment support.

### 6.3.6 New start jobs

New start jobs were introduced in 2007 to make it easier for those detached from the labour market for a long time because of unemployment or illness, for example, to obtain work. New start jobs provide financial compensation to employers who employ a

[87] Forslund et al (2004) state that the 8 per cent shorter expected time corresponds to eight months less time to get a job, but this estimate concerns the time from the start of unemployment, not from entry into the programme. The authors of the study estimate that four months, i.e. a 120 day shortening of the expected unemployment spell from entry into the programme, may be a reasonable estimate.

[88] There was employment support for those on long-term sick leave between March 2004 and June 2008 in certain places and nationally between 2006 and June 2008. There is, however, no evaluation of the effects of the subsidy.

person who has been unemployed or ill for a long period and the length of subsidy is linked to the unemployment and sickness's length. New start jobs are an entitlement and do not require referral from the Public Employment Service but the Employment Service is to approve the new start job. Table 6.4 shows the current rules for new start jobs for different groups.

**Table 6.4 Rules for new-start jobs for different groups**

| Group | Qualifying period | Size of subsidy | Employer's monthly cost at a wage of SEK 19 000 * | Duration of new start job |
|---|---|---|---|---|
| Aged 20 – 26 | 6 months | Unreduced employer's social security contribu-tion (31.42 %) | SEK 15 973 | As long as the individual has been out of work, but a maximum of 12 months |
| Aged 20 – 26, has been on sick leave | 6 months | Unreduced employer's social security contribu-tion + employer's social security contribu-tion for young people (46.91 %) | SEK 13 030 | As long as the individual has been out of work, but a maximum of 5 years |
| Aged 26 – 55 | 12 months | Double employer's social security contribu-tion (62.84 %) | SEK 13 030 | As long as the individual has been out of work, but a maximum of 5 years |
| Aged over 55 | 12 months – 30/6/2010 6 months 1/7/2010– 30/6/2012 | Double employer's social security contribu-tion (62.84 %) | SEK 13 030 | Double the time the individual has been out of work, but a maximum of 10 years or until the individual reaches the age of 65 |

Note: The qualifying period refers to how long the individual must have been excluded from working life to qualify for a new start job. There are moreover certain special rules for newly-arrived immigrants, those sentenced to prison and participants in JUG which are not shown in the table. * The employer's wage cost without subsidy is SEK 24 970/month for employees over 26 and SEK 21 943/month for employees under the age of 26.

At the same time that the new-start jobs were introduced in 2007, the general and enhanced employment support, which were also

subsidies to employers who hired individuals who had been out of work for a long time, were terminated. Plus jobs, which were also an employment support mechanism for the long-term unemployed, were terminated in 2006. When new start jobs were expanded to include those on sick leave in 2008, employment support for those on long-term sick leave was terminated. The rules for the previous forms of employment support are summarised in Table 6.5. An important difference between new start jobs and the previous forms of employment support is that new start jobs focus on a broader target group. The previous forms of employment support targeted the openly unemployed, participants in ALMP programmes and people on long-term sick leave. The previous employment support for those on long-term sick leave targeted those who had been off sick for at least two years. In addition to the unemployed, new start jobs also target people on sick leave and people on early retirement who have been out of work for at least a year and newly-arrived refugees. Participants in JUG can also obtain new start jobs. Unlike the previous forms of employment support, new start jobs are covered by employment protection legislation.

**Table 6.5 Rules for the previous employment support mechanisms**

| | Qualifying period | Size of the subsidy | Employer's monthly cost at a wage of SEK 19 000 * | Duration of employment support |
|---|---|---|---|---|
| General employment support | 12 months | 50 % (ceiling SEK 350/day) | SEK 17 270 | 6 months |
| Enhanced employment support | 24 months | 75 % for 6 months (ceiling SEK 525/day), 25 % for 18 months (ceiling SEK 175/day) | SEK 13 420 for 6 months SEK 21 120 for 18 months | 2 year |
| Employment support for those on long-term sick leave | 24 months | 85 % (ceiling SEK 750/day) | SEK 8 470 | 6 months |
| Plus jobs | 24 months, 12 months for young people | 100 % (ceiling SEK 1 000 /day) and additional cost grant of SEK 100/150 /day | SEK 2 970, SEK 770 (SEK -330) with SEK 100 (SEK 150) additional cost grant | 24 months |

Note: * The wage cost to the employer without a subsidy is SEK 24 970/month.

An additional difference is that the subsidy period is (most often) longer than it is in the case of employment support. General employment support and employment support for those on long-term sick leave were limited to 6 months and enhanced employment support to two years. The duration of a new start job varies according to age and reason for qualifying (older persons and those on sick leave have a longer period of subsidy, see Table 6.4). The subsidy rate for the general employment support was 50 per cent (up to a ceiling of SEK 350 per day) of the wage cost and the subsidy rate for the enhanced employment support was 75 per cent of the wage cost (up to a ceiling of SEK 525 per day) for the first 6 months and 25 per cent for the following 18 months (up to a ceiling of SEK 175 per day). A rather low ceiling in the employment support mechanism meant that the actual subsidy was most often lower. For example, for a full-time employee with a

monthly wage of SEK 19 000, the subsidy rate in the general employment support was about 31 per cent.

There is no ceiling for the subsidy in new-start jobs. The subsidy is a double employer's social security contribution (62.84 per cent) for people over 26, a subsidy rate of 48 per cent.[89] For youth aged 20-26, the subsidy is an unreduced employer's social security contribution (31.42 per cent) if a person qualifies due to unemployment and an unreduced employer's social security contribution plus an employer's social security contribution for young people (46.91 per cent) if the person qualifies due to sick leave. This entails a subsidy rate of 27 per cent if the qualification is due to unemployment and a subsidy rate of 41 per cent for young people who qualify due to illness.

To sum up, new-start jobs most often provide higher benefits and a longer period of subsidy than the previous employment support mechanisms. New-start jobs are targeted on a broader group than the previous forms of employment subsidy. Higher subsidies and a broader target group, but one which does not have a strong position in the labour market, are probably positive for getting more people into sustainable employment. However, it is not certain that a long period of subsidised employment is positive; lock-in effects are probably much greater, which contribute to lower sustainable unsubsidised employment. New start jobs are moreover an entitlement and deadweight effects are probably greater than in previous forms of employment support. This entitlement can per se be important from the point of view of equal treatment but higher deadweight costs decrease the efficiency of the measure and the employment effects. It is not possible to assess how much larger the deadweight costs are compared with the previous employment support mechanisms. New-start jobs probably also create announcement effects that extend the unemployment spell, as the unemployed and the employers know in advance the exact date when the unemployed qualifies for new start jobs and there is a relatively strong threshold effect. This is different from an employment support mechanism when it was not known exactly when the referral would be made or whether it would be made. Compared with the previous forms of employment support, the design of the new-start jobs thus has both positive and negative effects and it is difficult to assess whether the positive or negative

[89] The subsidy rate is the subsidy divided by the employer's wage cost (62.84/1.3142=48 %).

effects predominate. It is assumed in the calculations that it is the greater volume of new-start jobs that affects employment effects compared with the previous forms of employment support. There may, however, be reasons to review the design of new start jobs to reduce threshold effects, deadweight costs and lock-in effects and to increase cost effectiveness.

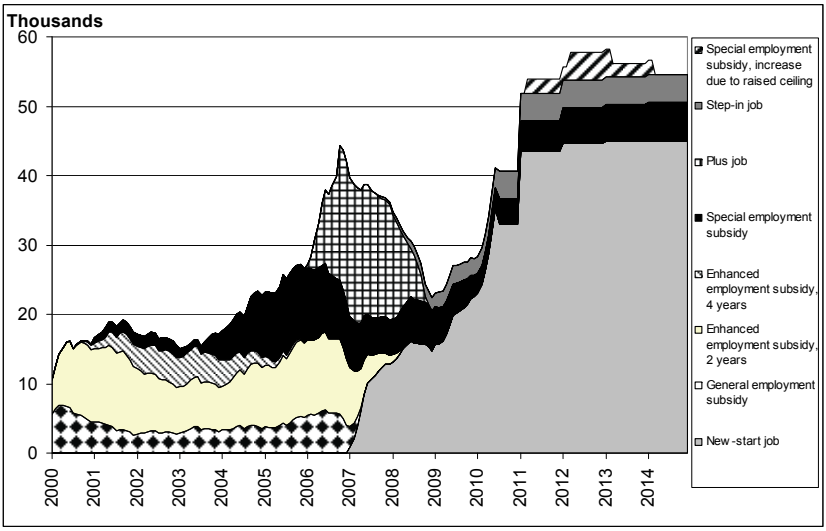
*Assessment of the effects of new start jobs*

The new start job volumes are higher than for the all the previous forms of employment support combined (see Figure 6.2). During 2006, subsidised employment (general employment support, enhanced employment support and plus jobs) totalled on average more than 27 000 people a month. New start jobs are expected to total about 45 000 people a month in 2013–2014. This implies that the volume of employment support is about 18 000 places per month higher than previously. We assume that the average new start job lasts for a year[90]. New start jobs are estimated to increase employment by around 12 200 individuals (18 000*(1-0.65)+ 18 000*120/365=12 200).

Unsubsidised employment is expected to increase by around 3 600 individuals (18 000*0.52-0.65*18 000 + 18 000*120/365 = 3 600).

[90] According to Public Employment Service calculations, the average number of months in programmes completed during 2010 was nine months for those who qualified for new start jobs via unemployment, 14 months for those who qualified via sick leave, and 13 months for those on part-time or hourly employment.

**Figure 6.2. Subsidised employment**




Sources: The Public Employment Service and own estimates.

### 6.3.7 Special employment subsidy

Special employment subsidy is a form of subsidised employment. The aim of the subsidy is to encourage employers to employ individuals who have been out of work for a long time and who have difficulties in obtaining regular work. The subsidy is provided to employers for a maximum of 12 months. The number of individuals with long unemployment spells has increased due to the financial crisis. Special employment subsidy has therefore been expanded to include participants in the job and development guarantee by raising the ceiling for payment to employers from SEK 750 to 890 per day for up to 85 per cent of the wage cost. As a result, more jobs with special employment subsidy are expected actually to be subsidised at 85 per cent. In addition, a financial subsidy is being introduced for supervision of SEK 50 per day to employers who employ individuals with the special employment subsidy. The subsidy should be for an initial period of three months when the need to settle in and receive guidance are particularly important. To ensure that the subsidy reaches those with a very weak position in the labour market, the qualifying period for special employment subsidy has been changed to six

months after entry into the job and development guarantee, which corresponds, with an exception for special groups, to an unemployment spell of two years. To qualify previously, the individual must have completed phase one of the job and development guarantee.

The changes in special employment subsidy apply for 2011–2012. It is assumed in the calculations here, however, that the increase in the ceiling and the change in the qualifying period will be permanent. Temporary changes would not have any long-term effects on employment or unemployment.

*Assessment of the effects of special employment subsidy*

The raised wage cap and guidance subsidy should lead to higher volumes in special employment subsidy. An extended qualifying period means that the subsidy targets those most detached from the labour market even more, which should decrease displacement effects. The treatment effect ought not to be different, however. It is reasonable to believe that special employment subsidy involves treatment similar to other employment support mechanisms. The number of average annual places calculated in the 2011 Budget Bill will increase by 8 000 places between 2011 and 2013, an average of around 2 670 more places per year. It is assumed here that the average duration of the subsidy period is nine months[91]. Displacement should be somewhat less than in new start jobs because the programme targets a weaker group. We assume that displacement is 60 per cent. The employment effect will then be around 2 200 employed per year (2 670*(1-0.60) + 2 670*12/9*120/365 = 2 200).

Unsubsidised employment is estimated to be approximately unchanged (2 670*0.15-0.6*2 670+2 670*12/9*120/365=-31).

### 6.3.8 Step-in jobs

A step-in job is subsidised employment in the private or public sector for newly-arrived immigrants. The employment is to be linked to participation in a Swedish for immigrants course or an

[91] According to the Employment Service calculations, the average length of the special employment subsidy was about nine months for those completing the programme during 2010.

achieved result from such course, and include some mentorship. Since July 2008, the time framework within which a person can obtain a step-in job is 36 months from the date on which a residence permit is granted. The step-in job can be for a maximum of 24 months. If employment is for more than half-time, the subsidy can be granted for no more than 6 months. The job can be for full time or part time and in the form of permanent employment, trial employment or temporary employment. As from 2011, the subsidy has been raised to 80 per cent of the wage cost, and the wage cap to SEK 800 per day and it will be possible to give the employer a subsidy of SEK 50 per day for three months for mentorship costs. The benefit was previously 75 per cent of the wage cost (up to a ceiling of SEK 750/day).

*Assessment of the effects of step-in jobs*

During 2010, nearly 2 600 individuals a month have been employed in step-in jobs. The number of step-in jobs is estimated at 4 000 per month over the next few years. Assuming that step-in jobs on average last for 6 months, this means that 8 000 individuals have a step-in job every year. It is reasonable to believe that the treatment effect of step-in jobs is about the same as for other employment support mechanisms, i.e. a 120 day shorter unemployment spell. Direct displacement should be less since the subsidy targets a very weak group and we assume that displacement is 60 per cent. Step-in jobs are therefore estimated to increase employment by around 4 200 individuals (4 000*(1-0.6) + 8 000*120/365 = 4 200).

Unsubsidised employment is estimated to increase by 1 000 individuals (4 000*0.2-0.6*4 000+8 000*120/365=1 000).

### 6.3.9 Work experience programmes

The Government has carried out measures including work experience programmes and introduced practical skills development and a temporary activation scheme Lyft to enable the unemployed to maintain contact with working life. The main objective of these measures is to prevent long-term unemployment and exclusion from the labour market which, in turn, is expected to promote long-term labour force participation. The purpose of work

experience schemes is also to strengthen the individual's ability to obtain work. Unemployed individuals who are older than 25 may be referred to a work experience place for at most six months. Prova-på (Try it out) places are a special measure within the framework of work placement for individuals with no or limited experience of Swedish working life. Work experience placement may also be arranged in the form of practical skills development which gives the unemployed an opportunity to maintain contact with working life and occupational skills. The maximum duration for PPP and practical skills development is 3 months. No major changes have been made in the placement measures, but all participants in ALMP programmes are to apply for jobs while participating in the programme.

Adda et al (2007) evaluate Swedish ALMP programmes and find that work experience programmes do not seem to have any positive effects for the participants but they delay the outflow from unemployment due to the lock-in effect. However, the evaluation studies a period of time when programme participation could be used to re-qualify for a new period of unemployment benefits. In addition, the study only includes men aged 26–30 when they entered the programme with at most a two-year upper secondary education. The results from Adda et al (2007) should therefore be interpreted with caution. The Public Employment Service (2010b) concludes that employment effects of different kinds of work experience programmes have been positive but relatively small and that it is only in the past few years that a somewhat more significant positive effect of this measure has been observed. Participants in the work experience programmes normally perform tasks which differ at least to some extent from ordinary tasks. The treatment effects should thus be less than in the case of subsidised employment. At the same time, this means that displacement should also be less of a problem. An important objective of work experience programmes is also to test willingness to work, which can shorten unemployment spells. This type of effect is not captured by the treatment effect.

*Assessment the effects of work experience programmes*

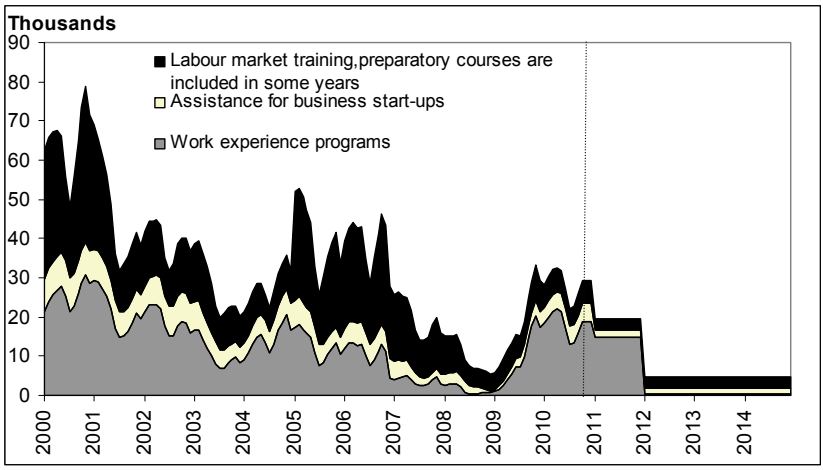
The treatment effect of work experience programmes is assumed to be modest: an unemployment spell 4 days shorter, because research

results typically show only small effects on the participants. Displacement is assumed to be 10 per cent. According to Public Employment Service calculations, the average duration of work experience placement and practical skills development was about three months and two months for prova-på (try it out) places among those who completed the programme during 2010.

Structurally, the number of annual placements in work experience programmes have decreased from about 16 000 placements between 2000 and 2006 to 200 placements between 2012 and 2014. The number of individuals who have participated in work experience programmes is thus 64 000 fewer (12/3*16 000). With a treatment effect of 4 days and a 10 per cent displacement effect, employment will increase by about 900 persons (16 000*0.1-64 000*4/365 = 900). The positive effect of the reduction in the work experience programmes comes from a decrease in the displacement of regular employment.

During the crisis, the volumes of placements were increased. However, the volumes have not been higher during the crisis than they were prior to 2006 (see Figure 6.3). Between 2009 and 2011, the number of placements (including Lyft places) has been increased by 42 900 average annual places to reduce the risk of persistent unemployment. Placements do not lead to any displacement of employment after they have terminated, and accordingly, only the treatment effect remains after 2011. Employment thus increases by around 1 900 people in the short term (12/3*42900*4/365=1 900). A temporary increase in work placement schemes has no effect on employment or unemployment in the long run, however.

**Figure 6.3 Number of participants in labour market training, assistance for business start-ups and work experience programs (work experience placements, practical skills development, prova på (try it out) places and Lyft)**




Sources: The Public Employment Service and own estimates. 2011 Budget Bill forecast for October 2010–2014.

### 6.3.10 Labour market training

Labour market training is vocational education at upper secondary or post-upper secondary level (in some cases also at higher education level). Vocational basic training occurs mostly in engineering, transport and restaurant courses. Labour market training normally lasts at most six months. Persons referred must be 25 years or over. Young people with disabilities and those belonging to the target group for step-in jobs may be referred from the age of 20 onwards. The volumes of labour market training have been scaled down sharply since 2006 but the content of the training is more or less the same. The goal of labour market training is to make it easier for the individual to obtain work and to make it easier for employers to find labour with the desired skills. Furthermore, labour market training is to prevent labour shortages in the labour market.

The newer studies of the effects of vocational labour market training on employment find significant positive effects for participants. De Luna et al (2008) analysed participants in labour market training between 2002 and 2004 and found that the vocational courses shortened the time to work by over 20 per cent,

which according to a calculation made by the authors of the study corresponds to around 50 days shorter unemployment spell calculated from the programme entry date. According to De Luna et al (2008), those with a lower level of education and those born outside the Nordic countries benefit more from participation in the programme than individuals with a stronger position in the labour market. Okeke (2005) and the Public Employment Service (2009b) also find positive effects of labour market training for the probability of employment. There are no studies of the effects of labour market training on vocational mobility.

It is very possible that labour market courses function better now than before due to the scaling down of the volumes (see Figure 6.3). Labour market training is a relatively expensive measure. The Government has therefore instead invested in regular vocational adult education (yrkesvux). We have no information as to how the treatment effects of these courses differ from labour market training. There is, however, no strong indication that they are worse than labour market training. However, regular education decreases labour force participation and thus both employment and unemployment during the education period. No assessment of the effects of the regular education efforts is made within the framework of this report

*Assessment of the effects of labour market training*

To sum up, the changes in the content of labour market training courses are not considered to have affected equilibrium unemployment or equilibrium employment because the changes compared with previous policy are not particularly large. The volume in 2010 was around 17 000 places lower than it was in 2006. It is, however, not clear whether the volume for 2006 also included preparatory training or only vocational training. We assume that there has been a reduction of 17 000 annual places in vocational labour market training since 2006. Previous research has not found any displacement effects from labour market training. According to Public Employment Service calculations, the average period of training for those leaving labour market training is about three months. The number of individuals who receive labour market training will then be 68 000 (17 000*12/3). De Luna et al (2008) found that vocational labour market training shortens the time to work from

entry into the programme by about 50 days. We consider this treatment effect to be reasonable. The reduction of the volume would thus indicate a reduction in employment amounting to 9 300 individuals in the long run (12/3*17 000*50/365=9 300).

During the downturn, labour market training was increased by 1 000 places in 2010 in order to counteract persistently high unemployment. The short-term employment effect is estimated at about 500 individuals (12/3*1 000*50/365=500). However, the long-term equilibrium is not affected by a temporary increase in labour market training.

### 6.3.11 Eliminated programmes

When reshaping ALMP, certain labour market programmes were eliminated. Computer activity centres, work experience abroad programmes, the sabbatical year (subsidised career break), educational leave replacement positions and jobs for recent graduates are programmes that have not been replaced by other similar programmes. It is difficult to calculate the macro effects of eliminating these programmes, but as there were relatively few participants in most of these programmes, these effects cannot have been particularly large (see Table 6.6).

Of the programmes eliminated, only the sabbatical year had a large number of participants. The sabbatical year had 13 000 participants in 2006. The sabbatical year meant that certain employees (those taking the sabbatical) temporarily left the labour force and were replaced by people who were previously unemployed (substitutes). In LFS those taking the sabbatical were treated as employed on leave. The sabbatical year thus increased LFS employment in the short term, but it also increased absence and thus decreased average working hours. Unemployment (ILO-definition) decreased by the number receiving substitute positions. Fewer individuals applying for jobs tend to increase wage requirements and the number of jobs is also affected by how many can and want to work. As the sabbatical year decreased the labour supply of those on sabbatical, the number of jobs should also have been reduced. The size of the reduction in employment depends on who participates in the programme and what effects the programme has. The results from an evaluation of the labour market effects of the sabbatical year (Lindqvist et al 2005) show

that those who had taken a sabbatical year did not work more after the career break than they would otherwise have done. The sabbatical year does not contribute to reduced sick leave but may lead to earlier retirement. There was a positive effect of obtaining a substitute position. On average, unemployment spells decreased by 23 days during the year following the substitute position. In the long run, the removal of the sabbatical year is expected to have a small positive effect on employment. It is, however, difficult to quantify the effect.

**Table 6.6 The number of participants in the terminated programmes which have not been replaced by similar programmes**

| Programmes | The number of participants 2006 |
|---|---|
| Sabbatical year | 13 000 |
| Computer activity centres | 2 500 |
| Work experience abroad | 160 |
| Educational leave replacement positions | 1 100 |

Note: Information about the number of participants in jobs for recent graduates is lacking.

Source: The National Institute of Economic Research

# References

Adda, J., M. Costa Dias, C. Meghir and B. Sianesi (2007): Labour market programmes and labour market outcomes: a study of the Swedish active labour market interventions. IFAU working paper 2007:27.

Andersson Joona, P. and L. Nekby (2009): Tipping the scales towards greater employment chances? Evaluation of a trial introduction program (TIP) for newly-arrived immigrants based on a random program assignment. IZA Discussion Paper No. 4072

The Public Employment Service (2009a): Kompletterande aktörer – Återrapportering till regeringen, 3 August 2009.

The Public Employment Service (2009b): Arbetsmarknadsrapport 2009:2.

The Public Employment Service (2010a): Fördjupade analyser. Återrapportering till regeringen, 2010-08-02.

The Public Employment Service (2010b): Arbetsmarknadsrapporten 2010.

Behaghel, L., B. Crepon and M. Gurgand (2009): Evaluation d'impact the l'accompagnement des demandeurs d'emploi par les operéteurs de placement et le programme Cap vers l'entreprise. Final report, September 2009.

Bennmarker, H., E. Grönqvist, B. Öckert (2009): Betalt efter resultat – utvärdering av försöksverksamhet med privatarbetsförmedlingar. IFAU report 2009:23.

Bernhard, S. and J. Wolff (2008): Contracting out placement services in Germany, Is assignment to private providers effective for needy jobseekers?, IAB discussion paper 5/2008.

Calmfors, L., A. Forslund and M. Hemström (2002): Vad vet vi om den svenska arbetsmarknadspolitikens effekter? IFAU report 2002:8.

Calmfors, L., Forslund, A. and M. Hemström(2004): The effects of active labor market policies in Sweden: what is the evidence? in J. Agell, M. Keen and J. Weichenrieder (red.): Labor Market Institutions and Public Regulation. MIT Press.

Carling, K. and L. Larsson (2005): Does early intervention help the unemployed youth? Labour Economics 2005, vol 12, no. 3, p. 301–319.

Carling, K. and K. Richardson (2004): The relative efficiency of labor market programs: Swedish experience from the 1990s. Labour economics 2004, vol 11, no. 3, p. 335–354.

De Luna, X., A. Forslund and L. Liljeberg (2008): Effekter av yrkesinriktad arbetsmarknadsträning för deltagare under perioden 2002–04. IFAU report 2008:1.

Finanspolitiska rådet (2010): Svensk finanspolitik. Finanspolitiska rådets report 2010.

Forslund, A., P. Johansson and L. Lindqvist (2004): Anställningsstöd – an väg från arbetslöshet till arbete? IFAU report 2004:17.

Forslund, A. and O. Nordström Skans (2006): (Hur) hjälps ungdomar av arbetsmarknadsprogram för unga? IFAU report 2006:5.

Forslund, A. and J. Vikström (2010): Arbetsmarknadspolitikens effekter på sysselsättning and arbetslöshet – en översikt. A Appendix 1 in *Vägen till arbete, Arbetsmarknadspolitik, utbildning och arbetsmarknadsintegration*. Appendix 1–4 of Långtidsutredningen 2011, SOU 2010:88.

Fröberg, D. and L. Lindqvist (2002): Deltagarna i aktivitetsgarantin. IFAU report 2002:11.

Hall, C. and L. Liljeberg (2011): En jobbgaranti för ungdomar? På Arbetsförmedlingens ungdomsinsatser. IFAU report 2011:1.

Harkman, A., M. Mikkonen and S. Okeke (2010): En utvärdering av kompletterande aktörer i jobb och utvecklingsgarantin. Working paper 2010:2, The Public Employment Service.

Hasluck, C., P. Elias and A. E. Green (2003): The wider labour market impacts of employment zones. Warwick Institute of Employment Research.

Hägglund, P. (2009): Effekter av intensiferade förmedlingsinsatser vid Arbetsförmedlingen – erfarenheter från randomiserade experiment. IFAU report 2009:15.

Hägglund, P. (2002): Första året med aktivitetsgarantin. URA2002:2. The Public Employment Service.

Johansson, P. and O. Åslund (2006): "Arbetsplatsintroduktion för vissa invandrare" – teori, praktik och effekter. IFAU report 2006:6.

Larsson, L. (2003): Evaluation of Swedish youth labour market programmes. Journal of Human Resources 2003, vol 38, no. 4, p. 891–927.

Liljeberg, L. and M. Lundin (2010): Jobbnätet ger jobb: effekter av intensifierade arbetspraktik insatser för att bryta långtidsarbetslöshet. IFAU report 2010:2.

Lindqvist L., L. Larsson and O. Nordström Skans (2005): Friårets arbetsmarknadseffekter. IFAU report 2005:10.

Martinson, S. and K. Sibbmark (2010a): Vad gör den Jobb- och Utvecklingsgarantin? IFAU report 2010:15.

Martinson, S. and K. Sibbmark (2010b): Vad gör den Jobb- och Utvecklingsgarantin för Unga? IFAU report 2010:22.

Okeke, S. (2005): Arbetsmarknadsutbildningens effekter för individen. Ura 2005:6. Arbetsmarknadsstyrelsen.

Sianesi, B. (2001): Differential effects of Swedish active labour market programmes for unemployed adults during the 1990s. IFS WP01/25.

Winterhager, H. (2006): Private placement services – A microeconometric evaluation for Germany. ZEW discussion paper no. 06-026.

Winterhager, H., A. Heinze and A. Spermann (2006): Deregulating job placement in Europe: A microeconometric evaluation of an innovative voucher scheme in Germany. IZA discussion paper no. 2109.

# 7 Effects of the sickness insurance reform

## 7.1 Summary

In the 2008 Budget Bill, an extensive package of sickness insurance reforms was announced.[92] The reform package aimed to strengthen the work capacity of those on sick leave, create incentives to work and strengthen demand for labour which had been on long-term sick leave or which had received sickness and activity compensation, thus increasing the labour supply. Further reforms in the area were announced in the Budget Bills for 2009 and 2010.[93]

This chapter describes these reforms and discusses the effects these reforms may have had on potential employment, equilibrium unemployment and the potential number of hours worked. Table 7.1 summarises the estimates. It should be noted that very great uncertainty is attached to these assessments.

[92] Government Bill 2007/08:1, see, for example, pp. 12–15.
[93] Government Bill 2008/09:1 and Government Bill 2009/10:1.

**Table 7.1 Long-term effects of structural reforms of sickness insurance on potential employment, equilibrium unemployment and the potential number of hours worked**

| Reform | Equilibrium unemployment | Employment | Hours |
|---|---|---|---|
| Rehabilitation chain including upper time limit | 0.07 | -0.07 | 0.04 |
| Downward factor adjustment of sickness benefit qualifying income (SGI) | 0.01 | -0.03 | 0.06 |
| Changed sickness and activity compensation | 0.4 | 0.5 | 0.4 |
| **TOTAL** | **0.48** | **0.4** | **0.5**[94] |

Note All figures are percentages, except the effect on equilibrium unemployment which is stated in percentage points.

Equilibrium unemployment is thus estimated to increase as a result of the sickness insurance reform.[95] This is partly due to many of those on sick leave being treated as employed in the Labour Force Survey (LFS); measured unemployment will increase if individuals with work capacity are instead referred to ALMP programmes. If they start work, it will not affect employment but will only affect average working hours and the number of hours worked. The largest effect on unemployment will, however, come from the changed rules in sickness and activity compensation (S/A). The stricter qualifications for S/A will lead to a marked decrease in the number of individuals with S/A. The individuals receiving S/A will not be counted as part of the labour force. When fewer individuals receive S/A, at least some of these will be in the labour force and unemployed, which is the most important explanation for the rise in equilibrium unemployment as a result of the reforms. Despite the rise in equilibrium unemployment, potential employment also increases due to the reforms. This effect is attributable to the changed rules for sickness and activity compensation where some individuals who would have previously had early retirement are

[94] This corresponds to about 19 000 full-time employed.
[95] In the summary table in Chapter 3 the effect of the sickness insurance reform is summed to 0.4. This is a rounding-off error, which affects the total effect of the structural reforms on equilibrium unemployment by 0.03 percentage points.

instead assumed to work. In other words, statistical classification has a great impact on the effects of the sickness insurance reforms on employment and unemployment. A more relevant measure to describe the effect of the reforms on the labour market is thus the number of hours worked. The total number of hours worked is estimated to increase by about 0.5 per cent due to the reforms, corresponding to about 19 000 full-time employees.

## 7.2 The development of sickness insurance

### 7.2.1 How has sickness insurance been reformed since 2006?

The 2008 Budget Bill contained an extensive package of sickness insurance reforms. See the text of the Bills and other legislative history for a detailed and comprehensive description of the reforms.[96]

The reforms for which effects have been calculated are:

1. **The rehabilitation chain** with time limits at 3, 6 and 12 months in the sickness benefit.
2. A **time limit for sickness benefit** at 12 months and the introduction of an extended sickness benefit after that for at most a further 18 months with a lower benefit. It is now possible, however, to apply to continue to receive an 80 per cent benefit, i.e. sickness benefit at the normal level, without a time limit.
3. Only a permanent reduction of work capacity is to provide **entitlement to sickness and activity compensation**. Time-limited sickness and activity compensation has been abolished.
4. **Sickness benefit qualifying income (SGI)** is to be based on previous earned income. Pending a report on this matter, SGI is for the time being adjusted downwards by a factor of 0.97.
5. Increased possibilities for **returning to work for individuals with sickness and activity compensation** through a sliding reduction of sickness and activity compensation, and changed rules for dormant sickness and activity compensation.

[96] See Government Bill 2007/08:136 A reformed sick leave process for increased return to work, Government Bill 2007/08:124 From sickness compensation to work.

The above list does not give a comprehensive list of the sickness insurance reforms carried out, but these reforms are considered to be the most important in terms of their labour market effects.

This chapter should not be regarded as a comprehensive review of how policy changes will affect the number of persons on sick leave in future as other reforms which do not directly affect sickness insurance may also affect the number on sick leave, for example, the in-work tax credit. The effects of the in-work tax credit are discussed in another chapter.

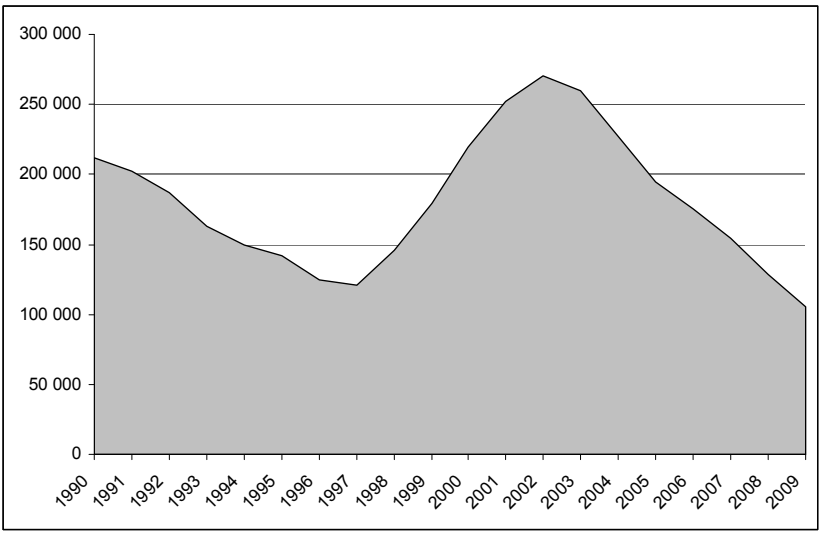
The different reforms are discussed individually below, the theory and empirical findings that may be applicable in estimating the effects, and finally an estimate of the size of the effect of the reforms on employment, unemployment and the number of hours worked.

### 7.2.2 The development of sickness insurance in the recent times

In the late 1990s and early 2000s, sick leave increased very sharply (Figure 7.1). The increase was mainly due to sickness cases becoming longer, but there was also an increase in the number on sick leave. The most serious consequence of the increase in the number of long sickness cases was that an increasing number left the labour market with sickness and activity compensation (Figure 7.2). Of particular concern was the increase in activity compensation among young people (Figure 7.3).[97]

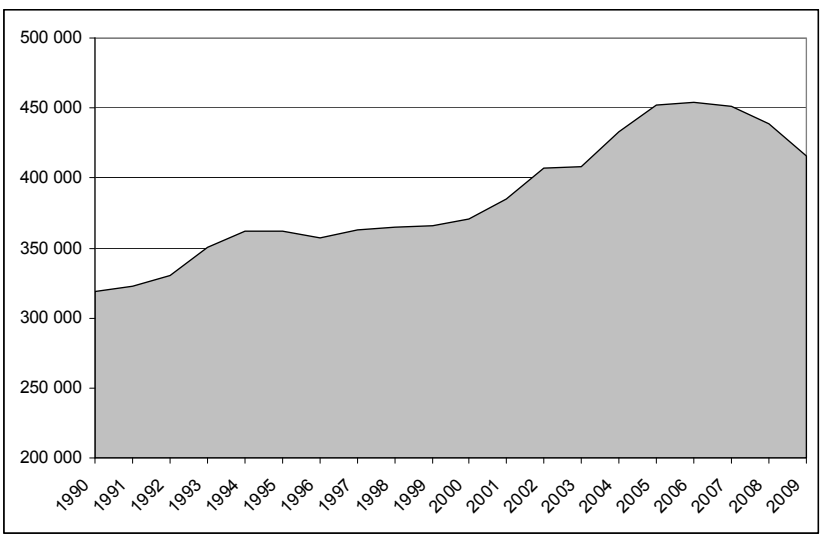
[97] Activity compensation is provided for individuals aged 19-29.

**Figure 7.1 Number of full-year equivalents supported by sickness benefit 1990–2009**




Source: Statistics Sweden, Household Finances 2009.

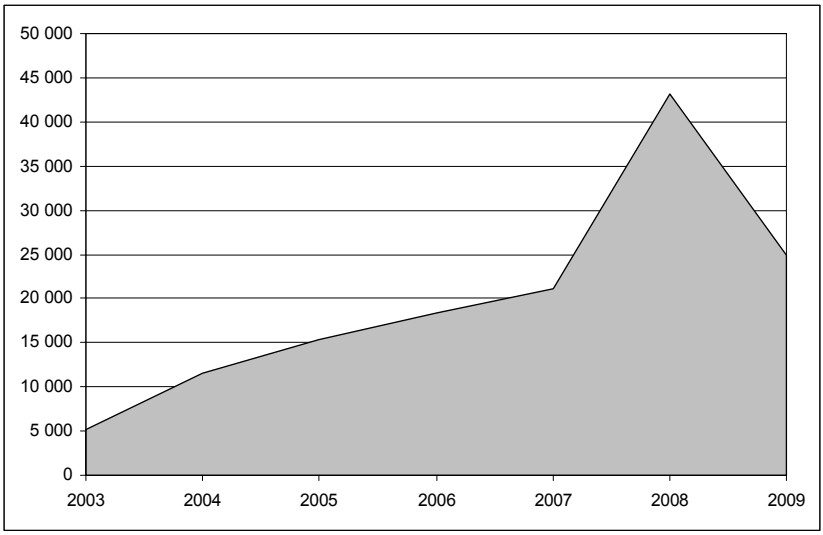
**Figure 7.2 Number of full-year equivalents supported by sickness and activity compensation 1990–2009**




Source: Statistics Sweden, Household finances 2009.

**Figure 7.3 Number of full-year equivalents supported by activity compensation 2003–2009**

Source: Own calculations on Swedish Social Insurance Agency's statistics.




Sick leave has decreased sharply since the peak year 2002, when the number of full-year equivalents supported by either sickness benefit or sickness and activity compensation peaked at just over 675 000. It is primarily sickness benefit days that have decreased; they began to decline already in 2003. This change is due to a decrease in the number individuals with sickness benefit and in the average period of sick leave.

In mid-2006, the number of those with sickness and activity compensation stopped increasing. Since autumn 2007, the number of individuals with sickness and activity compensation has actually fallen somewhat (calculated on an annual basis). This development can be partly explained by decrease in the inflow to sickness and activity compensation when fewer individuals receive sickness benefit. Statistics from the Swedish Social Insurance Agency also indicate that demography is helping to keep down the number of those with sickness and activity compensation just now, as many of those with sickness compensation are reaching retirement age and leaving the sickness benefit scheme. The figures for 2008 and 2009 are also affected by the sickness insurance reforms. But the number

of those with activity compensation (i.e. young people) was still high in 2009, even if a marked reduction has taken place since 2008.

It is difficult to find an explanation for the decrease in sick leave, as the development is probably the result of a number of interacting factors. A number of reforms took place in this area from the end of the 1990s to the early 2000s.[98] None of these reforms appears to be crucial to the development of sick leave, even if the development in certain months coincides with the change in rules that took place.[99] In addition to concrete rules, sickness insurance can, of course, be affected by less direct factors. The Swedish Social Insurance Agency since shortly after the start of the 2000s has begun to apply the rules in a more uniform and stricter way. Drawing up medical guidelines for the insurance has led to more uniform processing by doctors and in general cooperation between the Swedish Social Insurance Agency, the Public Employment Service, employers and doctors concerning the sick has grown.[100] The merging of Sweden's 21 freestanding insurance offices and the National Social Insurance Board in 2005 into an integrated government agency, the Swedish Social Insurance Agency, has also contributed to a more uniform treatment of citizens and a more efficient process. Part of the explanation for the decrease can also be found in these parameters. Furthermore, shifts in norms and attitudes in society to being on sick leave may have affected the trend.

Some research indicates that norms and attitudes affect sick leave at least to some extent. A comparative study between two municipalities in Sweden, Strömsund in Jämtland and Gislaved in Småland, shows a very different attitude towards sick leave. This is also reflected in morbidity rates, which were considerably higher in Strömsund, where the attitude and approach to sick leave was generally more permissive and less focused on a strict work-first line.

[98] The level of benefit has changed during the period in question. It was raised from 75 to 80 per cent in January 1998, to be reduced from 80 to 77.6 per cent in July 2003 and again raised to 80 per cent on 1 January 2005. However, it does not appear likely that the changes in benefit level have played a crucial role in the decrease in sick leave. The employer's responsibility for sickness benefits during the sick pay period and co-financing were also reformed during the period, but, not in a way, from an overall perspective, that would seem to explain the decrease. Co-financing was introduced on 1 January 2005, when the reduction was already a fact. It was abolished on 1 January 2007, and the decline has continued after that date. The sick pay period also varied during the period in question. The sick pay period decreased from 28 to 14 days on 1 April 1998, to be increased to 21 days on 1 July 2003, and again decreased to 14 days on 1 January 2005.

[99] See Hägglund & Skogman Thoursie (2010) for a discussion.

[100] For example, through an increased use of what are referred to as status meetings.

The stigma of not having paid employment was less in Strömsund.[101] A couple of studies based on Swedish data have also succeeded in identifying effects indicating that sick leave is "contagious". If you live and circulate in groups with a high level of sickness absence, there is also a higher probability that you will receive sickness benefit yourself, compared with if you live among individuals with a low risk of sick leave. Lindbeck et al (2006) show that the effect occurs among neighbours (geographical area) and Hesselius et al (2008) among individuals from the same ethnic group. The interpretation of these results is that social interactions between individuals are a factor affecting sick leave, i.e. there seems to be a measure of "contagion" between individuals in their attitude towards sick leave. A shift in norms and attitudes in society could thus to a certain extent underlie the sick leave trend.

There is research support for announcement effects, i.e. the reforms have an effect from the time that they are announced and not just when they come into effect (which often takes place with a delay). The plans and ideas for an extensive reform of sickness insurance have been discussed in the media and other fora, ever since the appointment of the Social Insurance Commission in 2004, if not before that. In 2005, a delegation was appointed with a view to forestalling and preventing incorrect payments (The FUT delegation), which also contributed to a lively discussion in the media. The Government's proposals for sickness insurance reform were presented in 2007 and there was a public debate of individual proposals. The whole reform package in its final form was presented in autumn 2007 in the Budget Bill and has been gradually implemented from 2008 onwards. The announcement effects of the reform package may thus also have affected development prior to implementation in 2008.

In other words, it may be difficult to get an overview of the effects of the. The effects can be discussed on the basis of some kind of general equilibrium, including announcement effects, changes in norms and attitudes and interaction with other reforms. The reforms also have an effect on the individual level where they affect both the incidence, i.e. how many individuals are on sick leave and the duration, i.e. the length of sick leave periods.

[101] Frykman & Hansen (2005).

## 7.3 The rehabilitation chain and time limits in sickness insurance

The purpose of the introduction of the rehabilitation chain was to achieve a more active sick leave process including access to support and rehabilitation efforts early in the sickness case with the focus on returning to work.[102]

The start of the sick leave period is unchanged compared with the previous regulations.[103] After the initial 14 days up to day 90 of the sick leave, the person on sick leave is entitled to sickness benefit if he or she cannot perform his or her current, or other temporary, work at his or her employer. To obtain sickness benefit for the next three months (i.e. up to six months), the individual must be unable to perform any work for his or her employer. After six months of sick leave, the individual's capacity is to be tested vis à vis the regular labour market as a whole. This means that individuals who cannot return to their previous employer, but who are considered to have some form of work capacity, are no longer entitled to sickness benefits.[104] They should instead register with the Public Employment Service. If the person on sick leave is considered not to have any work capacity after 12 months of sickness benefits, he or she can receive the extended sickness benefit for at most a further 18 months. Such sickness benefits may, for example, be paid if the insured person is waiting for medical treatment or if work capacity is expected to be restored during the period. The benefit level for extended sickness benefit is reduced from 80 to 75 per cent of the sickness benefit qualifying annual income (SGI).[105] A person who is still on sick leave after 30 months and considered to be incapable of work is granted sickness compensation. Sickness compensation should in future only be

[102] Already before the introduction of the rehabilitation chain, the "step-by-step" model was applied by the Swedish Social Insurance Agency. The important difference is that the rehabilitation chain introduced time limits by which the different assessments of work capacity should have been carried out.

[103] After the qualifying day, the employer pays sick wage for the first 14 days. A medical certificate is required if the sick leave exceeds seven days.

[104] If the insured person is expected to be able to do other work only if a wage subsidy is granted or if employment can be arranged through Samhall, sickness benefits can be paid temporarily until such work is available. The test after six months can be deferred for an additional six months if there is reason to believe that the insured person can start work for his or her employer again before the sickness case has continued for a year. It is also possible to postpone testing in relation to the whole of the labour market if it would otherwise be unreasonable.

[105] It is also possible to apply for sickness benefits at the normal level, making it possible to receive an 80 per cent sickness benefit without a time limit.

granted to individuals who have a clear diagnosis and a substantially and permanently reduced work capacity. If the individual in question does not comply with the above criteria, he or she is to be transferred to unemployment insurance and the Public Employment Service's introduction programme, working life introduction[106]. Individuals whose extended sickness benefit days or time-limited sickness compensation is exhausted can receive sickness benefit again at the earliest three months after sickness insurance benefits have been exhausted.

### *Time limits with checks*

Hägglund (2010) investigates whether the rehabilitation chain has contributed to the generally positive development of sick leave periods. The transitional rules formulated on introduction of the rehabilitation chain are used in the evaluation as a natural experiment. The study makes use of the fact that the new rules introduced on 1 July 2008 only applied to new sickness cases. Sickness cases commencing prior to that date were treated until the end of 31 December 2008 within the framework of the old rules. Accordingly, sickness cases that started shortly before 1 July 2008 can be compared with sickness cases that started shortly after.[107] Hägglund finds that the rehabilitation chain reduced sickness cases by an average of 0.4 per cent. This study only takes into account the effects of the rehabilitation chain on the duration of sickness cases, but it is possible that the incidence is also affected. Furthermore, a short follow-up period of 28 weeks is used in the study because the study was carried out very soon after the introduction.

Other studies that may be relevant for the effect of the rehabilitation chain are, for example, Hesselius, Johansson &

[106] Working life introduction has been introduced for those individuals whose sickness benefit days or time-limited sickness compensation is exhausted. Working life introduction, which is to be individually adapted, consists of a focused analysis and survey of the individual's prospects and need of assistance. The programme is to last no more than three months. After working life introduction, the individual is to be referred to the Public Employment Service's ordinary measures, such as vocational rehabilitation, the job- and development guarantee, wage subsidy, special employment support, new start jobs or own job search, where possible. For some insured individuals, additional labour market measures are not justified, considering their state of health. These individuals can re-apply for sickness benefit or sickness compensation.

[107] More specifically, the change in outcome for sickness cases between June and July 2008 is compared with the change between June and July 2007.

Larsson (2005) who use a randomised experiment to investigate how individuals' sick leave is affected by the requirement for a medical certificate. In this experiment, which took place in Jämtland and in Gothenburg, a randomly selected group was given a longer time – 14 days instead of the normal 7-day period – before they had to submit a medical certificate to obtain further sick leave. It was found that the number of sick leave days on average increased by 6.6 per cent when the requirement for a medical certificate was extended. The study also clearly shows that the probability of ending a sickness period is greatest the day before a medical certificate is required; in the experiment group this "peak" in inflow probability shifted from the seventh to the fourteenth day. Given that a person is on sick leave on the seventh/fourteenth day, the probability of ending the sick leave is three times greater than on all other days. How often individuals are on sick leave, the inflow to sick leave is not affected by the reform, however. In other words, the authors do not find any support for preventive effects. This can be interpreted to mean that very early measures are required if decreasing the inflow is desired. Hesselius *et al* estimate on the basis of their result that if the requirement for a medical certificate was moved forward from the current (at the latest) eighth day to the third day of illness, sick leave might decrease by a half percentage point (from 5.5 to 5 per cent per year in 2005). The authors point out, however, that one should be careful about generalising the results to reforms other than the one studied.

Research on unemployment contains many more studies on control and sanctions. These results can be briefly summarised: both seem to play an important role in keeping unemployment down. But sick leave and sickness insurance differ so much from unemployment and unemployment insurance that it is difficult to draw any direct parallels, rather, it has to be regarded more as a qualitative conclusion. Another study of interest in this context is Engström *et al* (2007) on increased control of temporary parental benefits (VAB). This is based on an extensive randomised experiment in spring 2006. In all, an estimated 22.5 per cent of all paid temporary benefits are attributed to overuse. However, there are considerable differences between the care of sick children and the sickness benefit.

*Decreasing benefit profile and upper time limit*

There is no theoretical research about the effects of a sickness benefit that varies over time. One alternative which is close at hand is to study the research on unemployment insurance. There is support in both the theoretical and empirical studies of unemployment insurance showing that a time limit and a decreasing benefit profile increase the outflow from unemployment (to work). This is because a profile of this kind provides stronger incentives to look for work and to the extent that the unemployed person's efforts to find work affect the probability of obtaining a job, this leads to an increased outflow.

The main conclusions from the research[108] on unemployment are that:

i. a declining benefit profile, and a time limit when the benefit ceases completely reduce the reservation wage the closer to the exhaustion of benefits the employed is and thus leads to shorter unemployment spells, and

ii. a declining benefit profile weakens the incentives to keep working, as the insured is compensated relatively well in the event of job loss (compared with a constant benefit at the same total insurance value). An optimal system should therefore in some way tax entry into unemployment through, for example, qualifying day(s).

What do these conclusions say about a time limit and declining benefit profile in sickness insurance? The argument for qualifying day(s) also applies to sickness insurance, which is also reflected in the current rules. There is, however, no research, either on unemployment or sickness insurance, which specifies the optimal number of qualifying days. It is conceivable that qualifying days have a diminishing effect, i.e. the first qualifying day has the greatest effect. *Too* many qualifying days moreover provide an opposite time profile i.e. a benefit that increases over time, which does reduce the inflow, but may lead to longer sickness cases.

The economic term reservation wage (i.e. the wage at which the individual's benefit from market work is the same as the benefit of not working) is an expression of the individual's financial

[108] See, for example, Fredriksson & Holmlund (2001), Fredriksson & Holmlund (2004) and Mortensen (1977).

incentives to begin or resume working. The reservation wage determines the wage level at which the applicant likely to accept a job offer. A reduced reservation wage should thus lead to a higher labour supply and lower equilibrium unemployment. Other factors also play an important role for sickness insurance, however, and consequently, the effect on the labour supply and unemployment is not clear. A change in benefit at a specific time, for example, after a year, can just as in unemployment be expected to have effects both *before* and *after* that time. The total effect on the labour supply depends on both these effects. A benefit that decreases over time is expected to increase the outflow from sick leave to work already *before* the time at 12 months when it decreases as it motivates the insured to start to act early in the sick leave period. The outflow from sick leave to work is also expected to increase *after* the one-year time limit, given that the benefit is then de facto reduced. However, there are two problems in estimating the size of this effect: a) there is limited research on the sensitivity of those on long-time sick leave to financial incentives[109], but this sensitivity is likely to be lower than for those on short-term sick leave, and b) the group on long-term sick leave after the introduction of the reform is hardly identical with the group that was on long-term sick leave prior to the reform. Given that the outflow from sick leave increases already before the time limit, individuals who remain on sick leave will probably be more ill and less inclined to return to work than they were on average before the reform.

Based on unemployment insurance research, it is thus possible to conclude by theoretical discussion that a declining benefit profile ought to lead to shorter sickness cases. Depending on how the total insurance value changes on introduction of a declining profile and the time limits, the inflow may either increase (unchanged insurance value) or decrease (reduced insurance value).

But there is no empirical support for a declining benefit profile in sickness insurance. Some empirical conclusions can, however, be discussed on the basis of the research. For example, Johansson & Palme's study (2005) can provide some indications. It shows that an upward sloping benefit profile leads to fewer but longer sickness cases; the opposite should apply to a *declining* profile. It should be possible to avoid an increase in inflow given that there is an initial cost associated with a new sickness case – the qualifying day. Any

[109] Hesselius & Persson (2007) show that individuals on sick leave for between three months and a year are relatively sensitive to changes in the benefit.

change in the inflow will also depend on the change in the insurance's value as a whole.

We have also limited knowledge about how the size of the benefit affects very long sickness cases. Theoretically, it could be argued that sensitivity to the size of the benefit should decrease with the passage of time, but it is ultimately a question for empirical analysis. Hesselius & Persson (2007) show that individuals on sick leave for between three months and a year are relatively sensitive to changes in the benefit. At the same time, the study is based, like most other studies, on relatively small adjustments of the benefit level. The question is what effect very large changes in the benefit would have, as well as a time limit, on behaviour.

The empirical research on unemployment insurance has shown that time limits are of relevance to the length of the unemployment spell. One example is Carling et al (1996) which, using Swedish data, have shown that the transition to work increased at the end of the benefit period. In the Social Insurance Commission's brochure no. 16, *Vad påverkar flödet från arbetslöshet till sjukskrivning? [What affects the flow from unemployment to sick leave, in Swedish]*, the analysis from Carling is repeated using Swedish data from 2004 onwards. The Commission also finds an increased shift to work at the end of the benefit period. As in Larsson (2006), the Commission also finds that the transition from unemployment to sick leave increases when unemployment benefit days are exhausted. This is not unexpected as the benefit for most people is higher in sickness insurance compared with unemployment insurance.

The empirical results around time limits from the research on unemployment do not explain exactly what can be expected to happen with a time limit in sickness insurance. The results can nonetheless provide some guidance as to how a time limit in sickness insurance might operate. The Social Insurance Commission notes in its analysis that the time limits in unemployment insurance undoubtedly contribute to shortening unemployment spells. Even if sickness insurance does not have the same kind of problems as unemployment insurance, and does not insure the same situations, according to the Social Insurance Commission "a time limit could help early in the sick case give the

person on sick leave the right expectations and create the conditions for taking the right steps in good time."[110]

### 7.3.1 Estimating labour supply effects for the rehabilitation chain with time limits and the upper time limit in sickness insurance

It is difficult to assess what effects the rehabilitation chain with time limits and the upper time limit may be expected to have. Access to studies or other background analysis is very limited. Considerable uncertainty is therefore attached to the assessment of the reform. According to our assessment, two different kinds of background analysis can provide some guidance on how the rehabilitation chain and time limits affect the labour supply:

i. Hägglund (2010) calculates that the rehabilitation chain has reduced sickness cases by 0.4 per cent. This would correspond to just under 1 000 full-year equivalents.[111]

ii. It is also reasonable to take into account what the actor which is to implement the rules – the Swedish Social Insurance Agency – itself believes will happen to sick leave as a result of the rehabilitation chain and the upper time limit.

The Swedish Social Insurance Agency calculated at an early stage that the rehabilitation chain's time limits at 3, 6 and 12 months would lead to around 2 000 fewer individuals on sick leave.[112] The upper time limit at 30 months would lead to around 20 000 fewer on sick leave. The Swedish Social Insurance Agency's most recent forecast of flows out of the sickness benefit due to the upper time limit shows that about 16 000 individuals leave sickness insurance due to the upper time limit before a new equilibrium is reached, i.e. if we take into account that a certain number of individuals will reach the upper time limit every year and that an adjustment will now take place in the next few years before the new flow equilibrium is reached.

[110] Page 61 of publication no. 16, Social Insurance Commission.
[111] The effect is calculated on the total number of sick leave days decreasing by 0.4 per cent, divided by 365. This calculation is based on the number of days paid in 2006.
[112] The Swedish Social Insurance Agency, Anslagsbelastning och prognos för anslag inom Försäkringskassans ansvarsområde budgetåren 2008-2011. Report 1 August 2008. Dnr 900-2008.

The Swedish Social Insurance Agency thus estimated that about 20 000 individuals would leave sickness insurance due to the upper time limit. The most recent estimate calculates that about 16 000 individuals will leave sickness insurance as a result of the upper time limit before a new equilibrium is reached. This can be interpreted as more individuals leaving sickness insurance "prematurely", possibly due to the checks in the rehabilitation chain. Seen in this light, the Swedish Social Insurance Agency's figures can be interpreted as meaning that the rehabilitation chain leads to 6 000 fewer people on sick leave.[113] This is a much larger effect than that in the only evaluation to date of the rehabilitation chain. Hägglund's effect which would lead to almost 1 000 fewer on sick leave (full-year equivalents) may, however, be regarded as a floor as it has a short period of evaluation[114] and does not take into account any effect on incidence but only on the duration. The 6 000 above derived from the Swedish Social Insurance Agency's forecast do not refer, however, to full-year equivalents so that this consideration together with a general principle of caution leads to an estimate that the rehabilitation chain decreases the number on sick leave (full-year equivalents) by 3 000.

When assessing the effect of the fixed time limit, the flow forecasts of the Swedish Social Insurance Agency are taken into account, and thus the upper time limit is assumed to lead to around 16 000 fewer people on sick leave. Overall, it is thus assumed that the rehabilitation chain and the fixed time limit will lead to an outflow from sickness insurance totalling 19 000 individuals.

What happens to the individuals who leave sickness insurance? Some guidance can be obtained by studying where the individuals who have left the insurance to date during 2010 have gone. The individuals who left the insurance in January may, however, on average be assumed to have a weaker position in the labour market than the gradual outflow of individuals due to the upper time limit. This is because many of those who left sickness insurance in January 2010 included very long sickness cases. Of the 60 000 individuals affected by the transitional rules, about half had been

[113] The Swedish Social Insurance Agency's initial assessment of an effect of 2 000 due to the rehabilitation chain plus those whose benefits terminated "prematurely", i.e. 2 000+(20 000-16 000)=6 000.

[114] The report only analyses the effects on sick leave periods of up to six months, i.e. the limit at 12 months is not taken into account.

on sick leave for two years or more on 30 June 2008.[115] The individuals who left the insurance after 1 January may, however, to a greater extent be used as an indication of future flows since these individuals had been sick for 30 months, not longer.

During the first and second quarters of 2010 (not including those who left the insurance in January), more than 18 000 individuals reached the maximum limit in the sickness benefit. Of these, almost 5 000 did not need to leave sickness insurance. In addition, around 3 400 individuals returned to sickness insurance after the requisite three months outside the insurance. All in all, around 45 per cent have thus returned to sickness insurance. Around 8 200 individuals (45 per cent) have been referred to the Public Employment Service and have not returned to sickness insurance. Of these, about 7 per cent are categorised as being in work, about 3 per cent as jobseekers, about 26 per cent participated in programmes with activity support, about 7 per cent were registered without ALMP and the remainder had left the Public Employment Service for a reason other than work. Finally, about 10 per cent of those leaving sickness insurance have neither returned to sickness insurance nor registered at the Employment Service. Of these, a majority probably work in the regular labour market. A questionnaire to individuals who left sickness insurance at year-end and who did not use the Public Employment Services' services shows that a majority at the time of the survey had a wage as an employee or income from their own business.[116] To sum up, around 45 per cent have thus returned to the sickness benefit, 36 per cent are unemployed and 7–17 per cent have started working.[117] This distribution cannot be regarded as wholly representative, however, for the future distribution in the new equilibrium. First, it is conceivable that it will take some time for these individuals to obtain work and second the economic situation must be taken into account when these individuals have entered the

[115] For an insured person, who on 1 July 2008 was not actually entitled to sickness benefit due to the new regulations on the maximum number of benefit days, transitional rules were introduced under which these individuals could obtain the sickness benefit at the normal rate for at most 550 days.

[116] See *Hur försörjer man sig – En kartläggning av personer som uppnått maximal tid i sjukförsäkringen och inte anmält sig till Arbetsförmedlingen*, The Swedish Social Insurance Agency, 2010.

[117] The lower limit (7 per cent) is obtained by taking only those registered as being in work by the Public Employment Service with the total number of persons who reached the maximum limit during the first six months of 2010. The upper limit (17 per cent) is obtained by assuming that all of those who were neither registered by the Public Employment Service nor returned to sickness insurance are now working.

labour market. There is also reason to believe that some of those who were initially unemployed will disappear from the labour force if they cannot find work. For this reason, we use the following distribution in the calculations: 45 per cent return to sickness insurance, 15 per cent start work, 15 per cent become unemployed and 25 per cent leave the labour force.

It is assumed that the distribution will look somewhat different for the 3 000 individuals leaving sickness insurance at an earlier stage due to the control limits in the rehabilitation chain as they are assumed to have a stronger link to the labour market. Among these, it is assumed that 70 per cent start work, 10 per cent become unemployed and 20 per cent leave the labour force.[118]

To finally estimate how these flows affect the number of employed, unemployed and those not in the labour force, we must also assess how these individuals were treated in the Labour Force Survey (LFS) while they were on sick leave. Those on sick leave with a job are classified in the LFS as employed. A transition from sick leave to unemployment thus entails a move from employment to non-employment. The transition from sick leave to work has no effect on employment (but does affect the number of hours worked and average hours worked). However, there is reason to suspect that those on long-term sick leave (i.e. those who leave sickness insurance due to the upper time limit) are not always classified as employed but as being not in the labour force. There is no information available on this and a rough assumption is therefore made in the calculations that 50 per cent of those on long-term sick leave have been classified as not in the labour force.[119] It is assumed that all of those who leave sick leave due to the control limits in the rehabilitation chain are treated as employed in the LFS.

[118] This distribution is fundamentally an assessment based on previous investigations;, see, inter alia, the Swedish Social Insurance Agency (2009) Uppföljning av försörjningskällor och sysselsättning efter avslutad period med sjukpenning eller tidsbegränsad sjukersättning [Follow-up of means of support and employment after sickness benefits or temporary sickness compensation has expired].

[119] In a report from Statistics Sweden, a comparison is made between sick leave according to Statistics Sweden and sick leave according to the National Social Insurance Board. It emerges that those on sick leave without work represented 1.4 per cent of the population in 2000, or almost 80 000 people. These are largely thought to be individuals who had been on sick leave for a long time. In June 2000, almost 132 000 people had been on sick leave for over a year. A distribution in which 50 per cent are assumed to have employment would thus appear not to be unreasonable.

On the basis of these flows and assumptions, total employment is affected in a negative direction by -0.07 per cent.[120] The labour force decreases only marginally and unemployment thus increases somewhat.[121]

The number on sick leave who de facto start work due to the rehabilitation chain and the upper time limit is around 2 400 people.[122] Assuming that the average hours worked can be expected to be slightly lower for individuals who return to work (20 per cent lower than the average, which means average annual hours worked of approximately 1 300 hours[123]), the number of hours worked will increase by 0.04 per cent.[124] Given that employment decreases, average hours worked thus increase by 0.11 per cent. This is a consequence of some of those on sick leave who were classified as employed and thus drawing down average hours worked starting to work and some disappearing from the labour force.

## 7.4 Lower replacement rate – downward factor adjustment of SGI and the level of extended sickness benefit

Two reforms in the package affect the benefit level or the size of benefit. These are:

- the introduction of the extended sickness benefit after 12 months of sickness benefit, at a 5 percentage point lower benefit level (from 80 to 75 per cent of SGI), and
- **Sickness benefit qualifying income (SGI)** is to be based on historically earned income. Pending investigation of this

[120] The effects are the total of the different flows named above, which is related to the level of employment according to the LFS for 2006.
[121] The labour force decreases by 0.004 per cent.

[122] Including those on sick leave already treated as employed, who do not change category in the LFS when they start work.
[123] Assuming that those who start work have lower than average hours worked avoids the risk of overestimating the effect on hours because certain individuals are on part-time sick leave.
[124] Calculated on the number of hours worked in 2006.

matter, until further notice SGI is to be adjusted downwards by a factor of 0.97, i.e. in reality a reduced benefit.[125]

Research provides support for a lower sickness benefit leading to reduced sick leave. The starting point is that a reduced benefit level (lower than 100 per cent) constitutes an excess for the insured. The excess is an important tool to create incentives for the individual to avoid unnecessary sick leave.

The general method for calculating the effects on labour supply is to multiply a percentage change in the *replacement rate* by an elasticity of the sensitivity of sick leave. This elasticity is taken from the research literature.[126]

Johansson & Palme (2005) find that the elasticity on the inflow for the benefit is about -1, which means that a 1 per cent decrease in the benefit leads to a reduction in inflow of around 1 per cent. The elasticity for duration is around -0.25; a 1-per cent reduction in the benefit shortens sickness periods (up to 90 days) by around 0.25 per cent. Another study that identified the effects of a reduced benefit is Pettersson Lidbom & Skogman Thoursie (2006). They report higher elasticities, 1.72–2.45 per cent, but their study is only based on leave shorter than 8 days from a reform in 1987.[127] The higher elasticity is per se not surprising in the light of the research on benefit levels and sick leave generally which indicates that sensitivity to changes in the benefit is greatest at the beginning of a sickness case and gradually diminishes the longer it lasts. A study by Hesselius & Persson (2007) reports an elasticity of 0.22 for sickness periods with a duration of 91 to 360 days, based on a reform from 1998.[128] The elasticity is thus approximately in the same range as in Johansson & Palme (2005).

The replacement rate is defined as the proportion of the disposable income that the individual retains when he/she goes from work to benefit dependency. The effects of tax and allowance systems are taken into account because the replacement rate is

[125] In October 2009, an inquiry was appointed to review the possibility for employers to submit monthly income information, a prerequisite for introducing SGI based on historic income.
[126] Elasticity shows how much a change in the replacement rate (in per cent) affects the change in sick leave (in per cent).
[127] In 1987, the benefit level was raised in the agreed benefit for municipal employees from 90 till 100 per cent for the first eight days of absence. Other collective bargaining areas were not affected by the higher benefit level.
[128] In 1998, the state stopped regulating collective insurance agreements of longer than 90 days. Municipal employees then received an increase in benefits from 80 till 90 per cent from day 91 to 365 of the sickness case.

calculated based on the individual's disposable income for a representative sample of the population.[129] The actual replacement rate in most cases varies less than the reductions or increases in *benefit levels* in sickness insurance or unemployment insurance as taxes and allowances compensate for the change. However, it is debatable whether the replacement rate is a good measure of how reformed benefit levels (or other reforms) actually affect the individual's financial incentives. The advantage is that the measure captures the changes in the whole disposable income, i.e. the real financial effect (the effect on the amount of money the person has). The disadvantage is that the measure does not capture any group contractual insurance which to some extent offsets the reduced sickness benefit.

### 7.4.1 Estimating the labour supply effects for the extended sickness benefit level

After 12 months' sick leave, sickness benefit terminates and an extended sickness benefit can be granted upon application. The sickness benefit level is reduced by 5 percentage points from 80 to 75 per cent for the extended sickness benefit. We cannot identify any change in the replacement rate in our microsimulation model FASIT due to this reform, probably because this change affects only a few individuals in the sample. Furthermore, the rule has been made less strict with the introduction of a sickness benefit at normal level where the individual can continue to receive a benefit at 80 per cent. Thus, we have not calculated any effect of this reform.

### 7.4.2 Estimating the labour supply effects for reduced SGI

The parliamentary commission is at present working on producing a proposal that sickness benefit qualifying annual income (SGI) should be based on previously earned income, *historical* SGI. At present, SGI is based on an estimate of the (future) income which will be lost during the sick leave period, *forward-looking* SGI.

[129] The definition is described in Ds 1997:73. The calculations are made in the dynamic microsimulation model FASIT.

Pending a historical income concept, SGI has been adjusted downwards by a factor of 0.97.[130] The benefit level will thus be lower. The level of sickness benefit will de facto be 77.6. The effective replacement rate will consequently decrease by 2.16 per cent.[131]

Lowering the SGI means that the benefit level will be reduced over the entire sick leave period. Based on the research, we should expect the effect to be stronger at the beginning of the period compared with later. No study captures this effect, but one possible study applicable to these calculations is Johansson & Palme (2005) who study medium-term sickness cases, up to three months.

The Ministry of Finance estimates how the reduction of the benefit level affects sick leave by multiplying the change in the replacement rate by an elasticity. The 2.16 per cent replacement rate reduction is multiplied by an elasticity of 0.25 for the duration and an elasticity of 0.93 for men and 0.72 for women for the incidence.[132] This leads to a reduction in sick leave of around 1.5 million days, corresponding to around 4 000 full-year equivalents.[133] Of these, 70 per cent are assumed to start work, 10 per cent to become unemployed and 20 per cent to leave the labour force. This is the same distribution as for those who terminate their sickness cases due to the control limits in the rehabilitation chain as these groups can be assumed to be relatively comparable. All those on sick leave are assumed to be treated as employed in the LFS. There will accordingly be a negative effect on employment when they become unemployed or leave the labour force. Employment will decrease by 0.03 per cent and the labour force by 0.02 per cent which means that unemployment only increases marginally.[134] Assuming that average working hours can be expected to be slightly lower for individuals who return to work (20 per cent lower and thus average hours worked of about 1 300 hours), hours worked will increase by about 4 million hours, or about 0.06 per cent, due to the reform. Given that employment

[130] The factor reduction took place in two steps. In the 2007 Budget Bill, a factor of 0.989 was introduced. In the 2008 Budget Bill, the factor was reduced to 0.97. These changes were carried out on 1 January 2007 and 1 January 2008 respectively.
[131] The *replacement rate* decreases less than the reduction of the actual benefit level in sickness insurance as taxes and allowances compensate for the change.
[132] As this lower benefit level comes into effect from the start of the sickness case, incidence is also assumed to be affected.
[133] Based on the total number of days paid in 2006.
[134] Calculated according to the number in the labour force and employment according to the LFS in 2006.

decreases, average hours worked will thus increase by 0.09 per cent. This follows from some people on sick leave who were classed as employed, thus pulling down average hours worked, now starting to work and some leaving the labour force.

## 7.5 Changes in sickness compensation and activity compensation

Three proposals in the sickness insurance package change the prerequisites for sickness and activity compensation (S/A)[135]. These are

- stricter criteria for assessment of work capacity in sickness and activity compensation,
- abolition of temporary sickness and activity compensation, and
- a sliding reduction of sickness and activity compensation and changed rules for dormant sickness and activity compensation.

As a step in the sickness insurance package, from 1 July 2008, the Government abolished temporary sickness and activity compensation.[136] On 1 July 2008, the rules were also changed for sickness and activity compensation. The basis for entitlement to sickness and activity compensation is to be that there is a *permanent reduction in* work capacity, which is not expected to come back. . The possibilities for rehabilitation must be exhausted. The stricter gatekeeping for S/A means that no other factors apart from reduced work capacity because of illness are to be taken into account for benefit entitlement. Thus, the assessment no longer takes the age of the insured person, their residence, education, previous work or similar circumstances into account.[137]

In brief, a sliding reduction means that those with sickness and activity compensation may earn up to the equivalent of a price base

[135] Activity compensation is given to individuals under 30 and sickness compensation to those over 30.
[136] Temporary sickness compensation ceased as a benefit form on 1 July 2008. People who then had temporary sickness compensation retain their benefit for the period for which it was already granted. Transitional rules apply if work capacity is still reduced when the period of temporary sickness compensation ends. According to these transitional rules, a person can receive temporary sickness compensation for a further period of at most 18 months if he or she does not meet the conditions for sickness compensation under the rules that apply from 1 July 2008. The transitional rules apply at the longest until the end of December 2012.
[137] See Government Bill 2007/2008:136, section 9.12 for further details.

amount[138] during a year without benefit being reduced. If a person earns more than this amount, only half (50 per cent) of the benefit is reduced up to a ceiling of eight price base amounts. Above that level, the whole of sickness compensation is reduced. There is also an "amnesty" associated with this. This means that those receiving sickness and activity compensation who were granted non-temporary benefit prior to July 2008 can try new work without their entitlement to a benefit being called into question, or withdrawn. The changed rules for dormant S/A mean that people who were granted a benefit after 1 July 2008 may retain 25 per cent of the benefit for at most 12 months if they request that the benefit be dormant because the person is trying new work. Previously, the whole benefit could be retained for three months.[139] The benefit may be kept dormant for 24 months without the right to the benefit being reconsidered.

The effect of the stricter gatekeeping and abolition of temporary S/A depends wholly on how the new regulations will be applied. Will the Swedish Social Insurance Agency and doctors be capable of regarding reduced work capacity as the sole ground for benefits and that the reduction must be permanent? There are factors supporting a critical attitude to this possibility. The limited research and overall knowledge that exists indicate that there are considerable *moral hazard* problems, i.e. that factors other than reduced work capacity – such as the development of the labour market (for example, local labour market conditions and cyclical swings) – are allowed to affect sickness and activity compensation awards. At the same time, a significant potential for improvement exists. The number of individuals with sickness and activity compensation increased sharply up to the end of 2006, in a way that did not coincide with the general state of health of the population. The law has also permitted considerations other than work capacity to be taken into account when considering benefit entitlement. This also indicates that small improvements in the application of the regulations may have large effects on the number of those with sickness and activity compensation.

The effect of the sliding reduction and dormant S/A depends more on the mechanisms around the financial incentives for those receiving sickness and activity compensation. Research on what

[138] One price base amount comes to SEK 42 400 kronor for 2010.
[139] See Government Bill 2007/2008:124, From sickness compensation to work, for a detailed description of the reforms.

happens to the labour supply in the event of changes in financial incentives for those receiving sickness and activity compensation is very limited. Experiences in Sweden and internationally have shown that returning to the labour market is very difficult for people who have left the labour market permanently with sickness and activity compensation. Returning to work by those receiving sickness and activity compensation has historically been at very low levels in Sweden. This indicates that a reduction in awarding early retirement, not least among young people, must primarily take place by reducing the inflow to sickness and activity compensation. New early retirement awards should thus be kept at a low and controlled level.

We have previously discussed the theoretical mechanisms relating to how benefit levels are important for the transition between employment and non-employment for those on sick leave. The basic mechanisms should likewise be the same for those on sickness and activity compensation, but with certain provisos. The incentives for those on sickness and activity compensation are probably weaker compared with more short-term sick leave. Research on sickness benefits indicates generally that the longer the sickness cases are, the weaker the response to changed benefit levels is. If this effect also applies to sickness and activity compensation, a weak link between reduced benefit levels and reduced sickness and activity compensation can be expected. The effect is not unreasonable bearing in mind the fact that work capacity is probably lower the longer a person has been on sick leave and particularly weak in the case of sickness and activity compensation as the absence of work capacity has been specifically tested (and established). Contact with the labour market is also often worse in the case of sickness and activity compensation, as the person has then left their employment (unlike most of those receiving sickness benefit).

At the same time, there is a risk that high benefit levels in sickness and activity compensation (a possibility of life-long support) reduce people's efforts to return to work following long-term illness. If the benefit is high (considerably higher than sickness benefit), there is a risk that the inflow to sickness and activity compensation will be higher. The transition from non-employment to employment among those on sickness and activity compensation will also be affected by the demand for labour. Employers may attach a greater stigma to individuals receiving

sickness compensation than those with sickness benefits, as it indicates that there is a more long-term health problem and that the person is more detached from the labour market.

The empirical research on the incentives to work for those on sickness and activity compensation are – is with few exceptions – an unexplored area. One of the exceptions is Skogman Thoursie (1999) who analyses incentives to work among those receiving early retirement. The study reports that the size of benefit plays a small but statistically significant role for the inflow to early retirement.

There are also some studies that indicate that there are significant *moral hazard* problems in the early retirement system. Early retirement may be awarded on grounds other than reduced work capacity, particularly factors relating to labour market developments. Autor & Duggan (2003) find, for example, that the application of the rules for early retirement at the state level in the United States affects labour force participation among unskilled workers. The early retirement system was also affected by financial shocks: early retirement applications were two to three times higher in an economic downturn and the supply of unskilled labour decreased.

In Sweden, there have been rules permitting reasons other than work capacity to be included in the assessment of entitlement to early retirement. Karlström, Palme and Svensson (2008) find however, that the abolition of special considerations in the assessment of early retirement for individuals over 60 years of age from 1997 did not have any significant effect on increased labour supply in the group.[140] However, sickness benefits and unemployment benefits increased in the age group due to the abolition of the special considerations that existed prior to 1997.

### 7.5.1 Estimating the labour supply effects of the change in sickness and activity compensation

The Swedish Social Insurance Agency – which is the most important actor in the application of the new rules – expects that the stricter regulations will lead to a halving of the inflow to

[140] The requirements for obtaining early retirement were lower for individuals aged 60–64 before 1997. This referred to i) the medical requirements, ii) the requirements to move to obtain work and iii) the requirement for participation in rehabilitation measures.

sickness compensation and a reduction of 20 per cent in the inflow to activity compensation.[141] The new rules were introduced in 2008. It will, however, take time before the decreased inflow leads to a new stock equilibrium as this will not happen before the outflow of all of those granted S/A under the old regulations. In the long term, the stock with sickness compensation, given the Swedish Social Insurance Agency's estimate, will be halved and the stock with activity compensation will decrease by 20 per cent. The year prior to the introduction of the reforms, the number of full-year equivalents with sickness compensation came to about 425 000 and the number of full-year equivalents with activity compensation to about 26 000. We assume that in the long term the number of full-year equivalents with sickness compensation will fall to 215 000 and the number of full-year equivalents with activity compensation to 21 000; the total number of full-year equivalents will then amount to 236 000, a reduction of 215 000. As this group, according to the rules, must have a permanent reduction of work capacity and is not expected to be able to return to working life, it is assumed that the outflow will only take place when individuals reach the age of 65 or die. In the long term, this reduction will thus capture the stricter gatekeeping for entry into sickness and activity compensation, the termination of time-limited sickness and activity compensation, and the sliding reduction in sickness and activity compensation and changed rules for dormant sickness and activity compensation. We find this assessment optimistic, but do not see reason to revise the estimates in our analyses. At present, there is no better basis (such as research studies, etc.) available than the Swedish Social Insurance Agency's own estimates.

Unlike the reforms of sickness benefit, there will be an effect on employment. The transition from sickness and activity compensation to work is treated in the LFS as a transition from non-employment to employment. Of the reduction of 215 000 full-year equivalents, 10 per cent are assumed to be employed, 10 per cent unemployed and 80 per cent are not in the labour force in one way or another. As there is no research or other tried and tested experience available, we have assumed this distribution on

[141] The Swedish Social Insurance Agency, Anslagsbelastning och prognos för anslag inom Försäkringskassans ansvarsområde budgetåren 2008–2011, :[Appropriation charge and forecast for appropriations in the Swedish Social Insurance Agency's responsibility areas for budget years 2008–2011], Report 1 August 2008, Dnr 900-2008.

the basis of previous flow statistics from the Swedish Social Insurance Agency.[142] With the assumed probabilities, employment will consequently increase by 0.5 per cent (from all changes to sickness and activity compensation). The labour force increases by 0.9 per cent and consequently unemployment rises. Assuming that average hours worked can be expected to be slightly lower for individuals who return to work (20 per cent lower than the average and thus average hours worked of about 1 300 hours), the number of hours worked increased by 0.4 per cent.[143] This corresponds to about 15 000 full-time employees.

[142] Persons who are not granted S/A under the new regulations are assumed on average to have a slightly stronger position in the labour market than those who flowed out from S/A with the old regulations. See, for example, the Swedish Social Insurance Agency, Socialförsäkringsrapport 2008:2, Möjliga vägar ut ur sjuk- och aktivitetsersättning, för upplevd arbetsförmåga bland de med nybeviljad S/A and Försäkringskassan Analyserar 2007:12, Vägen tillbaka- en beskrivande studie av flödet ut från sjuk- och aktivitetsersättning. [Social insurance report 2008:2 Possible exits from sickness and activity compensation, for perceived work capacity among people newly awarded S/A and the Swedish Social Insurance Agency analyses 2007:12, The way back- a descriptive study of the flow out of sickness and activity compensation.

[143] As the calculations are based on full-year equivalents, the calculations do not need to take into account the fact that certain individuals have partial sickness and activity compensation.

# References

Autor, D. & M Duggan (2003), The rise in the disability rolls and the decline in unemployment, The Quarterly Journal of Economics, February 2003.

Carling, K., P-A. Edin, A. Harkman and B. Holmlund (1996), Unemployment duration, unemployment benefits, and labor market programs in Sweden, Journal of Public Economics 59, 313-334.

DS 1997:73, Lönar sig arbete?, ESO-report, The Ministry of Finance.

Engström, P., P. Hesselius & M. Persson (2007), Excess use of temporary parental benefit, Working paper 2007:18, The Institute for Labour Market Policy Evaluation.

Fredriksson P. & B. Holmlund (2001) Optimal unemployment insurance in search equilibrium, Journal of Labor Economics, vol 19, p. 370-399.

Fredriksson P. & B. Holmlund (2004) Hur ser en optimal arbetslöshetsförsäkring ut?, Ekonomisk Debatt vol 32, no. 4, p. 22-38.

Frykman J. & K. Hansen (2005) Att leva på kassan, Försäkringskassan Analyserar 2005:4.

The Swedish Social Insurance Agency (2007), Försäkringskassan Analyserar 2007:12, Vägen tillbaka- en beskrivande studie av flödet ut från sjuk- och aktivitetsersättning.

The Swedish Social Insurance Agency (2008), Socialförsäkringsrapport 2008:2, Möjliga vägar ut ur sjuk- och aktivitetsersättning.

The Swedish Social Insurance Agency (2008), Anslagsbelastning och prognos för anslag inom Försäkringskassans ansvarsområde budgetåren 2008-2011, Dnr 900-2008.

The Swedish Social Insurance Agency (2009), Uppföljning av försörjningskällor och sysselsättning efter avslutad period med sjukpenning eller tidsbegränsad sjukersättning, Dnr 104601-2009.

The Swedish Social Insurance Agency (2010), Hur försörjer man sig? – en kartläggning av personer som uppnått maximal tid i sjukförsäkringen och inte anmält sig till Arbetsförmedlingen, Dnr 037658-2010.

Hartman L. & A. Westerberg (2008), Arbetsutbudseffekter av reformer i sjukförsäkringen 2007-2009, Report from the Department of Economic Affairs, Ministry of Finance.

Hesselius, P., P. Johansson & L. Larsson (2005), Hur påverkat kravet på läkarintyg sjukfrånvaron? Erfarenheter från ett socialt experiment, Report 2005:7, IFAU.

Hesselius P. & M. Persson (2007), Incentive and spill-over effects of supplementary sickness compensation, Working paper 2007:16, IFAU.

Hesselius P., P. Johansson & J. Vikström (2008), Påverkas individen av omgivningens sjukfrånvaron?, Report 2008:11, IFAU.

Hägglund P. (2010), Rehabiliteringskedjans effekter på sjukskrivningstiderna, Report 2010-1, Inspektionen för Socialförsäkringen.

Hägglund P. & P. Skogman Thoursie (2010), Reformerna inom sjukförsäkringen under perioden 2006-2010: Vilka effects kan vi förvänta oss?, Report 2010:17, IFAU.

Johansson P. & M. Palme (2005) "Moral hazard and sickness insurance", Journal of Public Economics, vol 89, p. 1879-1890

Karlström, Palme and Svensson (2008), The employment effect of stricter rules for eligibility for DI: Evidence from a natural experiment in Sweden, Journal of Public Economics 92 (2008) 2071–2082.

Larsson L. (2006) Sick of being unemployed? Interactions between unemployment and sickness insurance, The Scandinavian Journal of Economics, vol 108.

Lindbeck A., M. Palme & M. Persson (2006) Job Security and Work Absence: Evidence from a Natural Experiment, Working Paper

Mortensen, D. (1977), "Unemployment Insurance and Job Search Decisions". *Industrial and Labour Relations Review*, vol 30, no. 4, p. 505-517.

Pettersson-Lidbom P. and Skogman Thoursie, P. (2006), Temporary Disability Insurance and Labor Supply: Evidence from a Natural Experiment, Working Paper, Department of Economics, Stockholm University.

Government Bill 2007/08:1, The Budget Bill for 2008.

Government Bill 2007/2008:124, From sickness insurance to work.

Government Bill 2007/08:136, En reformerad sjukskrivningsprocess för ökad återgång i arbete.

Government Bill 2008/09:1, The Budget Bill for 2009.

Government Bill 2009/10:1, The Budget Bill for 2010.

Skogman Thoursie, P (1999), Disability and Work in Sweden, Doctoral Dissertation, SOFI.

Socialförsäkringsutredningens skrift (2006) *Vad påverkar flödet från arbetslöshet till sjukskrivning?* Samtal om socialförsäkring No. 16.

Statistics Sweden, Sjukfrånvarande enligt SCB och sjukskrivna enligt RFV, AM76 Bakgrundsfakta. Arbetsmarknads- and utbildningsstatistiken.

# 8 Effects of RMI and RUT tax credits

## 8.1 Summary

Taken together, RMI (the tax credit for repair, maintenance and improvement) and RUT (the tax credit for household services) are expected to increase employment by 0.4 per cent and lead to a decrease in equilibrium unemployment of 0.2 percentage points in the long run. Increased demand for RUT services account for the major part of the increase in employment. Some effect on employment also occurs because of an increase in the labour supply by those purchasing RUT and RMI services.

**Table 8.1 Effects of RMI and RUT**

| | Labour force (%) | Employment (%) | Equilibrium unemployment (p.p.) | Hours worked (%) |
|---|---|---|---|---|
| RMI | 0 | 0.1 | 0 | 0.1 |
| RUT | 0.1 | 0.3 | -0.2 | 0.4 |
| **Total effect** | **0.2** | **0.4** | **-0.2** | **0.5** |

The estimate of the sustainable employment effects is based on calculations of how the individual's use of time changes due to a tax credit for RUT and RMI services. First, because of the tax credit, households that purchase more of these services increase their labour supply, which in time leads to higher employment. Second, the increased demand for labour is expected to mainly be directed at individuals with a weak position in the labour market. Due to structural imbalances in the labour market, the increased demand is therefore expected to lead to sustainable higher employment. The third reason for increased employment in the

registered market is that some unregistered activity will be shifted to the registered market after the introduction of a tax credit for these services.

## 8.2 The reform's design and aims

The main aim of the tax credit is to decrease undeclared work and to increase demand in the construction (RMI) and household services (RUT) sectors. A greater number of people should be able to buy services instead of performing them themselves, given that the tax credit makes it financially more attractive. People can thus free up time from household work and use it for paid work, which benefits the economy. Increased demand for RUT services contributes to higher employment in an industry which for many can be a first step towards permanent establishment in the labour market. Taken together, these effects lead to higher employment and increased tax revenue. The time chosen for extending the system to apply to RMI work as well was related to the downturn and was one of the measures to dampen the effects of the financial crisis and improve the conditions for a gradual recovery.

The deduction for household work (RUT) was introduced on 1 July 2007. The RMI deduction was introduced on 8 December 2008. The tax credit only covers the cost of labour. Material and travel expenses etc. are not deductible. The basic rule for the tax credit is that a person must live in the dwelling where work is performed or have it as a second home. In order to obtain a tax credit for RMI work, you must also own the dwelling (house, owner occupied flat or owned flat) where the RMI work is carried out. The tax credit for RMI and RUT is granted for half the labour cost of the work at the dwelling up to a maximum of SEK 50 000 per person and year.

RMI deductions were granted between 1993 and 1999 with some interruptions. The tax credit for owners of houses, second homes and owner-occupied apartments, was 30 per cent of the labour cost (including the value added tax and employer's social security contribution) up to a set level. The tax credit was considered a cyclical instrument intended to provide a temporary employment stimulus to the construction industry by bringing forward investment. The parliamentary auditors examined the

effects of the RMI deduction on employment in a report in 2001.[144] Their conclusions are regarded as uncertain but indicate that there is no relationship between the RMI tax credit and the number of people employed in the construction industry. However, it could not be excluded that the credit led those who were already working in the industry to work more hours. The RMI deduction was re-introduced in Sweden for the period 15 April 2004 to 30 June 2005. This time, the tax credit was also 30 per cent of a basis consisting of construction expenditures. For family homes, the maximum tax credit was SEK 10 500 and the maximum credit for a private owner-occupied flat was SEK 5 000. The credit was introduced mainly because unemployment in the construction industry was substantially higher than in other industries.

## 8.3 Effects on employment of the tax credit for RMI and RUT services

The tax credit leads to increased demand for RMI and RUT and to an increased incentive to purchase the service instead of doing it oneself.

A sustainable increase in employment and GDP are expected for three reasons. First, a tax credit leads households that purchase more of these services to increase their labour supply, which in time leads to an equivalent increase in employment. Second, the increased demand for RMI and RUT services is expected to increase demand for services which are largely performed by individuals with a weak foothold in the labour market (below-average productivity). Thus, the increased demand can lead to sustainable higher employment because of structural imbalances in the labour market. The third reason for increased employment in the registered market is that part of the activity in the unregistered market for household services will be shifted to the registered market after the introduction of tax credits for these services.

[144] Report 2001/02:8.

*1) Increased demand for RMI and RUT services*

A tax credit which leads to lower prices for RUT and RMI services leads to increased consumption of these services. This increase in consumption can occur by substituting RUT and RMI services for other goods and services, reducing savings and increasing paid work. This demand effect can be important, particularly for RUT services, as there is considerable potential for reallocating time in the case of household work. According to Statistics Sweden's time use study from 2000, Swedes aged between 20 and 64 use an average of just over one hour per day for household work. This can be compared with renovation and repairs of housing where we use an average of around 8 minutes per day.

A demand effect for labour can only increase sustainable employment if there is a surplus of labour because of structural imbalances in the labour market. Structural imbalances may be created, for example, due to high minimum wages, high costs for recruitment and dismissal of labour and high benefit levels in transfer systems. These imbalances can lead to the demand for labour being less than the supply, i.e. there is a surplus of labour and an increase in demand can be met by the higher supply without an increase in wages and prices. If there is a surplus of certain types of labour, employment is determined by the demand for work. In these circumstances, increased demand for RMI and RUT services can lead to sustainable higher employment and lower equilibrium unemployment.

The household services industry is labour-intensive with a large proportion of young, immigrant and low-educated individuals with a weak foothold in the labour market, many of whom have difficulty entering the labour market. In the household services industry, there are often binding agreements on minimum wages, which lead to the demand for labour also determining employment in the long run. Increased consumption of RUT services is therefore expected to increase employment in the domestic services industry without any great rise in wages and prices. Increased employment in the household services industry is therefore expected to lead to an increase in the labour supply and to lower equilibrium unemployment, i.e. sustainable employment for youth, immigrants and those with a low level of education will be higher.

The potential labour reserve in the construction industry is expected, however, to be considerably less. The increased demand for RMI services is therefore expected to rise because 1) demand and employment in other industries is decreasing and 2) paid work is increasing due to the tax credit.

There is great uncertainty about how large the demand effect of the RMI and RUT deductions will be. Öberg's (2005) calculations indicated that the sustainable effect on employment could be in the range of 2 900–18 800 individuals. Öberg (2005) noted, however, that

> The calculations are, however, particularly uncertain and the results are governed by the assumptions made. This calculation should therefore be regarded as providing an example of possible effects and not an estimate of the more probable effects.

During 2010, the tax credit was estimated at just under SEK 12 billion for RMI and SEK 1.3 billion for RUT. This is conservatively estimated to correspond to 28 000 full-time jobs for RMI and 3 500 full-time jobs for RUT.[145] The use of the RUT tax credit has increased sharply since its introduction in 2007. In 2008, around 92 000 individuals made use of the RUT deduction. During the period 1 July 2009 to 3 March 2010, around 156 500 had used the deduction, which recalculated on an annual basis would mean an increase of 150 per cent compared with 2008.

In future, the purchase of RUT services is expected to increase in line with the adjustment of household behaviour to the new circumstances. The use of RMI in 2010 is thought, however, to be slightly higher than the equilibrium take-up, due to the existence of a pent-up need of refurbishment in the short run and uncertainty about whether the RMI deduction would be permanent.

According to the model simulations in Copenhagen Economics (2007), a decrease in the value-added tax for "domestic services" of 10 percentage points would result in a shift of 2.9 percentage points of the total number of hours worked from household work to paid work. According to these calculations, RUT would theoretically increase the labour supply by around 280 000 full-year equivalents (25 per cent of work at home is purchased on the market in the new equilibrium). However, this effect is thought to be unreasonably large.

[145] This calculation is based on the assumption that invoicing for work is SEK 0.84 million in the RMI industry and SEK 0.74 million in the RUT industry.

The calculated effects are instead based on the assumption that 1 per cent of domestic work is purchased on the market due to the RUT deduction. This corresponds to the population aged 20 to 64 purchasing RUT services for almost 4 hours a year, which is equivalent to 10 per cent of the population aged between 20 and 64 purchasing RUT services for an average of 45 minutes a week.

The population aged between 20 and 64 is about 5.5 million, which leads to an increase in demand for RUT services of 22 million hours. Assuming that those working in the RUT industry work on average 1 400 hours per year, the increased demand for RUT services will increase employment by 14 000 individuals.

In the case of RMI, it is assumed in the long run that 10 per cent of household work (or unregistered work) is purchased in the registered market. The increased demand will lead to an increase in employment in the RMI industry equivalent to 15 000 registered jobs. This effect occurs, however, through a decrease in employment in other industries.

*2) Less undeclared work*

A rough rule of thumb which is usually used is that the rate of pay for unregistered work by craftspeople is about 50 per cent of the rate when the work is declared for tax.[146] This means that after tax deductions, declared RUT and RMI services cost about as much as unregistered services. People probably generally prefer to purchase registered rather than unregistered services, so that it is conceivable that registered services will largely outcompete unregistered services. It is assumed in these calculations that 70 per cent of the previous unregistered services will become registered services.

There is considerable uncertainty about how large the unregistered work sector is, even though Statistics Sweden has made rough estimates. In connection with the Taxation of Services Commission (SOU 1997:17) in the mid-1990s, the Tax Agency estimated the extent of unregistered work in the service sector. The Tax Agency estimated that unregistered work providing simple domestic services in Swedish homes accounted for a turnover of about SEK 3 billion in undeclared wages. Home repairs and maintenance accounted for at least SEK 5 billion in undeclared pay

[146] See, inter alia, SOU 1997:17.

for work. Adjusted to current prices, this would be equivalent to an undeclared turnover in the "RMI sector" of SEK 6.1 billion and SEK 3.7 billion in the "RUT sector" .

Overall, these assumptions lead to a decrease in unregistered work in RUT of 1 900 individuals and in RMI of 3 600 individuals.[147]

*3) Increased labour supply*

When domestic work decreases, time is freed up that can be used for leisure or paid work. The purchasers of reduced price services are assumed to use 50 per cent of the time freed up for increased leisure. The labour supply increases because those already employed work more hours (moving from part-time to full-time/more overtime) and because more individuals are employed. It is assumed that 2/3 of the increased labour supply in hours due to RMI and RUT is attributable to increased average hours worked by those already employed and 1/3 to increased employment.

Taken together, these assumptions lead to an increase in employment of 2 300 individuals as a result of increased paid work due to the purchase of RUT services and to an increase in employment of 2 500 due to the purchase of RMI services.

*Total employment effect*

The results are summarised in Table 8.2 below. Overall, the RUT and RMI tax credits eventually led to a rise in employment of around 20 000 individuals. The main part of the increased employment is due to the increased demand for RUT services. Some effect on employment is also due to those purchasing RUT and RMI services increasing their labour supply.

**Table 8.2 Effects on employment of RMI and RUT**

| | RUT | RMI |
|---|---|---|
| Demand effect | 14 000 | 0 |
| Supply effect | 2 300 | 2 500 |
| **Total effect** | **16 300** | **2 500** |

[147] This calculation is based on the assumption that invoicing for work is SEK 0.84 billion in the RMI industry and SEK 0.74 million in the RUT industry.

# References

Copenhagen Economics (2007) Study on reduced VAT applied to goods and services in the Member States of the European Union. Final report. EU Commission, 6503 DG TAXUD.

The National Institute of Economic Research (2005), "Samhällsekonomiska effects av skattelättnader för hushållsnära tjänster", Specialstudie no. 7.

Statistics Sweden, Tidsanvändingsundersökningen 2000/01,http://www.scb.se/Pages/Product_12223.aspx

SOU 1997:17, "Skatter, tjänster och sysselsättning", Stockholm 1997.

# 9 Effects of reduced social security contributions: general contributions and contributions targeting young people

## 9.1 Summary

In the long run, a general reduction in social security contributions is expected to have only small effects on employment as the decrease in the social security contribution is passed on in the form of higher wages. Thus employment is only affected because higher real wages lead to an increase in the labour supply.

In the long run, the reduced contribution for young people is also expected to lead to real wage increases, but not all the reduction is likely to be passed on.

Assuming that both the general reduction and the reduction targeting young people are passed on in their entirety in the form of higher real wages, a sustainable increase in employment of about 0.2 per cent as a result of the reductions in social security contributions is expected. This must be regarded as a conservative estimate of the effects of the reforms as the employment effect ought to be greater if not all the reduction is passed on.

**Table 9.1** **Effects of reduced social security contributions (general and targeting young people) on labour supply, employment and the number of hours worked**

| | Labour supply | Employment | Equilibrium unemployment | Hours worked |
|---|---|---|---|---|
| General decrease | 0.08 % | 0.08 % | 0 | 0.10 % |
| Selective decrease young people | 0.10 % | 0.10 % | 0 | 0.14 % |
| **Total effect** | **0.18 %** | **0.18 %** | **0** | **0.24 %** |

## 9.2 The reforms' design and aims

The reduction of the social security contribution for young people took place in two steps. The first step took place on 1 July 2007. Employer's social security contributions, with the exception of the old age pension contribution, were then halved from 32.42 to 22.71 per cent. The old age pension contribution is 10.21 per cent. This reduction applied to youth over 18 and under 25 at the beginning of the year. On 1 January 2009, the reduction was expanded to cover all those who had not reached 26 at the beginning of the year. The reduction was also larger. The social security contribution for young people is now 15.49 per cent compared with the ordinary social security contribution of 31.42 per cent. On 1 January 2009, the general social security contribution was reduced by 1 p.p. to 31.42 per cent.

One of the reasons for the reduction for young people is that the wage structure is rigid and there is therefore an excess supply of labour in equilibrium. A selective reduction of the social security contribution for young people is expected to lead to an increased demand to employ young people with a weaker foothold in the labour market, due to the mandatory minimum wage in many industries. The reduced social security contribution for young people is therefore expected to lead to sustainably higher employment and lower equilibrium unemployment among young people. As a result of the general reduction of social security contributions, the incentives for work increase because the reduction leads to higher real wages. The general reduction of social security contributions also helped stimulate demand and reduce wage costs for companies and the public sector at the time

of the downturn, which contributed to a moderation of the economic downturn and a stronger recovery.

## 9.3 Effects of a general reduction of social security contributions on employment

*Short-term effects*

In the short run, the cost of labour decreases in the private and public sector by as much as the reduction in the social security contribution. This can lead to increased profits, lower prices, higher gross wages or to an increase in the number of people employed (or fewer job cuts). Research shows that all of these four effects probably occur in the short term.

Given the low resource utilisation in 2009, the assessment is that reduced social security contributions primarily led to slightly higher profits, but also to lower prices and slightly higher wages and to more labour hoarding by firms while waiting for production to pick up speed again. Somewhat dampened price developments combined with higher wages increases household real disposable income, which in turn leads to increased demand. The improved competitiveness of Swedish export companies leads them to reduce prices slightly, which leads to increased demand for Swedish goods and services. The increased demand in combination with the lower wage costs lead to an increase in the demand for labour (less need to reduce the number of staff).

For the public sector, the reduced social security contributions are expected to have reduced the need for staff cuts, particularly in the local government sector. In the short term, the reduced social security contributions are expected to have the same effect on employment in the local government sector as increased central government grants of an equivalent amount.

*Short-term effects depend on the economic situation*

The short-term effects mainly depend on how quickly the reduction in social security contributions is passed on in the form of higher wages. How quickly this takes place in the case of the general reduction of social security contributions depends, among

other things, on how long a period the collective agreement covers and the current economic situation. In a situation with high resource utilisation and collective agreements with short terms, this shift to higher wages will probably take place almost immediately and affect employment only because higher real wages lead to an increase in the labour supply. In a situation with collective agreements with long terms and weak resource utilisation, the shift to higher wages will take longer and it should thus be expected that firms' demand for labour will also increase at the same time that household disposable income increases due to a lower price level. In a balanced cyclical situation, the greater part of this reduction is expected to be passed on after two to three years.

*Long-term effects*

The increased demand for labour leads to a gradual increase in wage demands, which counteracts the rise in employment. A reduction of social security contributions tends therefore not to have any effect on wage costs in the long run but only leads to a corresponding increase in the real hourly wage. In the long run, therefore, the employment effects take place through the increase in the labour supply. As the real wage cost in the long term can be expected to be unchanged, at the same time that employers' social security contributions are lower, the real wage will be higher than before. The labour supply will therefore increase to the extent that the labour supply is affected by changes in the net real wage. In the long run, all of the reduction in social security contributions will be passed on to wage-earners in the form of higher real wages.

Based on the calculations in the Ministry of Finance's labour supply model (the same model used to calculate the in-work tax credit), the increase in real wages due to the reduced social security contributions of 1 p.p. increases the labour supply by 0.08 per cent and employment increases by 0.08 per cent (provided that the new arrivals in the labour force on average are unemployed to the same extent as the existing labour force). The higher real wage also leads to increased incentives to work somewhat more hours/go up to full time. The average hours worked by the employed increase slightly (0.02 per cent).

## 9.4 Effects of reduced social security contributions for youth on employment

In the long term, the reduction for young people is also expected to lead to real wage increases and the employment effect will thus be less than the short-term employment effect. The long-term employment effect is, however, very uncertain.

Three alternatives are conceivable:

*1. The reduction for youth is shifted to all wages in the economy*

One possible mechanism is that the reduction leads to an increased demand for labour, which in turn pushes up wages generally. Overall, the effects on employment will be approximately the same as for a general decrease in social security contributions. The effects may, however, be greater than for a general decrease as the costs of employing of young people decrease compared with other groups. This assumes that the work costs of youth were too high to begin with and that the lower wage costs will lead to a sustainable increase in demand for labour.

*2. The reduction for young people is passed on in young people's wages*

It is, in principle, conceivable that the reduction for young people is at least partially passed on in young people's wages in particular. This would be the case in a perfect market. In practice, however, there are many problems attached to this. In particular, it would require a wage reduction of 12 per cent when the young people reach the age of 26. It is, however, possible that part of the reduction is shifted specifically to young people. According to the Ministry of Finance's labour supply model, young people have a higher labour supply elasticity. If the reduction is passed on to young people in the form of a wage increase, the employment effects will be greater than if it is passed on to the labour market as a whole.

*3. The reduction for young people is not completely passed on*

It is not self-evident that the reduction for young people will be passed on in its entirety. Because of rigidities in wage formation, differences in wages may not fully reflect differences in productivity. This could lead to higher equilibrium unemployment among young people if they have lower productivity than older

people. A reduction for young people could counteract this market imperfection. More young people would then obtain work and sustainable employment would increase.

All in all, this indicates that the employment effect, per krona invested, should probably be slightly greater for the social security contribution reduction for young people than for the general reduction in contributions. There is, however, considerable uncertainty as to how much greater the effect could be for the reduction for young people compared with a general decrease in social security contributions. The calculated effects are based on the assumption that the effect and the mechanisms are the same as for the general reduction of social security contributions. This must be regarded as a conservative estimate of the effects of the reforms, as the employment effect should be larger if not all the reduction has been passed on.

Based on the calculations in the labour supply model, the higher real wages due to the reduced social security contributions for young people will increase the labour supply by 0.1 per cent and employment will increase by 0.1 per cent (given that the new entrants to the labour force on average are unemployed to the same extent as the existing labour force). The higher real wage also leads to an increased incentive to work slightly more hours /go up to full time. The average working hours for the employed increase slightly (to 0.04 per cent).

# 10 Effects of the demographic developments

## 10.1 Summary

Because of demographic changes, the size and composition of the labour force change over time. As was discussed in the theory section, changes in composition can affect equilibrium unemployment as matching effectiveness may differ for different groups. If, for example, groups with lower skills and more uncertain productivity form a larger part of the labour force, the result will probably be a deterioration in matching and an increase in equilibrium unemployment.

Demographic developments will lead to an increase in the potential labour force and a rise in employment between 2006 and 2020 of 4.6 and 4.2 per cent respectively. All in all, as groups having an average low employment rate increase as a proportion of the population, equilibrium unemployment is expected to increase by about 0.4 percentage points from 2006 to 2020.

**Table 10.1 Effects of population developments on the potential labour force, potential employment and equilibrium unemployment 2006-2020**

| | Per cent/Percentage points | | | Number of persons | | |
|---|---|---|---|---|---|---|
| | Labour force | Employ-ment | Unemploy-ment | Labour force | Employ-ment | Unemploy-ment |
| **Demo-graphy** | 4.6 | 4.2 | 0.4 | 225 000 | 190 000 | 35 000 |

## 10.2 Demographic developments in Sweden between 2006 and 2020

Actual unemployment and labour force participation differ considerably between different groups. Table 10.2 shows that unemployment for people born in Sweden was around 5 per cent in 2008, while the corresponding figure for people born outside of Europe was 16 per cent. The level of unemployment is also considerably higher among younger groups than among older and slightly higher for women than for men. Labour force participation is correspondingly lower for people born outside of Europe and for women. With regard to age groups, labour force participation is highest for the age group 35 to 44.

**Table 10.2 Unemployment and labour force participation in different groups, 2008, per cent**

| | Unemployment | Labour force participation |
|---|---|---|
| **Total** | **6.2** | **71.2** |
| 15–19 years | 34.9 | 34.0 |
| 20–24 years | 14.0 | 73.2 |
| 25–34 years | 5.6 | 89.0 |
| 35–44 years | 3.8 | 92.4 |
| 45–54 years | 3.7 | 89.5 |
| 55–64 years | 3.8 | 73.0 |
| 65–74 years | - | 12.3 |
| Born in Sweden (15-74 years) | 5.2 | 72.2 |
| Born outside of Europe (15-74 years) | 16.0 | 69.0 |
| Women (15-74 years) | 6.6 | 68.3 |
| Men 15-74 years) | 5.9 | 74.0 |

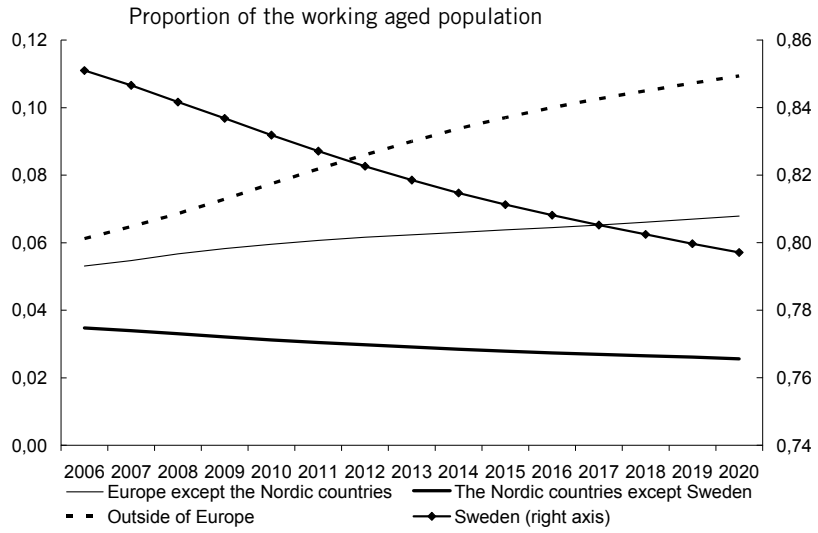
Note: Unemployment is measured according to the ILO definition. Labour force participation refers to the proportion of the population in each group.

Source: Statistics Sweden

Between 2006 and 2020 the population in the age group 15-74 will increase by an average of 0.6 per cent, but at a decreasing pace. The composition of the population will undergo a relatively large change, particularly in terms of country of origin but also with respect to age groups. The proportion of people born outside of Europe will increase while the proportion of people born in Sweden will decrease (see Figure 10.1). On the other hand, age

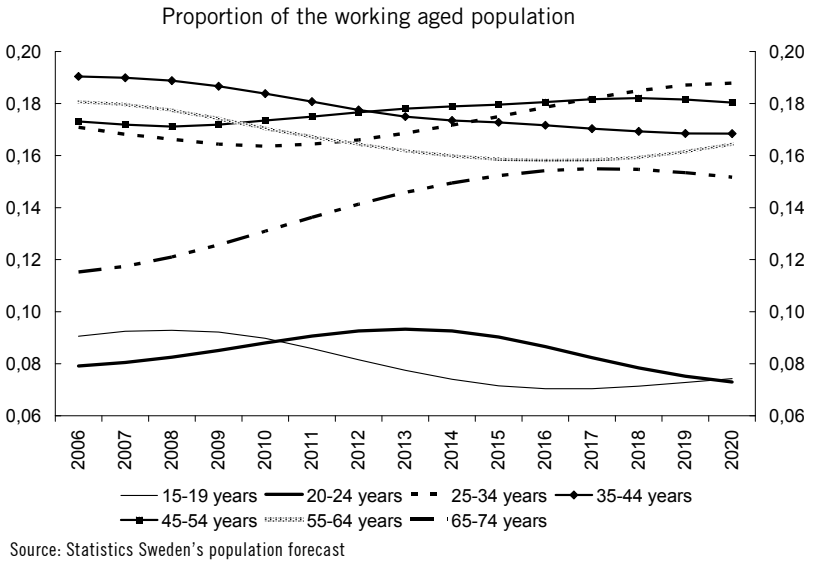
developments are not as clear. The age groups 25 to 34, 45 to 54 and 65 to 74 are expected to increase while the other age groups will decrease as a percentage of the population (see Figure 10.2).

**Figure 10.1 Population trend for the age group 15-74 by place of birth, 2006-2020**




Source: Statistics Sweden's population forecast

**Figure 10.2 Population trend by age group, 2006–2020**




Source: Statistics Sweden's population forecast

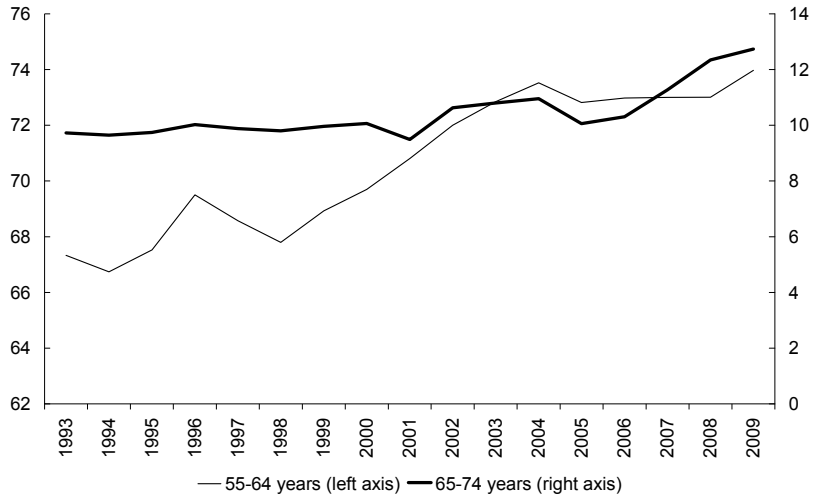
## 10.3 Effect of demography on potential employment, potential labour force and equilibrium unemployment

The effects of demographic developments on the labour market variables are normally calculated through a projection of the population forecast, given that labour force participation, the employment rate, and thus the level of unemployment is constant for each subgroup of the population (based on age, gender and country of origin). This type of mechanical projection does not, however, take into consideration the possibility that labour force participation and/or the employment rate will change over time in different groups. If, for example, the labour market integration of people born abroad improves, the level of unemployment in this group would decrease during the period. Likewise, a change in the regulatory framework as regards the retirement age may lead to a change in the behaviour of older people over time.

The method of estimating demographic effects, assuming a constant unemployment rate, employment rate and labour force participation rate for each group, gives a correct estimate if the historical differences between the groups essentially reflect that the matching functions are different for different groups and that these differences are not affected by changes in the groups' relative size. Such changes can obviously not be excluded. If the proportion of young people in the labour force increases, it may possibly be accompanied by more effective matching for young people and a downward adjustment of their relative wages. If this is the case, the method used will overestimate the demographic effects on, for example, equilibrium unemployment. It is therefore reasonable to interpret the estimates presented as an upper limit for the demographic effects.

The data demonstrate that both labour force participation and the employment rate for the age groups 55 to 64 and 65 to 74 show a positive trend (see Figure 10.3). Explanations for this positive trend could be that the average life span is increasing, older people's health is improving and the incentives for working have been strengthened due to the pension reform at the end of the 1990s. It is therefore not unreasonable to assume that this positive trend will continue.

**Figure 10.3 Labour force participation, different age groups**




Source: Statistics Sweden.

Different reforms aimed at increasing labour force participation and the employment rate for people born abroad have been introduced. Even though policy effects have been calculated at an aggregate level, they implicitly take into account such an effect as several of the reforms are expected to lead to an increase in the work performed by this group. The demographic projection does not therefore take such an effect into consideration.

The Ministry of Finance's labour market model, AMOD, is used in the projection of the population forecast. It consists of sub-groups based on gender, origin and age.[148] The calculations are based on labour force participation and the employment rate for different sub-groups in 2008 since this is a year in which the labour market did not appreciably differ from equilibrium.[149] It is, however, assumed that labour force participation and the employment rate increase for older people (aged 55 to 74) so that the age of retirement[150] from the labour force will increase by about 0.3 years by 2020

[148] The population is broken down into men and women, one year groups extending from 15 to 74 years old and by origin. There are four different areas of birth, Sweden, The Nordic countries except Sweden, Europe except the Nordic countries and outside of Europe, which means that there is a total of 480 (2*60*4) different groups.
[149] One alternative is to use an average extending over a business cycle but as data is only available from 2005 this is not possible in the present situation.
[150] The sum of the labour force participation in all one year groups aged between 48 and 74 divided by labour force participation among 47-year olds plus 47.5.

compared with 2008.[151] The size of the increase is different for different ages and it is phased in linearly until 2020 (see the appendix for a more detailed description of expected developments for older people).

The demographic developments will lead to an increase in the potential labour force and employment of 4.6 and 4.2 per cent respectively during this period, or 225 000 and 190 000 individuals respectively. Since groups with a high average level of unemployment make up an increasing proportion of the population, the demographic developments will lead to an increase in equilibrium unemployment. All in all, equilibrium unemployment is expected to increase by about 0.4 percentage points from 2006 to 2020.

**Table 10.3 The effects of the population trend on the potential labour force, potential employment and equilibrium unemployment between 2006 and 2020**

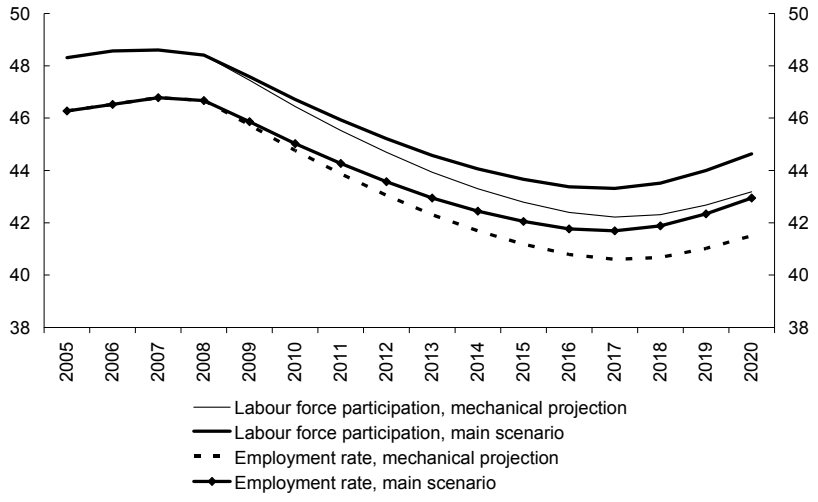
| | Per cent/Percentage points | | | Number of persons | | |
|---|---|---|---|---|---|---|
| | Labour force | Employ-ment | Unemploy-ment | Labour force | Employ-ment | Unemploy-ment |
| **Demo-graphy** | 4.6 | 4.2 | 0.4 | 225 000 | 190 000 | 35 000 |

[151] The assumption about the development for older people is conservative and is, for example, lower than the assumption made in an alternative scenario in the 2008 Long-Term Survey where the retirement age was assumed to be one year higher in 2021 than in 2012.

# Appendix: The main scenario compared with mechanical projection

We assume in the calculations that the labour force participation and the employment rates increase for older people (aged 55 to 74). The labour market exit age will thus increase by about 0.3 years in 2020 compared to 2006. The increase is phased in linearly. Compared with a mechanical projection where labour force participation and the employment rate are constant, this assumption implies that both rates will be 1.4 percentage points higher for the age group 55 to 74 in 2020 (see Figure A1).

**Figure A1** **Labour force participation and employment rate, aged 55–74, main scenario and mechanical projection**




Source: Own calculations

The size of the increase is different for each one year group (see Figure A2 and A3). For the age group 65–69 years, labour force

participation and the employment levels are together about 9 per cent higher than with a mechanical projection (this represents about 8 000 individuals). The increase is assumed to be greatest in the age group 65 to 69 since data show a strong positive trend in this group and since the pension reform principally affects this group.

**Figure A2 Assumptions about the increase in labour force participation**

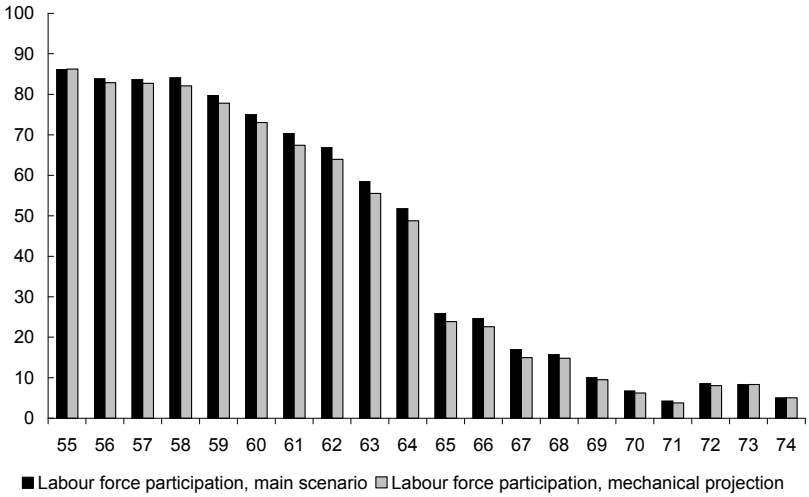
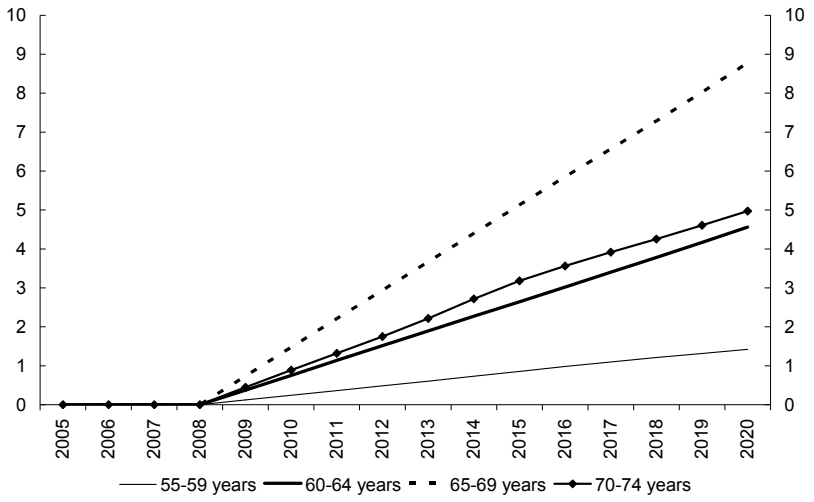


**Figure A3 Assumptions about the increase in labour force participation and employment level**

Increase in per cent compared with a mechanical projection




The effect of the increasing trend is that the level of the labour force (and the level of employment) for the age group 15-74 is 0.7 higher in 2020 than with a mechanical projection. Also, labour force participation (and the employment rate) is 0.5 percentage points higher. Since older people on average have a slightly lower level of unemployment, the effect of demographic developments on equilibrium unemployment is marginally lower in the main scenario than with a mechanical projection (-0.04).

# 11 Permanent effects of the financial crisis on the labour market

## 11.1 Summary

In this chapter, the effects of the financial crisis on equilibrium unemployment, potential employment and the labour force are analysed. In the first part, persistence effects of the crisis are analysed. The second part contains an analysis of the effects of government policies on moderating the persistence effects.

The Ministry of Finance's overall assessment is that the downturn will temporarily lead to slightly higher equilibrium unemployment. This is primarily because the drop in employment related to the financial crisis was concentrated in the industrial sector and a large part of the downturn in employment in industry is expected to persist. Consequently, future matching between the skills of the labour force and employers' demands will deteriorate somewhat, as a person's human capital is to some extent specific to an industry or company. Longer unemployment spells are also expected to contribute to a decline in the competitiveness of the unemployed and thus an increase in equilibrium unemployment.

In line with the model results presented in this chapter, equilibrium unemployment is expected to increase by about 0.3 percentage points (15 000 people) due to the financial crisis. At the same time, it is estimated that 10 000 will leave the labour force, leading to a reduction of permanent employment by 25 000 people due to the crisis.

To counteract permanent exclusion from the labour market due to the downturn, the Government has strengthened and complemented the measures previously implemented. These include

measures that maintain search activity at a higher level and an expansion of the ALMP programmes and education initiatives.

Table 11.1 below shows the effects of the temporary crisis measures on potential employment, labour supply and equilibrium unemployment. As shown in the Table, the net effect of persistence and the crisis measures is that equilibrium unemployment is not affected by the financial crisis. This is mainly because the volumes in ALMP programmes were adjusted to accommodate a much larger drop in employment than was actually realised. A temporary increase in the number of people in labour market training contributes to improving matching of employees and employers regardless of the economic situation. If the labour market training courses were made permanent, this would contribute to permanently lower equilibrium unemployment.

The persistence effects and the temporary measures to counteract persistence have only temporary effects on equilibrium unemployment. As those individuals who have become ”equilibrium unemployed”, leave the labour force because of retirement, or move or retrain, matching will again improve and equilibrium unemployment will fall back to its pre-crisis level. Education initiatives are also temporary in the sense that they only concern the individuals educated during the crisis but permanent in the sense that they persist as long as these individuals remain in the labour market. It is assumed in the calculations that the persistence effects and the most of the effects of the crisis measures will have abated by 2020.

**Table 11.1 The effects of the financial crisis and the crisis measures on the potential labour force, employment and equilibrium unemployment (maximum effect in about 2012–2013)**

| | Labour force (%) | Equilibrium unemployment (p.p.) | Employment (%) |
|---|---|---|---|
| Persistence | -0.2 | 0.3 | -0.5 |
| Crisis measures | 0.1 | -0.3 | 0.4 |

## 11.2 Why can cyclical fluctuations affect equilibrium unemployment?

A deep and protracted downturn can have long-term effects on unemployment, employment and labour force participation. There are a number of explanations as to how the effects may become persistent.

One important reason is that an economic downturn does not as a rule affect all industries and regions to the same extent. In terms of the above model, structural change temporarily accelerates in an economic downturn; for example, firms and industries with obsolete technology can no longer compete. Those who lose their jobs in these industries may lack the skills required to obtain a new job, given the prevailing wage structure. Matching between the skills of the labour force and employers' demands will thus deteriorate. These problems can be long term if there is relatively little incentive for those who have lost their jobs to improve their skills or move or if it takes a long time to train in the occupations where labour demand is high. An economic upturn will thus not automatically lead to these individuals obtaining work; rather the higher unemployment may persist for a long time.

In a downturn, the unemployment spells are extended due to a high inflow to unemployment, while the outflow to work is low, even among individuals who are competitive in the labour market. However, a protracted unemployment spell may itself cause a loss of competitiveness and an increase in equilibrium unemployment. This may be case, for example, if an individual's incentive to look for work diminishes or if occupational skills are lost while unemployed. Studies (Agell & Bennmarker 2002) also show that employers perceive the long-term unemployed as less competent despite otherwise equivalent qualifications.

Another cause of a rise in equilibrium unemployment may be that the wage structure does not adjust sufficiently to restrain unemployment. This is the case, for example, if the social partners do not take the unemployed into account in their wage demands. This restrains the demand for labour and keeps unemployment up.

Cyclical changes and temporary changes in the rate of structural change will not, as a rule, have a long-term effect on equilibrium unemployment. As those individuals who have lost their competitiveness retrain, move or leave the labour force, matching will again improve and equilibrium unemployment fall back to its

pre-crisis level. Cyclical swings do not also as a rule affect long-term structural change in the economy; they only affect how fast this structural change takes place. Slower structural change after the crisis contributes to a more rapid return of equilibrium unemployment to its level before the crisis.

## 11.3 The effects of the financial crisis on the labour market

The strong fall in demand in the wake of the financial crisis led to a sharp decrease in employment, while unemployment increased by almost 3 percentage points (see Figure 11.1 below). The global downturn affected export-dependent industries in particular. The number of people employed in this sector decreased by about 110 000 from the third quarter of 2008 to the fourth quarter of 2009, a reduction of more than 15 per cent. This can be compared with an upswing in employment of about 25 000 people in the rest of the business sector during the same period (see Figures 11.2 and 11.3 below).

Recovery came earlier and has been stronger than most people anticipated. Employment has increased since autumn 2009 and unemployment has begun to decrease. Most of the drop in employment has been recovered in a year, from autumn 2009 to autumn 2010. According to the forecast in the 2011 Spring Fiscal Policy Bill, the cyclical recovery in the labour market is expected to continue over the next few years.

**Figure 11.1 Unemployment (aged 15–74) outcome and forecast according to the 2011 Spring Fiscal Policy Bill**

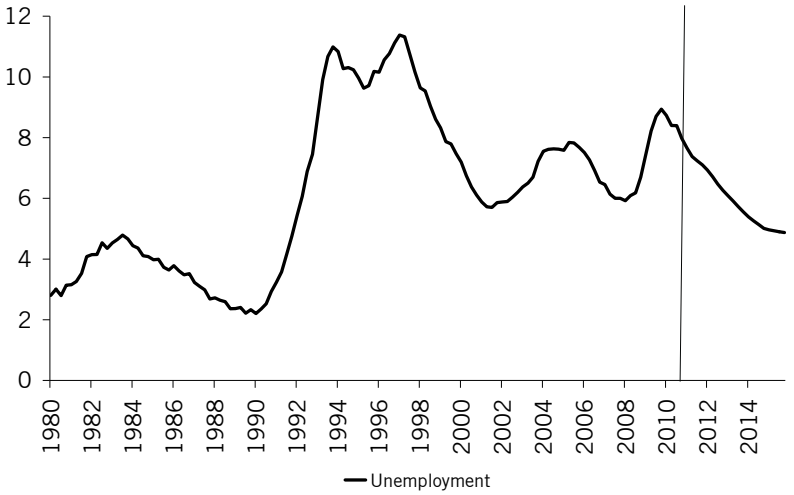



**Figure 11.2 Labour force and employed outcome and forecast according to 2011 Spring Fiscal Policy Bill, Hundreds of persons**


A large part of the downturn in employment in industry is expected to persist, as the increase in output in connection with the recovery is expected to be met mainly by higher productivity (see Figure 11.3 below). Future matching between the skills of the labour force and the employers' demand for labour accordingly will worsen somewhat as a person's human capital is to some extent

specific to an industry or firm. It should be emphasised, however, that the forecasts at industry level are very uncertain.

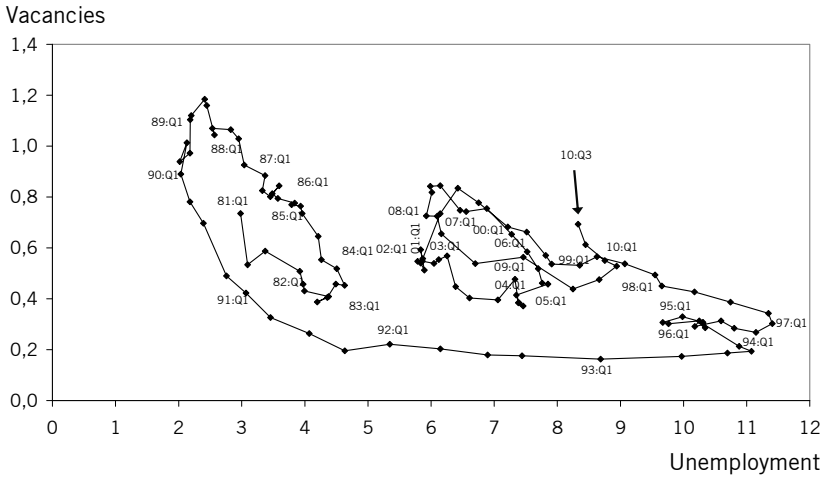
Furthermore, as a rule the regions with relatively high unemployment before the crisis were also those worst affected by the crisis. For example, the counties of Gävleborg, Kronoberg and Västernorrland, with a large percentage of people employed in manufacturing, were hard hit by the crisis, while the County of Stockholm fared better. This indicates that the geographical rate of structural change may also have increased due to the crisis.

**Figure 11.3** **Employed in different sectors, outcome and forecast according to the 2011 Spring Fiscal Policy Bill, hundreds of persons**


An increased rate of structural change (between sectors and different regions) should lead to a deterioration in matching in the labour market when the demand for labour picks up speed again, as the skills of the labour force will match employers' demands less well. If so, there will be an outward shift of the Beveridge curve, higher unemployment at a given number of vacancies and higher equilibrium unemployment. If the Beveridge curve is studied for quarterly data, some outward shift can be seen in 2009, which, slows down during 2010, see Figure 11.4. However, the fact that there is a trend towards an outward shift need not mean that the actual matching process has deteriorated, as the quarterly correlation is relatively irregular historically and individual quarterly outcomes should be interpreted with caution. Moreover,

when cyclical swings occur, vacancies as a rule increase before unemployment falls, and thus the curve would shift outwards in the short term.

**Figure 11.4 The Beveridge curve, seasonally-adjusted quarterly data**




Note: The first quarter of 1980 to the third quarter of 2010. Unemployed and vacancies as a percentage of the labour force.

The weak resource utilisation in the labour market is clearly reflected in the collective bargaining that took place in 2010 for about 3.3 million employees. Wage increases are considerably lower than those negotiated during collective bargaining in 2007. The agreements were relatively homogeneous as regards the total increase in wages during the agreement period between different industries, even though the financial crisis affected some industries more severely than others. The industry worst hit by the financial crisis has, however, the lowest agreed wage increases. In industry, "crisis agreements" were also reached, temporarily reducing wages and working hours, among other things, to lessen the need for redundancies.

All in all, this indicates that wage formation has functioned well with a high degree of real wage flexibility and relative wage flexibility. This has in turn probably contributed to dampening the fall in employment and the permanent effects on employment.

**Qualitative conclusions on the permanent effects of the crisis:**

- The labour market recovery appears to be more rapid and stronger compared with most previous downturns. A shorter period of low employment and high unemployment leads to a reduced risk of the permanent exclusion of individuals' human capital and a reduced risk of a deterioration in matching between jobseekers and vacant jobs when demand increases again. This indicates, all else being equal, limited persistence effects from the financial crisis.
- However, the crisis is concentrated mainly in manufacturing and a large part of the fall in employment there is expected to be persistent. Thus, future matching between the skills of the labour force and employers' demands will deteriorate somewhat, as a person's human capital is to some extent specific to an industry or firm. Longer unemployment spells are also expected to contribute to a decrease in the unemployeds' competitiveness and an increase in equilibrium unemployment. Overall, this indicates slightly higher equilibrium unemployment because of the downturn.

## 11.4 Model estimates of persistence effects

There are a number of studies, based on Swedish data that have investigated the extent to which cyclical variations in unemployment have affected NAIRU (for example, Assarsson and Jansson (1998), Lindblad (1997), Mossfeldt and Österholm (2010)). The econometric model used is as a rule an unobserved components-model for NAIRU. Various types of identifying assumptions are made in the models as to how the cyclical unemployment is related to variables which are observable or calculated, such as capacity utilisation or the GDP gap via Okun's law. Cyclical unemployment means the deviation of current unemployment from NAIRU.

In the UC-model, total unemployment, $U$, is decomposed into a cyclical component, $U^c$, and a structural component, $U^n$.
At the same time, these models permit cyclical unemployment to affect structural unemployment.

$$U_t = U_t^c + U_t^n$$
$$U_t^n = U_{t-1}^n + \alpha U_{t-2}^c + \varepsilon_t^n$$

How much structural unemployment is affected is determined by the parameter $\alpha$. This parameter thus captures the persistence effects by stating how much structural unemployment was affected by a cyclical unemployment shock.

Previous estimates (see Assarsson and Jansson, 1998) indicate that structural unemployment can increase by as much as 0.7 percentage points if cyclical unemployment increases by 1 percentage point (the estimate is based on open unemployment). Updated estimates by Assarsson and Jansson, 1998 for the period 1980Q1–2008Q3 indicate that an upturn in cyclical unemployment of 1 percentage point increases NAIRU by 0.2–0.4 percentage points (the estimate has been based on ILO unemployment). Lindblad (1997) also finds large persistence effects.[152] According to the results obtained from these models, a large part of the variations in unemployment are permanent, i.e. NAIRU tracks actual unemployment very well.

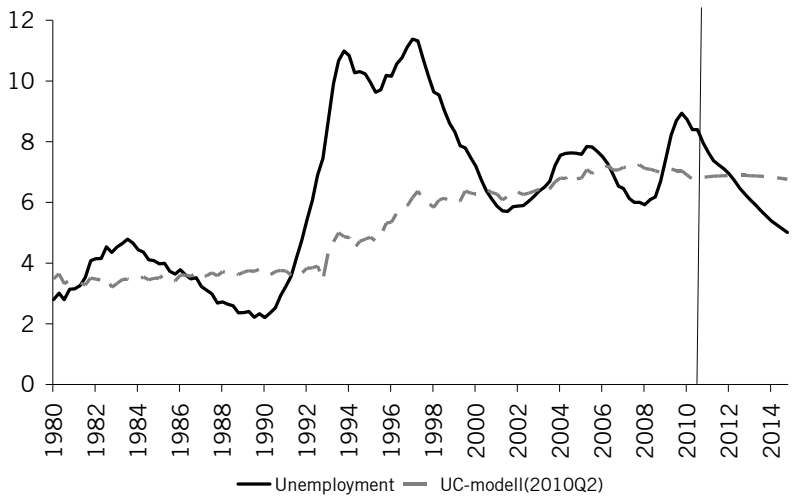
In this report, updated estimates of Mossfeldt and Österholm's (2010) UC model are used as input to determine the persistence effect. It is a UC model where the cyclical part of unemployment is identified with the aid of an Okun relationship. The results from the UC model estimated for the period 1970Q2–2010Q2 indicate that an upturn in cyclical unemployment of 1 percentage point increases structural unemployment by around 0.015 percentage points. This may at first glance seem small and is considerably less than the studies discussed above, but persistent high cyclical unemployment has large cumulative effects. According to the model, equilibrium unemployment, for example, will increase by around 3 percentage points due to the crisis in the 1990s.

Figure 11.5 shows how equilibrium unemployment develops according to the UC model for the period 1980Q1–2010Q2. For the period, 2010Q3–2014Q4 it shows the effect that the increase in

[152] Lindblad (1997) calculates five different relationships for identifying the unobserved components. In the case where open unemployment is taken into account during the period 1972-1994, the hysteresis effect is estimated at 0.59-0.84 depending on the model specification. When the period of estimation is instead 1972-1991, the parameter estimates are in the interval 0.49-0.54. When total unemployment is taken into account, the corresponding interval will be 0.50-0.64 and 0.10-0.59 respectively.

actual unemployment according to the 2011 Spring Fiscal Policy Bill has on equilibrium unemployment. According to the model, equilibrium unemployment will rise by around 0.3 percentage points during the period 2008Q3–2013Q2 due to the increase in unemployment during the crisis. The development 2010Q3–2014Q4 in Figure 11.5 shows therefore only the effect that the downturn has on equilibrium unemployment and is thus not a forecast of equilibrium unemployment.

**Figure 11.5 Model estimates of equilibrium unemployment**




## 11.5 Estimate of the persistence effects

In line with the model results, equilibrium unemployment is estimated to increase by about 0.3 percentage points (15 000 people) due to the financial crisis. At the same time, 10 000 are expected to leave the labour force, leading to a decrease in sustainable employment of 25 000 people due to the crisis. All in all, more than 15 per cent of the total decline in employment of about 140 000 thus results in permanently lower employment. Or more relevantly, about 30 per cent of the drop in employment of 75 000 in manufacturing leads to permanently lower employment.

The persistence effects are expected to decrease as the individuals affected "permanently" by the financial crisis retrain, move or retire (or would have retired, had they not taken early retirement due to the

financial crisis). It is assumed that persistence effects will have abated by 2020.

**Table 11.2 The effects of the financial crisis on the potential labour force, unemployment and employment**

| Labour force | Unemployed | Employed |
|---|---|---|
| -10 000 | 15 000 | -25 000 |

## 11.6 Measures to counteract persistence effects

To counteract persistent effects of the crisis, the Government has strengthened and supplemented previously implemented measures. This takes place, among other things, through measures that maintain search activity at a reasonable level and an expansion of the ALMP programmes and education initiatives.

The assessment is that the ALMP measures, work experience placement and coaching, have short-term positive effects on potential employment (counteract persistence). The education initiatives are temporary in the sense that they only concern the individuals educated during the crisis but permanent in the sense that their effect persists as long as these individuals are in the labour market.

**Table 11.3 Annual places and employment effect (2012 max effect)**

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | Employment counter-acting persistence (2012) |
|---|---|---|---|---|---|---|---|
| **Labour market policy** | | | | | | | |
| Work placement (incl. Lyft) | 9 100 | 18 800 | 15 000 | | | | 1 900 |
| Coaching/job search assistance | 17 100 | 38 000 | 28 300 | | | | 6 400 |
| **Training** | | | | | | | |
| Labour market training | | 1 000 | | | | | 500 |
| Adult vocational training | 5 600 | 23 800 | 25 300 | 1 800 | 1 850 | 2 000 | 8 300 |
| Vocational higher education | 1 500 | 3 750 | 4 500 | | | | 300 |
| Universities and university colleges | 10 250 | 10 500 | 4 500 | | | | 600 |

See Chapter 6 for calculations relating to work experience placement and coaching.

Labour market training is expected to have a treatment effect that will shorten unemployment spells by 50 days. Given a volume of trained individuals, the employment effect can be approximated as full-year employment (365 days per year). 1 000 annual places corresponds to 4 000 trained individuals and thus 4000*50/365=500 employed.

Adult vocational education (yrkesvux) is expected to have the same treatment effect as labour market training, but the average study period is longer, one year, because it is not individually customised as in labour market training. Some labour market training also consists of short supplementary training courses and the average labour market training course is accordingly much shorter, 3 months. Adult vocational education can be given to 60 350 people, assuming an average training period of a year. The employment effect will then be 60350*50/365=8300 employed. The effect is temporary in the sense that it only concerns people who have been trained during

the crisis, but permanent in the sense that it persists as long as these individuals remain in the labour market.

For vocational higher education and education at universities and university colleges, the employment effect is also estimated to be persistent during the period that the individuals are in the labour market. The effect is estimated based on the assumption that the individuals who take a post-secondary education increase their likelihood of employment by the difference in the employment rate between individuals with upper secondary and those with post-upper secondary education. In the LFS, the employment rate is around 72 per cent for those with upper secondary education (average 2005–2010), and around 79 per cent for those with post-upper secondary education. Vocational higher education is assumed on average to continue for 2 years and universities and university colleges for three years; there are thus enough places for 4 875 people in vocational higher education and 8 400 people in universities and university colleges.[153] The employment effect is thus (0.79-0.72)*4 875=300 employed from vocational higher education and (0.79-0.72)*8 400=600 employed from universities and university colleges.

All in all, the measures lead to temporary increases in potential employment of 18 000 individuals (maximum effect about 2012). The increase in potential employment means that the potential labour force will increase slightly (4 700 people) and that equilibrium unemployment will decrease by about 13 000 people.

**Table 11.4 Effects of crisis measures on the potential labour force, employment and equilibrium unemployment**

| Labour force | Unemployed | Employed |
|---|---|---|
| 4 700 | -13 300 | 18 000 |

[153] There may be dimensioning problems, etc. in university and university college education which may mean that individuals enrolled during the crisis later displace other individuals. This problem should, however, be limited and has not been taken into account in the calculations.

# References

Assarsson, B., Jansson, P. (1998) Unemployment Persistence: The Case of Sweden. Applied Economics Letters, 5, 25–29.

Jaeger, A., Parkinson, M. (1990) Testing for Hysteresis in Unemployment – An Unobserved Components Approach. Empirical Economics, 15, 185–198.

Jaeger, A., Parkinson, M. (1994) Some Evidence on Hysteresis in Unemployment Rates. European Economic Review, 329–342.

Lindblad, H. (1997) Persistence in Swedish Unemployment Rates. Licentiate thesis, Stockholm University, 1996.

Mossfeldt, M. and P. Österholm (2010) Estimating the effects of the crisis on the Swedish labour market, Working Paper No. 117, the National Institute of Economic Research, 2010

Pissarides, C. A. (1992) Loss of skill during unemployment and the

persistence of employment shocks, Quarterly Journal of Economics 107, 1992