Wage Formation

Economic Conditions in Sweden 2003

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Wage Formation – Economic Conditions in Sweden is the English translation of the Swedish report "Lönebildningen - Samhällsekonomiska förutsättningar i Sverige," which provides analyses of the economic conditions for Swedish wage formation. The report is published annually.

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Preface

The Swedish government has directed the National Institute of Economic Research to prepare each year a report on the economic conditions for wage formation (prop. 1999/2000:32, ”Lönebildning för full sysselsättning” [Wage Formation for Full Employment]).

The purpose of the report is to provide solid factual data to assist the parties on the labour market and the National Mediation Office in reaching a consensus on the economic conditions for wage formation in general and wage negotiations in particular. This means, for instance, that the emphasis in the report is more on reviewing various structural issues and less on presenting short-term forecasts.

In *Section One*, the report reviews the development of wages, labour costs and the state of the economy from 1990 on. *Section Two* focuses on the conditions for the coming round of labour negotiations in 2004. The analysis is heavily concentrated on the current economic situation and on Sweden's competitive position in relation to other countries. *Section Three* of the report provides an analysis of the long-term conditions for wage formation, with the focus on the evolution of productivity and prices. *Section Four* describes a main scenario for wage formation during the period 2004–2010. This scenario shows the development considered most probable by the NIER. *Section Five* presents two alternate scenarios showing how wage formation can contribute to a trend of higher employment. In *Section Six*, conclusions are drawn from previous sections concerning appropriate rates of increase for wages and labour costs in 2004–2006. *Section Seven* analyzes the role of relative wages in the economy, as well as the reasons for the dispersion of wages.

The preparation of this year's report was led by Hans Lindberg, Director of Forecasting.

Stockholm, October 2003
Ingemar Hansson
Director General

Summary

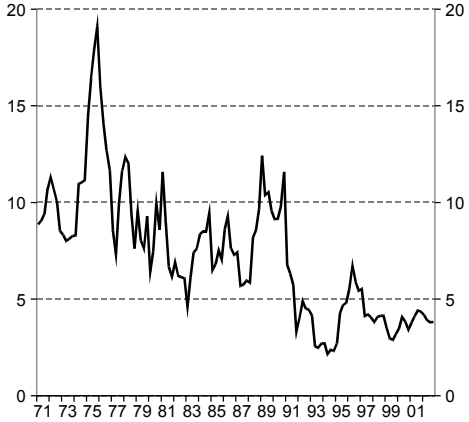
The Swedish people voted ”no” to the euro in the recent referendum. Monetary policy will continue to be conducted with a flexible exchange rate and the inflation target of the Riksbank (the Central Bank of Sweden). On the whole, wage formation has functioned well in relation to the inflation target since 1998. Inflationary expectations are holding steady at around 2 percent, and the labour-market parties and their mediators have developed a new view of wage formation. The Agreement on Industrial Development and Wage Formation (Industrial Agreement), and the corresponding agreements in other sectors, as well as new forms of negotiation and new ways of designing settlements, have contributed to lower wage increases since 1998 than at any time in the 1970s and 1980s (see Diagram 1).

It is important that the trend toward better-functioning wage formation continue, so that wage formation is not an obstacle to high employment or a source of cost shocks and other kinds of imbalance in the economy. Economically well-functioning wage formation also requires flexible wages that can be adjusted according to the state of the economy and the composition of the labour supply and the demand for labour.

The margin for wage increases and other labour costs depends on the payroll capacity of the business sector. This capacity is determined in turn by productivity and product prices – payroll capacity increases at a rate equal to the sum of the rates of increase in productivity and prices. Imbalance between labour costs and payroll capacity cannot last. An investment must yield the same long-term return in Sweden as abroad. In the longer term, therefore, labour costs increase at the same rate as the sum of the rates for productivity and prices. In the long run, the development of productivity and prices is expected to provide a margin of 4.0 percent for increases in labour costs.

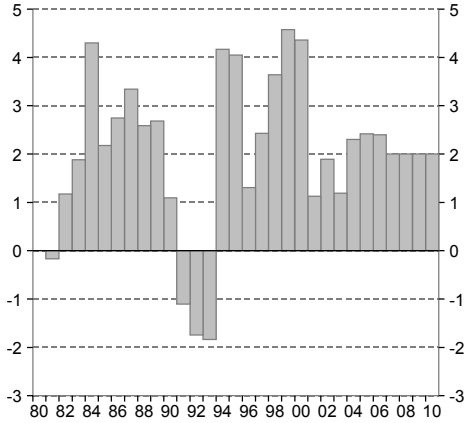
At the time of the 2001 labour negotiations, the economic situation was one of strong growth and surging employment. The conditions as the 2004 negotiations approach are quite different. Growth is modest, employment has stagnated and the unemployment rate has risen to 5.0 percent. Although demand and output will be rising more rapidly from now on, recovery will take time. GDP growth is forecast to be 1.2 percent this year, 2.3 percent next year and 2.4 percent in both 2005 and 2006 (see Diagram 2). With the slow pace of recovery, the demand for labour will remain soft. The unemployment rate will recede gradually to 4.7 percent in 2005. No substantial improvement in the labour-market situation is expected until 2006, when the unemployment rate is forecast to have dropped to 4.3 percent. Underlying inflationary pressure is low because of lacklustre growth and low resource utilization. It is therefore estimated that the average inflation rate will recede to 1.6 percent in 2004–2006, or 0.7 percentage point less than in 2001–2003.

Diagram 1 Hourly Earnings, Business Sector
Annual percentage change, quarterly values



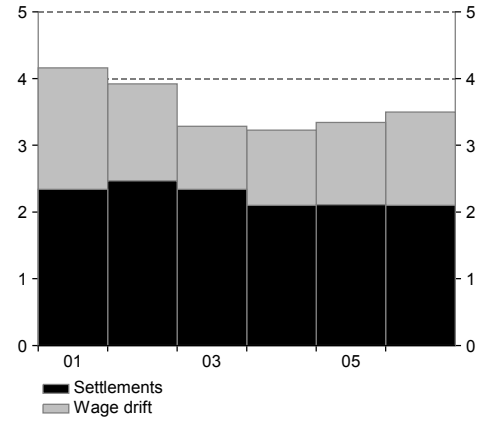
Source: National Mediation Office (Short Term Wages and Salaries Statistics).

Diagram 2 GDP
Annual percentage change



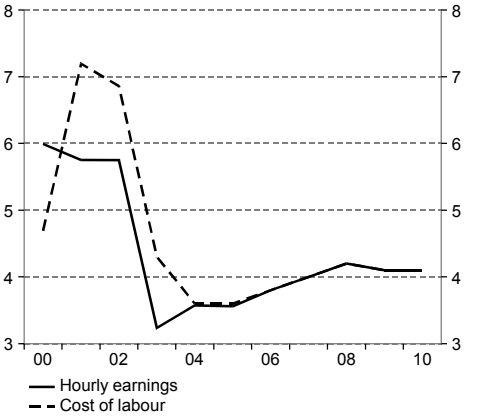
Sources: Statistics Sweden and NIER.

Diagram 3 Negotiated Settlements and Wage Drift, Business Sector: Forecast
Annual percentage change



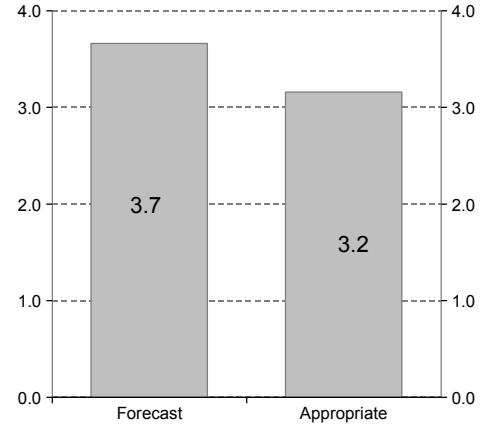
Sources: National Mediation Office (Short Term Wages and Salaries Statistics) and NIER.

Diagram 4 Cost of Labour, Business Sector: Forecast
Annual percentage change



Sources: Statistics Sweden (National Accounts) and NIER

Diagram 5 Cost of Labour, Business Sector 2004–2006
Annual percentage change



Sources: Statistics Sweden (National Accounts) and NIER.

In these circumstances, the negotiated wage settlements in the business sector are forecast at 2.1 percent per year in 2004–2006, 0.3 percentage point lower than in the 2001 negotiations (see Diagram 3). As a consequence, the hourly cost of labour in the business sector is expected to increase at an annual rate of 3.7 percent in 2004–2006, or 2.4 percentage points less than in 2001–2003 (see Diagram 4)

Despite a slackening rate of increase in labour costs compared to 2001–2003, an even lower rate of increase would be desirable from the standpoint of the economy. There are four reasons for this conclusion:

- A rate of increase somewhat below the one considered most probable would contribute to more rapid recovery of the economy and of employment. More modest wage increases mean that firms will demand more labour; among other effects, growth will be stimulated by a lower repo rate.

- If the Government and Parliament implement structural reforms that increase the labour supply, the labour-market parties and their mediators can, trough agreements on more moderate wage increases, help speed the adjustment of employment to the higher supply. A reduction in ill health would entail substantial gains for the national economy, with benefits to wage earners as a group in the form of better health, higher earnings and lower taxes or improved public services.

- A lasting reduction in unemployment could result if the labour-market parties and their mediators at the central, local and individual levels gave even greater consideration in practice to the economic benefits of high employment and low unemployment. It is in the interest of wage earners as a group to exercise restraint in wage demands, thus making it possible to achieve durably high employment; for instance, taxes could then be lowered and public services improved.

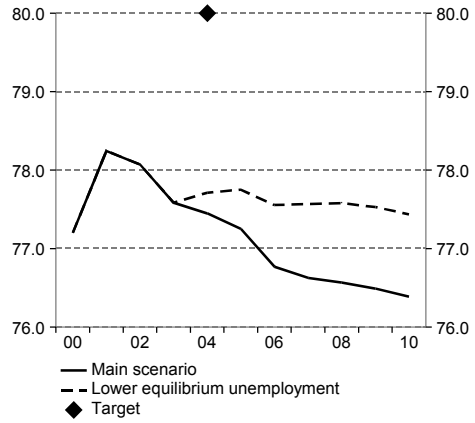
- There is substantial uncertainty about such factors as the tendency of the economy and the exchange rate of the Swedish krona against the dollar. So far there are no sure signs that an economic upturn is on its way in the euro zone. If the dollar continues to weaken, cost levels in Sweden will rise further in relation to those in the US and in other countries whose currencies are linked to the dollar.

For the reasons given above, it is the NIER's assessment that an economically appropriate rate of increase in labour costs for 2004–2006 would be 3.2 percent per year, or 0.5 percentage point less than the rate of increase considered most probable (see Diagram 5). In addition to negotiated wage hikes and wage drift, this rate of increase includes such factors as changes in

negotiated and legislated employer contributions, reductions in work hours and changes in employer costs of sick leave and rehabilitation. If wage increases are thus limited, signifying a lasting improvement in the functioning of wage formation, the annual rate of GDP growth will be 0.2 percentage point higher in 2004–2010. It is estimated that the regular employment rate will then be 77.4 percent instead of 76.4 percent in 2010, compared to Parliament's target rate of 80 percent (see Diagram 6). The higher employment rate will strengthen public finances, providing a margin of SEK 12 billion for unfinanced tax cuts or reforms entailing additional expenditure.

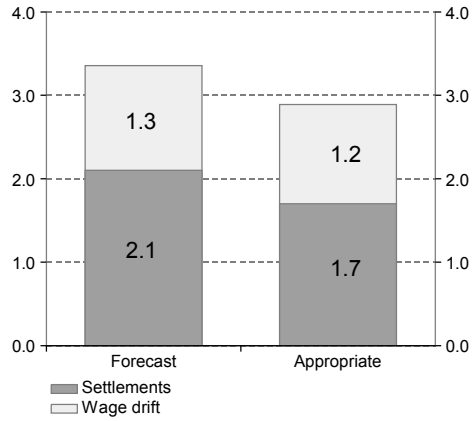
The economically appropriate rate of increase in labour costs in 2004–2006 corresponds to an annual rise of 2.9 percent in hourly earnings, according to the cyclically adjusted earnings statistics. However, the labour-market parties and their mediators are in a better position to limit the increase in labour costs at the central level than in local or individual negotiations. For this reason, the appropriate rate of increase for 2004–2006 is broken down into two components: negotiated increases averaging 1.7 percent, and wage drift accounting for the remaining 1.2 percent (see Diagram 7). This means that the negotiated settlements have been adjusted downward by an annual average of 0.7 percentage point compared to the 2001 negotiations.

Diagram 6 Regular Employment Ratio
Percent of population aged 20-64



Sources: Statistics Sweden and NIER.

Diagram 7 Negotiated Settlements and Wage Drift, Business Sector 2004–2006
Annual percentage change



Sources: National Mediation Office (Short Term Wages and Salaries Statistics) and NIER.

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Boxes

1 Wages, Labour Costs and Competitive Situation, 1990–2003

Wages and Labour Costs

In the 1970s and 1980s, Sweden had major problems with wage formation. Labour costs were increasing much faster than in our principal competitor countries. This forced Sweden to devalue four times between 1977 and 1982 and contributed to the economic crisis that erupted in the early 1990s. In November 1992 Sweden switched from a fixed to a floating exchange rate, followed by the Riksbank (the Central Bank of Sweden) adopting a target inflation rate of 2 percent. Later, the target of maintaining the constant value of the currency was legislated, and the Riksbank was given a more independent status. The new regime of stabilization policy changed the conditions for wage formation. If wages increase more rapidly than the inflation target permits, monetary policy will be tightened to the extent required for unemployment to increase, and wage increases will be limited to a level compatible with the inflation target. For most of the 1990s, this mechanism was combined with an extremely restrictive fiscal policy. These new circumstances, and the very high rate of unemployment in the mid-1990s, helped to stabilize inflationary expectations around 2 percent and to persuade the labour-market parties to adopt a new view of wage formation. The Agreement on Industrial Development and Wage Formation (Industrial Agreement) and equivalent co-operative agreements in other sectors, as well as new forms of negotiation and new ways of designing labour contracts, have contributed to considerably lower wage increases since 1998 than in the 1970s and 1980s (see Diagram 8).

Thus, a number of steps toward improved and well-functioning wage formation have been taken in recent years. It is important that this process continue so that wage formation does not constitute an obstacle to sustainably lower unemployment and a high employment ratio, or cause cost shocks or other forms of economic imbalance. For wage formation to function properly from the standpoint of the national economy, wages must also be flexible, adjusting to the state of the economy and to the composition of the labour supply and the demand for labour.

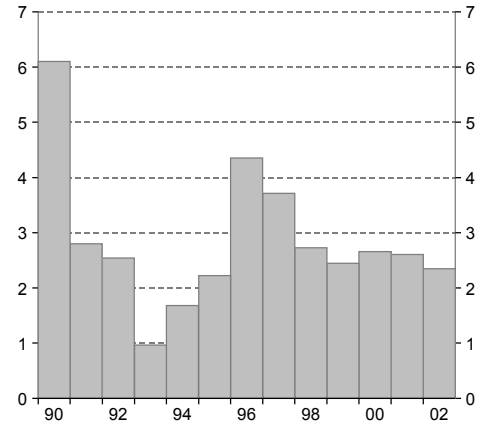
Diagram 8 Hourly earnings, Business Sector and Total
Annual percentage change, quarterly values

Source: National Mediation Office.

Stabilization Agreements, 1991–1994

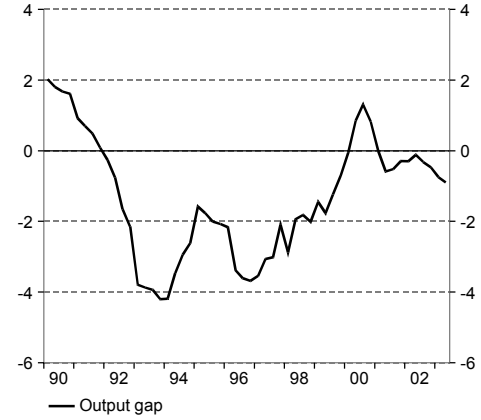
During the economic crisis of the early 1990s, there was a marked rise in unemployment, which helped bring about a rapid slowdown in inflation and in the rate of wage increases. At the

Diagram 9 Negotiated Wage Settlements, Economy as a Whole
Annual percentage change



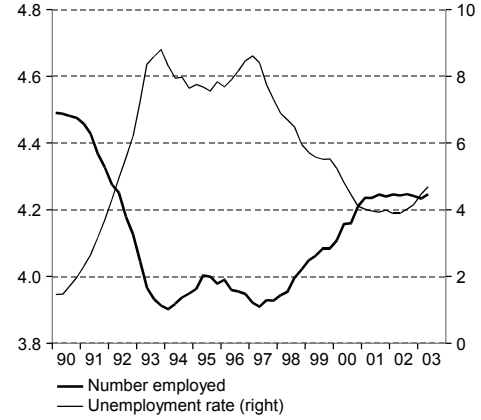
Source: National Mediation Office.

Diagram 10 Output Gap
Percent of potential GDP, quarterly values



Source: NIER.

Diagram 11 Employment and Unemployment
Millions and percent, seasonally adjusted quarterly values



Source: Statistics Sweden.

same time, initiatives were taken to change wage formation to reduce the rate of wage increases. The so-called Rehnberg Commission was directed in March 1990 to try to unite the labour-market parties on a common view of the Swedish economy and its development, and on a stabilization agreement for the period of the next labour contracts. The result was an agreement covering most of the labour market, with annual wage increases averaging 2.7 percent during the period 1991–1992 (see Diagram 9). The formerly frequent inflationary adjustment clauses were eliminated, thereby halving the rate of wage increases in the business sector to an annual average of 5.0 percent in 1991–1992. The most conspicuous reduction was in the construction industry because of the sharp downturn in building activity and high unemployment among construction workers.

The 1993 negotiations resulted in a new two-year contract of the same type as the stabilization agreements. The economy was still in a slump. The output gap was strongly negative, and unemployment was high (see Diagrams 10 and 11). Consequently, the wage settlements were low, and in the business sector the rate of wage increases was again halved to an annual average of 2.7 percent, of which 1.3 percentage points consisted of negotiated increases. The highest increases in hourly earnings, 3.2 percent, were in manufacturing, while the increases in construction, where unemployment was still high, were nearly two percentage points lower (see Diagram 12).

Table 1 Negotiated Increases in Hourly Earnings 1980–2003

Annual percentage change, average by year

	1980–90	1991–94	1995–97	1998–00	2001–03[1]
Manufacturing	4.0	1.4	3.3	2.3	2.4
Construction	3.1	0.9	2.9	2.6	2.3
Service industries	5.5	2.4	3.6	2.8	2.4
Business sector	*4.6*	*1.9*	*3.4*	*2.6*	*2.4*
General-government sector	7.0	2.2	3.5	2.6	2.5
Total	**5.4**	**2.0**	**3.4**	**2.6**	**2.4**

[1] Values for 2003 are forecasts.
Sources: National Mediation Office and NIER.

Wage Increases Accelerated in 1995–1997

Just before the 1995 labour negotiations, the economy began gradually recovering. Growth was high, but employment, though increasing somewhat, was still much lower than before the crisis (see Diagram 11). The recently adopted inflation target had little credibility, and the expected inflation rate was considerably higher than the Riksbank's two-percent target. The somewhat stronger economy, in combination with conflict-ridden labour negotiations, led to considerably higher wage settlements than in

the preceding round of negotiations. The first agreements were reached in the pulp-and-paper industry, which had benefited from the improved economy. The rest of the manufacturing sector, which had not developed so strongly, followed suit, and the three-year settlements for manufacturing as a whole ended up at 3.3 percent per year. At the same time, wage increases in addition to the settlements – so-called wage drift – picked up as growth in manufacturing output increased. This contributed to average annual wage increases of 5.5 percent in manufacturing in 1995–1997 (see Table 2). Such a high rate of wage increases is incompatible in the long run with 2-percent inflation and reflected a lack of confidence in the inflation target. The settlement in manufacturing led to demands for compensating increases in other industries, and the settlements for the economy as a whole averaged 3.4 percent (see Table 1). The overall rate of wage increases in the business sector for the period 1995–1997 ended up at 4.8 percent, while the increases for the economy as a whole were 4.6 percent (see Table 2).

Diagram 12 Hourly earnings, Manufacturing and Construction Industries
Annual percentage change, quarterly values

Source: National Mediation Office.

Table 2 Hourly Earnings 1980–2003 According to Short Term Wages and Salaries Statistics

Annual percentage change, average by year

	1980–90	1991–94	1995–97	1998–00	2001–03[1]
Manufacturing	7.8	4.1	5.5	3.5	3.7
Construction	8.2	1.8	3.8	3.9	4.1
Service industries	8.2	4.1	4.6	3.7	3.8
Business sector	*8.0*	*3.8*	*4.8*	*3.6*	*3.8*
General-government sector	7.8	3.9	4.2	3.6	4.4
Total	**7.9**	**3.8**	**4.6**	**3.6**	**4.0**

[1] Values for 2003 are forecasts

Sources: National Mediation Office and NIER.

Wage Increases in 1998–2000 Limited by Agreement on Industrial Development and Wage Formation

The rate of wage increases resulting from the 1995 negotiations were excessive from the standpoint of the national economy and indicative of substantial shortcomings in wage formation, particularly since unemployment was still high. For this reason, the unions in the manufacturing sector invited employer representatives to enter negotiations on new forms of wage formation. These negotiations subsequently led to the "Agreement on Industrial Development and Wage Formation," also known as the Industrial Agreement. All organizations in the manufacturing sector supported the agreement, the purpose of which was to establish a negotiation procedure that would favour industrial development and competitiveness through well-balanced wage increases. Observance of the agreement is co-ordinated by the Industrial Committee, which consists of leading union represen-

tatives. The Committee appoints an Economic Council for Industry that before each round of labour negotiations presents its views on the Swedish economy and its development, and thus provide the basis for the negotiations to follow. New agreements are to be fully negotiated before the old ones expire. To aid in the process, the parties have an impartial Chair appointed by the Industrial Committee. The impartial Chair can act as a mediator if necessary and is also authorized to postpone any industrial action for a 14-day period.

The round of negotiations in 1998 was the first in which the Industrial Agreement was tested; which resulted in settlements lower than in 1995. At the time, the economy was in an upturn, but unemployment was still relatively high. Again, the first agreement was reached in the paper industry, but this time with a three-year settlement of 2.9 percent per year. This agreement became the norm for the rest of the manufacturing sector, as well as for other parts of the business sector and for the general-government sector. The negotiated settlements decreased from an annual average of 3.4 percent for 1995-1997 to 2.6 percent for 1998–2000 (see Table 1). Interperiod comparison of negotiated wage increases, however, is complicated by the fact that the most recent rounds of labour negotiations have resulted to a growing extent in central agreements that specify only minimum levels and provide greater scope for local wage formation. In addition, more and more agreements are so-called "zero settlements" which do not provide for any specific rate of wage increases. The average rate of negotiated wage increases, as calculated, has therefore tended to decrease over the years, whereas wage drift has been successively higher. However, the drop in negotiated wage increases from 1995–1997 to 1998–2000 is too great to be due solely to lack of comparability over time, but is interpreted as a real slowdown in the rate of wage increases.

Overall wage increases in the business sector and the economy as a whole averaged 3.6 percent annually in 1998–2000, about 1 percentage point less than in the previous three-year period (see Table 2). During 1998–2000, the economy strengthened substantially, employment rose rapidly and unemployment receded. Nevertheless, as inflation and interest rates were still low, there was a relatively sizable increase in real wages. In combination with rising employment, this development contributed to the generally held view that the effort to slow the nominal rate of wage increases had been successful.

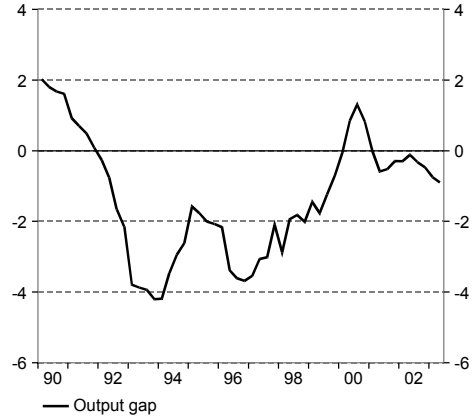
In order to improve the conditions for wage formation further, the Swedish Parliament decided in the spring of 2000 to approve the Government's proposal to establish a National Mediation Office charged with promoting efficient wage formation. In this connection, the NIER was commissioned to prepare an annual report on the economic conditions for wage formation; the current report is the fourth one of its kind. Furthermore, in 2000 co-operative agreements similar to the Industrial Agreement were reached for the central-government sector,

and an agreement on a negotiation procedure for the local-government sector was also concluded.

The Settlements for 2001–2003

The last round of labour negotiations began in a relatively strong economy. Resource utilization was strained for the first time since 1991 (see Diagram 13), and unemployment was much lower than in the 1990s, though still higher than in the 1970s and 1980s. In accordance with the principles of the Industrial Agreement, the manufacturing sector was the first to arrive at a settlement for the three-year period 2001–2003. The negotiated wage increase was 2.4 percent per year. This agreement provided the basis for negotiations in other industries, which reached settlements at similar levels. In the business sector, the average negotiated wage increase was 2.4 percent per year, 0.2 percent less than for the period 1998–2000 and an indication of a continued slowdown in negotiated wage increases. The reduction, however, was so minor that it may well have been attributable to a larger proportion of agreements providing for local wage formation.

Diagram 13 Output gap
Percent of potential GDP, quarterly values



Source: NIER.

Wage increases in addition to the settlement – as far as can presently be determined – were higher than for the preceding three-year period. The total wage increases for the business sector were 3.8 percent per year, whereas the increases were only 3.6 percent for the period 1998–2000. Thus, the rate of wage increases rose again after slackening at the end of the 1990s.

By agreement within LO, the Swedish Confederation of Trade Unions, the Swedish Municipal Workers' Union negotiated after the other unions, achieving somewhat higher wage increases for the large groups of women organized in that union. The purpose was to achieve a reduction in the wage differences between the members of the Municipal Workers' Union and the workers in the engineering-products industry. The settlement reached by the Municipal Workers' Union was for 3.7 percent per year for a three-year period, one percentage point higher than the negotiated wage increases in the manufacturing sector. For the final year, notice could be given to terminate the agreement, a provision that the Municipal Workers' Union invoked in the autumn of 2002, claiming that the wage disparity in relation to workers in the engineering-products industry still existed. This step led to a labour conflict in the spring of 2003 that was settled by a new two-year agreement providing for increases of 4.0 percent for 2003 and 2.5 percent for 2004. The latter figure is particularly interesting since it is the outcome of the first major settlement for 2004.

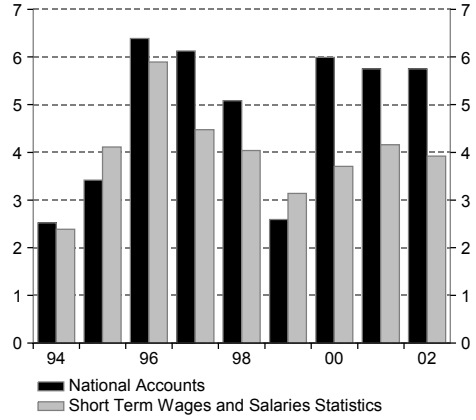
The new process of wage formation, with the Industrial Agreement, the National Mediation Office and the negotiation agreement for the general-government sector, has helped to ensure that that in most cases new settlements have been

reached without conflict and at levels somewhat below those of the period covered by previous agreements. However, when wage drift is also included, the rate of wage increases rose from an average of 3.6 percent in 1998–2000 to 4.0 percent in 2001–2003 (see Table 2). The rapidly rising rate of wage increases is an indication that Swedish wage formation is not currently compatible with an unemployment rate permanently below four percent. In addition, it is the NIER's assessment that the so-called equilibrium unemployment rate is 4.0 percent (see the box captioned "The Equilibrium Unemployment Rate in Sweden").

Hourly Earnings According to the National Accounts

The presentation above applies to wages as reported in the Short Term Wages and Salaries Statistics (WS). As an alternative, hourly earnings can be measured as the ratio between total earnings according to the National Accounts (NA) and the number of hours worked. When this measure is used, the picture of the tendency in the 1990s is roughly the same as in the WS, but the average wage increase was considerably higher according to the NA (see Diagram 14).[1] In 1990 the rate of wage increases in the business sector according to the NA was over 10 percent, whereas under the Stabilization Agreements for 1991-1994 it was limited to an average of 3.4 percent (see Table 3). For the rest of the 1990s, the rate of wage increases averaged 4.7 percent, while wage increases were higher in 2001–2002.

Diagram 14 Hourly earnings, Business Sector
Annual percentage change



Sources: Statistics Sweden, National Mediation Office and NIER.

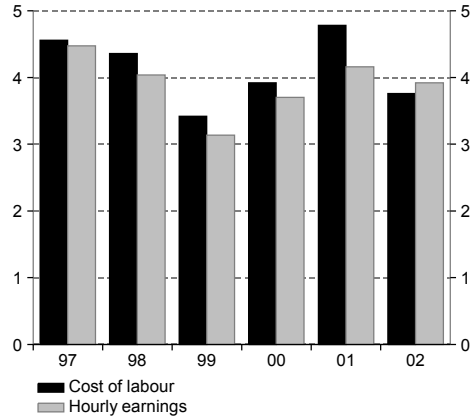
Table 3 Hourly Earnings According to the National Accounts

Average annual percentage change

	1981–90	1991–94	1995–97	1998–00	2001–02
Business sector	8.2	3.4	5.3	4.6	5.8
Total	**8.2**	**4.1**	**4.9**	**4.2**	**5.2**

Sources: Statistics Sweden and NIER.

Diagram 15 Labour Cost Index (LCI) and Hourly Earnings, Business Sector
Annual percentage change



Sources: Statistics Sweden and NIER.

The Tendency in Labour Costs

Total labour costs for employees in the business sector are measured by the Labour Cost Index (LCI). The rate of increase in the LCI averaged 4.2 percent during 1997–2002 (see Table 4 and Diagram 15), compared to an average increase of 3.9 percent according to WS. The more rapid rise in labour costs is due in part to increases in negotiated employer contributions.

[1] For a discussion of the differences between hourly earnings according to the NA and the Cyclically Adjusted Earnings Statistics, see the box captioned "Wages and Statistics".

Table 4 Hourly Cost of Labour, Business Sector

Annual percentage change

	1981–90	1991–96	1997–00	2001–02
LCI[1]			4.1	4.3
NA	8.4	4.3	4.5	7.0

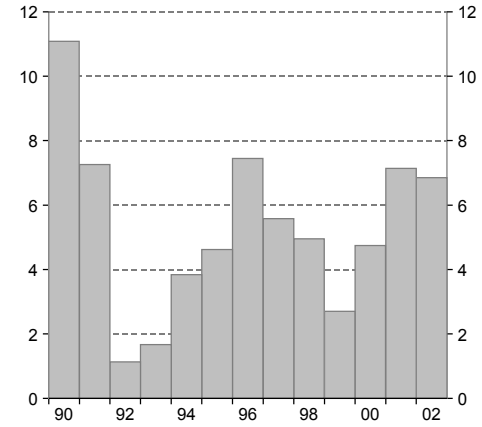
[1] The LCI is not available for years prior to 1997.

Sources: Statistics Sweden and NIER.

The hourly cost of labour can also be measured as the ratio between total earnings according to the NA, including employer contributions and payroll taxes, and the number of hours worked. During the period 1981–2002, labour costs in the business sector were increasing, according to the NA, by an average of 6.5 percent per year. The rate of increase was high throughout the 1980s but slowed from 11.1 percent in 1990 to 7.3 percent in 1991 and 1.1 percent in 1992 (see Diagram 16). During the years 1997–2000, the average rate of increase was 4.5 percent. Thereafter, the rate of increase rose to about 7 percent in 2001 and 2002.

Diagram 16 Cost of labour (NA), Business Sector

Annual percentage change



Sources: Statistics Sweden and NIER.

Consumer and Product Real Wages

The consumer real wage, which measures real hourly earnings after taxes, increased by an annual average of 2.4 percent in 1994–2002. The product real wage measures the real labour costs of business and increased by 3.1 percent per year during the same period (see Table 5 and Diagram 17). In 1995–1997 the consumer real wage increased more slowly than the product real wage. This difference was related to such factors as the increases in individual social-security contributions, which limited growth in the after-tax income of wage earners. In addition, prices of Swedish exports decreased in relation to prices of imports.

Table 5 Consumer and Product Real Wages

Annual percentage change

	1995–97	1998–00	2001–02	1994–02
Consumer real wage	0.4	3.5	5.8	2.4
Product real wage	3.0	3.2	3.8	3.1

Sources: Statistics Sweden and NIER.

Instead, during the period 1998–2002, the consumer real wage increased on average more rapidly than the product real wage, even though prices of exports continued to rise at a slower rate than prices of imports. One of the main reasons is that income taxes were lowered in these years.

Diagram 17 Consumer and Product Real Wage

Annual percentage change

Note: Consumer real wage = Hourly earnings in NA – direct taxes and individual social-security contributions, deflated by the deflator for household consumption.
Product real wage = Hourly earnings in NA + collective employer contributions deflated by the GDP deflator.
Sources: Statistics Sweden and NIER.

Wages and Statistics

It is difficult to compare the development of wages between sectors, occupational groups and countries, as well as between different periods of time. One fundamental problem is that the concept of wages is not clearly defined and that the development of wages is therefore measured in different ways. Wages can be considered solely as a price variable, as the earned income of the employee or as a labour costs for the employer. Which measure is most appropriate depends on the question at hand.

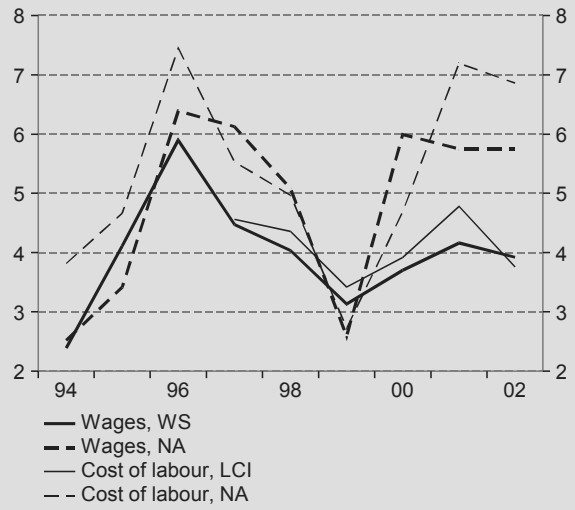
Different Concepts of Wages

For purposes of cyclical analysis, the Short Term Wages and Salaries Statistics (WS) are often used; these statistics are published each month by Statistics Sweden with a short time lag. The authority responsible for the statistics is the National Mediation Office. Short Term Wages and Salaries Statistics are generated for four separate categories of wage earners: local-government employees, central-government employees, blue-collar employees in the private sector and white-collar employees in the private sector. For the private sector, the statistics are based on responses to questionnaires from 5 000 firms, whereas for the general-government sector they are taken from a comprehensive survey.

The definition of wages in the Short Term Wages and Salaries Statistics differs between sectors. One difference concerns whether the basic compensation is expressed as an hourly wage or a monthly salary; another relates to the types of earnings supplements that are included. Statistics Sweden also publishes the Labour Cost Index (LCI), but only for the business sector, and the time series available is relatively short. The LCI is based on the Short Term Wages and Salaries Statistics, but with the addition of compensation for so-called non-working time, such as weekend pay, sick pay and private holiday pay, and of legislated and negotiated employer contributions. These supplements are mostly standardized or based on models.

In the Short Term Wages and Salaries Statistics, wages are largely a price measure. The wage as measured is affected only to a limited extent by changes in quantity, like the amount of overtime work, and by substitution between different types of labour. Such variations, however, are significant for productivity and for actual employer costs hour worked. Therefore, the Short Term Wages and Salaries Statistics are not appropriate for comparisons between the development of wage costs and that of productivity.

Diagram 18 Wages and Cost of Labour, Business Sector
Annual percentage change



Sources: Statistics Sweden, National Mediation Office and NIER.

Average hourly earnings can also be calculated from the National Accounts (NA) by dividing total earnings, based on employer statements of earnings paid, by hours worked by employees according to the Labour Force Survey (LFS). The measure of earnings in the NA is much broader than in the WS since it includes all forms of taxable compensation. The average cost of labour can also be calculated from the NA; added to total earnings are legislated and negotiated employer contributions as well as indirect taxes related to earnings. In many cases, hourly earnings and labour costs in the NA are more appropriate measures than earnings in the WS or the LCI, partly because the former are consistent with other variables in the NA system such as labour productivity. One disadvantage of the NA data on earnings, however, is that they are published only once a year and after a significant delay; in addition, there are certain problems of periodization.

Table 6 Hourly Earnings and Cost of Labour, Business Sector

Average annual percentage change 1997–2002

	Hourly earnings	Cost of Labour
WS and LCI	3.9	4.1
NA	5.2	5.3

Sources: Statistics Sweden, National Mediation Office and NIER.

The Short Term Wages and Salaries Statistics and the National Accounts provide considerably different pictures of the development of wages. Increases in earnings in the NA have been systematically higher than in the WS, and to a corresponding degree, the cost of labour in the NA has been higher than in the LCI (see Table 6). Moreover, the covariation between the series is relatively low.

The difference between the NA and the WS is due to the fact that the two measures reflect different definitions and are calculated in different ways. The NA include various wage supplements that are not covered or are measured in a more standardized fashion in the WS, such as supplements for overtime and inconvenient work hours. Furthermore, the WS are based on monthly salaries for white-collar employees and hourly earnings for blue-collar employees, whereas the NA are based on actual total earnings for all employees. In addition, there are random sampling errors and other types of measurement error.

One of the problems with the NA statistics is the lack of periodization. A varying proportion of total earnings each year consists of retroactive compensation for work performed in the previous year. Since this problem appears to be significant, the NA statistics for individual years must be interpreted with considerable caution. This is particularly apparent in the case of 1999 and 2000 (see Diagram 18). In the somewhat longer term, however, the NA statistics probably provide a more accurate picture than the WS statistics of the actual tendency in costs to business.

The NIER normally uses actual hours worked in calculating hourly earnings on the basis of NA statistics. However, the number of workdays per year varies depending on the occurrence of leap years and the extent to which public holidays fall on weekends. Since most employees receive monthly salaries, the increase in hourly earnings thus measured can vary by a few tenths of a percentage point from one year to another because of such calendar effects. This problem, however, can be alleviated by calculating hourly earnings instead on the basis of hours corrected for the number of workdays, a method used when the difference is significant for purposes of the analysis.

Systematic Underestimation

Owing to lack of a uniform concept of earnings and of appropriate values for weighting, Statistics Sweden publishes Short Term Wages and Salaries Statistics only for the above-mentioned four categories of employees and not for the entire business sector or for the economy as a whole. However, the National Mediation Office, which since 2001 has overall responsibility for Swedish earnings statistics, publishes rates of increase in earnings for both the business sector and the economy as a whole. Here the rate of increase in earnings is calculated as a weighted average of the rates of increase in earnings for the employee categories concerned. Some correction is also made in the WS statistics for negotiated changes in work hours. The National Mediation Office has previously used weights for total earnings from 1994. However, in collaboration with Statistics Sweden, a new system of weighting based on total earnings has been developed for 2000 and 2001.

Nevertheless, the weighting of increases in earnings based on the weights of total earnings for different groups normally leads to distortion of the rates of increase if the groups have different levels of earnings, or if the weights are not constant over time. This distortion, which can be quite substantial, could be avoided by weighting the levels of earnings for hourly and salaried employees. But for this purpose it is necessary to have reliable information on the number of hours worked by white-collar employees which is not presently available. However, a calculation example based on an assumed number of hours worked for salaried employees can be illustrative.

If the normal workweek of full-time salaried employees is taken to be 38.5 hours in 2002, the average hourly earnings of white-collar employees can be calculated for that year and then linked to previous years by the rates of increase provided by the National Mediation Office. The resulting hourly earnings for white-collar employees can then

be weighted together with the hourly earnings of employees paid on that basis.

Table 7 Hourly Earnings, Business Sector 1995–2002

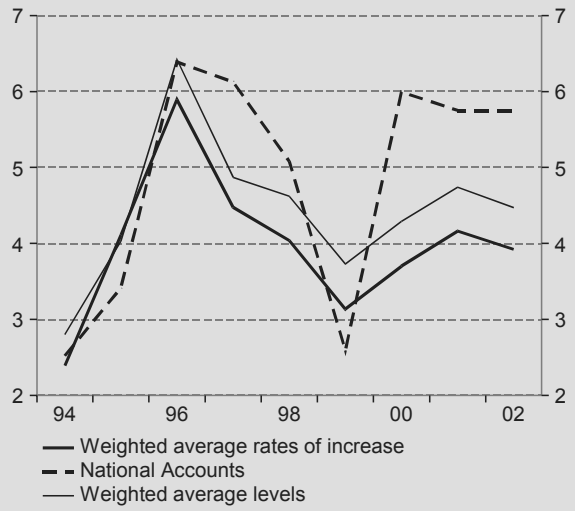
Annual percentage change

Weighted rates of increase	4.2
Weighted levels	4.6
National Accounts	5.2

Sources: Statistics Sweden, National Mediation Office and NIER.

Table 7 and Diagram 19 show the aggregate rate of increase in hourly earnings for the business sector calculated in two different ways: by weighting the rates of increase in earnings for the different employee groups and by weighting the levels of earnings. According to this calculation, the method of aggregation used led to underestimation of the annual increase in earnings in the business sector by an average of 0.5 percentage point during the period 1995–2002. The main reason for this discrepancy is the increasing proportion of white-collar employees in the business sector, who on average earn more per hour than employees paid by the hour. Thus, the interpretation is that average earnings in the business sector have gone up not only because of a rise in average hourly wages and monthly salaries, but also because of an increasing proportion of white-collar employees, who on average are better paid than blue-collar employees.

Diagram 19 Wages, Business Sector
Annual percentage change



Sources: Statistics Sweden, National Mediation Office and NIER.

About half of the difference between the Short Term Wages and Salaries Statistics and the National Accounts could thus be due to the use of a less appropriate method of aggregation.

The most appropriate measure of earnings depends primarily on the question at hand. The Short Term Wages and Salaries Statistics are best suited for short-term analysis of the economic situation. Their advantage is that they are published each month and with a relatively small time lag. However, the systematic underestimation should be corrected by using another method of aggregation than the one currently employed by the National Mediation Office and the NIER. The Short Term Wages and Salaries Statistics are less appropriate when labour costs are to be related to other macroeconomic data like average productivity per hour worked or the labour-cost share of value added. In such situations, the earnings statistics of the National Accounts are preferable, particularly if the average rate of increase over a number of years is more important than variations between particular years.

Sweden's Competitive Situation

Labour Costs in the Business Sector

The tendency in the international competitiveness of Swedish firms is largely dependent on the development of labour costs in relation to other countries. The cost of labour can be measured per employee or per hour.[2] In the 1990s, the cost of labour per employee rose more rapidly in Sweden than in the euro zone or the United States (see Table 8). In the euro zone, as in the OECD countries on the whole, the cost increases in 2001-2002 were much lower than during the period 1990–1994. In Sweden, too, the rate of increase in costs has gone down compared to 1990-1994, but cost increases have still been considerably greater than in other countries (see Diagram 20).

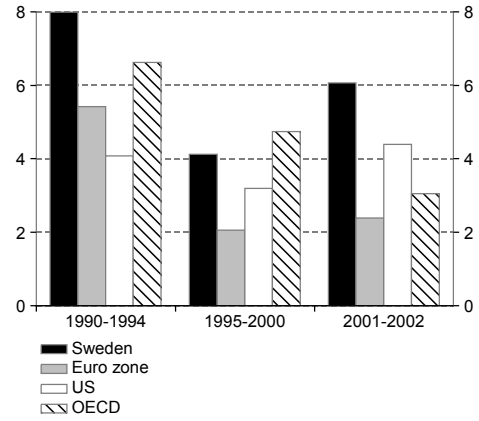
Table 8 Cost of Labour per Employee, Business Sector

	Sweden	Euro zone	US	OECD
1990–1994	8.0	5.4	4.1	6.6
1995–2000	4.1	2.1	3.2	4.7
2001–2002	6.1	2.4	4.4	3.1
1990–2002	5.9	3.4	3.7	5.2

Note: Costs of labour include employer contributions but not payroll taxes. The Swedish cost of labour per employee is measured in accordance with the OECD's definition.
Source: OECD.

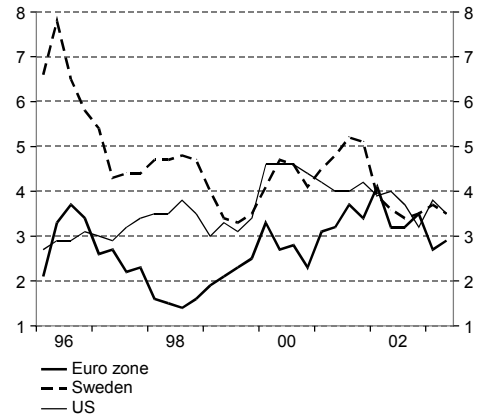
The cost of labour per employee does not take into account changes in work hours per employee and is thus a rather blunt instrument. If possible, it is better to consider variations in work hours and measure the cost of labour per hour worked instead. The problem, however, is that data are available only for a few countries and for limited periods of time. Nevertheless, the picture of the tendency is the same. Also when measured per hour, the cost of labour in the business sector has on average increased more rapidly in Sweden than in either the euro zone or the US (see Table 9 and Diagram 21). Despite extremely high unemployment during much of the 1990s, and despite the slowdown that has also occurred in Sweden, labour costs are thus

Diagram 20 Cost of Labour per Employee, Business Sector
Percent, average



Source: OECD.

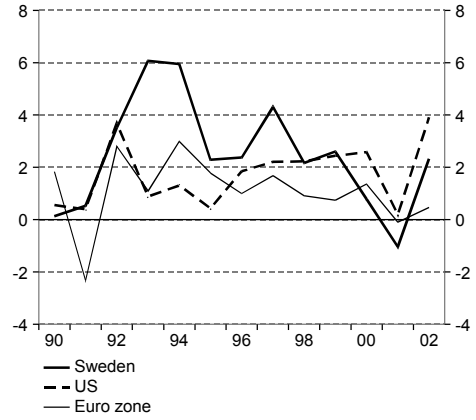
Diagram 21 Hourly Cost of Labour, Business Sector
Annual percentage change, quarterly values



Source: Eurostat.

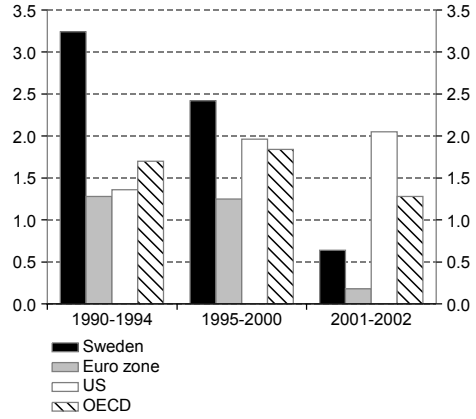
[2] In comparing Swedish labour costs in the business sector with the corresponding costs in other countries, the lack of comparable data is a problem. Here, two different measures are used to illustrate the tendency; one measure is taken from the OECD, the other from Eurostat. The OECD's measure of labour costs is per employee and is based on the national accounts of the respective countries. A more accurate measure is labour cost per hour. The national accounts of most countries do not contain information on the number of hours worked. But if the measure of productivity is calculated in the same way, the relationship between the variables will be consistent. One measure of labour costs per hour is the Eurostat Labor Cost Index (LCI), which is under development and is expected to be fully harmonized between EU countries by 2005.

Diagram 22 Labour Productivity per Employee, Business Sector



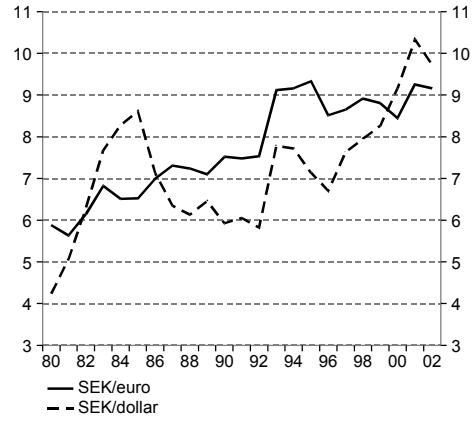
Note: The Swedish hourly cost of labour as defined by Eurostat is similar to the Swedish LCI
Source: OECD.

Diagram 23 Labour Productivity per Employee, Business Sector
Percent, average



Source: OECD.

Diagram 24 Nominal Exchange Rate



Sources: Ecowin and NIER.

continuing to rise more rapidly in Sweden than in other countries.

Table 9 Hourly Cost of Labour, Business Sector

	Sweden	Euro zone	US
1990–1995			3,8
1996–2000	4.8	2.2	3.5
2001–2002	4.2	3.5	3.9
1996–2002	4.6	2.7	3.6

Note: Data for the OECD are not available from Eurostat. The Swedish cost of labour per hour is measured in accordance with the Eurostat definition. This measure closely resembles the Swedish LCI. One difference is that reductions in work hours for salaried employees are included in LCI, but not in the Eurostat definition. Another difference is that the LCI is a monthly index, whereas the Eurostat measure is a quarterly index.
Source: Eurostat.

The Productivity Trend

In order to assess the tendency in the competitiveness of the business sector, the development of productivity should also be considered. If productivity is increasing more rapidly in Sweden than in other countries, labour costs can rise at a correspondingly higher rate without weakening Sweden's competitiveness. A significant qualification, however, is that the higher rate of productivity growth compared to other countries must not be due to overrepresentation of Swedish firms in industries with a strongly rising productivity trend and thus declining prices.

By comparing the development of labour costs per unit of output – so-called unit labour costs – for various countries, consideration is given to differences in the rates of increase in labour productivity. Productivity can be separated into two components, one that depends on the use of capital per employee, and a remaining one, so-called total factor productivity (TFP), which captures the effectiveness with which both capital and labour are employed. In comparing the productivity trends of different countries, it is customary to use labour productivity. One reason for doing so is that this measure is simpler to calculate than TFP.

The average labour productivity of the business sector increased more rapidly in Sweden in 1990–2002 than in the regions with which it was compared (see Table 10 and Diagram 22). The rate of increase in Swedish productivity was especially high until 2000, after which it subsided as the economy weakened in 2001 (see Diagram 23). The development of TFP for the entire economy shows the same picture: productivity has risen faster in Sweden than in other countries (see Table 10).

Table 10 International Tendency in Productivity

Labour productivity per employee, business sector

	Sweden	Euro zone	US	OECD
1990–1994	3.2	1.3	1.4	1.7
1995–2000	2.4	1.3	2.0	1.8
2001–2002	0.6	0.2	2.1	1.3
1990–2002	2.5	1.1	1.7	1.7

Total factor productivity for the whole economy

	Sweden	Euro zone	US
1990–1994	1.7	1.0	0.9
1995–2000	2.4	1.0	1.3
2001–2002	0.5	–0.1	0.7
1990–2002	1.8	0.8	1.0

Note: TFP is calculated using a Cobb-Douglas production function and measures the increase in value added that cannot be explained by an increase in the number of employees or in the amount of capital. Swedish productivity is measured according to the OECD's and Ameco's definition.
Sources: OECD and the EU Commission, AMECO.

Unit Labour Costs and a Weakening Krona

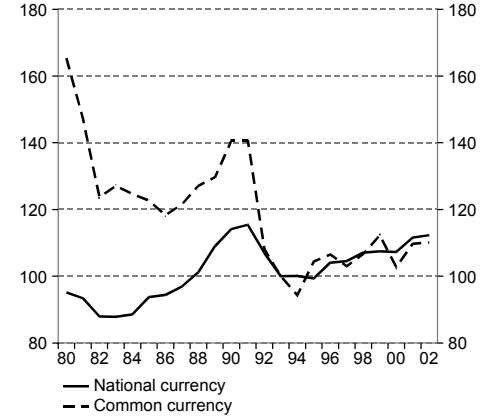
In order to assess the actual development of the competitiveness of Swedish firms, it is also necessary to consider changes in exchange rates. For the competitiveness of Swedish firms is affected not only by the cost tendency, but also by changes in exchange rates. A weaker krona lowers the costs of Swedish firms compared to those of foreign firms. The relative unit cost of labour, expressed in a common currency, takes into consideration the development of exchange rates.

In the early 1990s, the Swedish cost situation improved in relation to other countries when the krona weakened substantially against the dollar and the euro, as well as other currencies (see Diagram 24). The cost situation in relation to the euro zone has deteriorated by about 5 percent since 1994. In view of the relatively stable exchange rate between the krona and the euro, the more rapid growth in Swedish productivity has not been sufficient to offset the sharper rise in Swedish labour costs compared to the euro zone (see Diagram 25).

In relation to the US, Swedish costs increased somewhat in 1994-1995 as the krona strengthened against the dollar (see Diagram 26). When the Swedish cost increases slackened in the mid-1990s and the exchange rate weakened against the dollar, the relative unit cost of labour decreased.

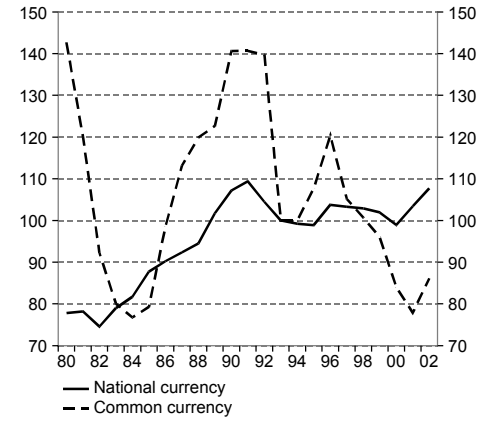
The conclusion is that labour costs in Sweden have risen more rapidly than in the euro zone in 1995–2002 even when consideration is given to the faster growth in Swedish productivity. But the relative cost situation in relation to the euro zone is still lower than in the 1980s. As a result of the substantial weak-

Diagram 25 Relative Unit Cost of labour, Business Sector, Sweden in Relation to Euro Zone
Index 1993=100



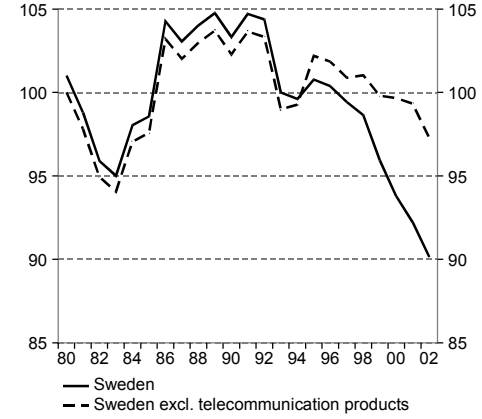
Sources: OECD and NIER.

Diagram 26 Relative Unit Cost of labour, Business Sector, Sweden in Relation to US
Index 1993=100



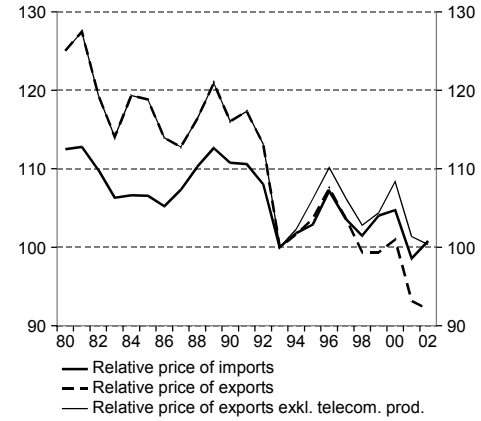
Sources: OECD and NIER.

Diagram 27 Terms of Trade
Index 1993=100



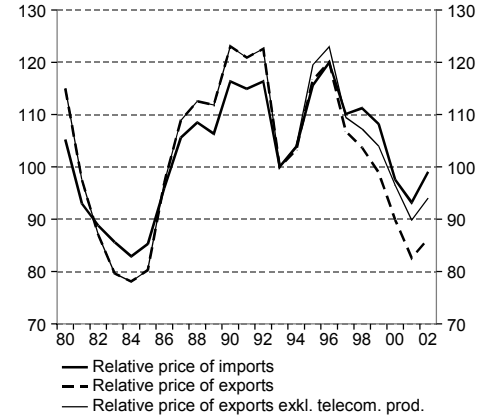
Note: For goods and services
Sources: OECD and NIER.

Diagram 28 Relative Prices of Exports and Imports, Sweden in Relation to Euro Zone
Index 1993=100



Note: Prices of exports adjusted for telecommunication products are available only for years beginning 1993.
Sources: OECD and NIER.

Diagram 29 Relative Prices of Exports and Imports, Sweden in Relation to US
Index 1993=100



Note: Prices of exports adjusted for telecommunication products are available only for years beginning 1993.
Sources: OECD and NIER.

Diagram 30 Sweden's Current Account
Percent of GDP

Source: NIER.

weakening of the Swedish krona against the dollar, unit labour costs in relation to the US decreased during the latter half of the 1990s.

Prices in Relation to Other Countries

The terms of trade are the ratio between the prices of a country's exports and the prices of its imports. Sweden's terms of trade fell by some 10 percent between 1993 and 2002 (see Diagram 27). One possible factor underlying the deterioration in the terms of trade is that a high proportion of Sweden's foreign trade is in telecommunication products with a trend of strong growth in productivity and thus declining prices. Adjusted for telecommunication products, the country's terms of trade have decreased by only about 3 percent since 1993 (see Diagram 27).

Since 1993 prices of Swedish exports have fallen by about 10 percent in relation to prices of euro-zone exports and by about 15 percent in relation to prices of US exports (see Diagrams 28 and 29). The relative prices of Swedish exports, however, dropped considerably more than prices of imports when the krona depreciated substantially in 1993, an indication that Swedish firms lowered their export prices in foreign currency in order to gain market share. The reduction in relative Swedish export prices led to a surge in Swedish exports, as reflected for instance in the country's substantial current account surplus (see Diagram 30).

A weaker tendency in prices of exports than in those of imports results in lower value added and lower profits per unit. Compared to the situation at the outset of the 1990s, the relative price of exports has decreased by about as much as the relative unit cost of labour in relation to the US (see Diagram 31). In relation to the euro zone, on the other hand, the relative price of exports has fallen more than the relative unit cost of labour (see Diagram 32).

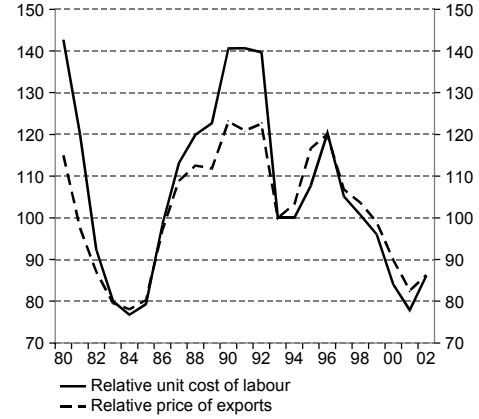
Labour Cost Share

The tendency in relative unit labour costs suggests that the competitiveness of Swedish firms has improved since the early 1990s, a development that should have reduced the labour-cost share, that is, labour costs as a share of value added, other things being equal. The deterioration in Sweden's terms of trade, however, has the opposite effect. The relative prices of Swedish exports in particular have fallen in the last 10 years (see Diagram 32). All factors considered, the labour-cost share was about the same in 2002 as in 1993 and is relatively normal by historical standards (see Diagram 33).

The conclusion is that Sweden's fairly low relative unit labour costs in 2002 are offset by lower relative prices of Swedish ex-

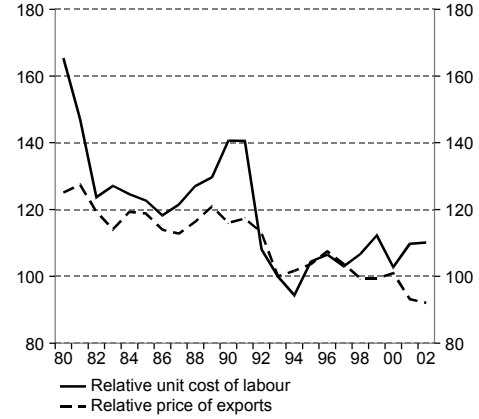
exports, and that consequently there is no correspondingly strong competitive situation or low labour-cost share. The high proportion of telecommunication products has led not only to low relative unit labour costs, but also to low relative prices of exports. Nevertheless, the substantial surplus on current account indicates that the Swedish business sector was relatively competitive at the exchange rates prevailing in 2002, averaging SEK 9.16 to the euro, SEK 9.73 to the dollar and 133.7 in terms of the trade-weighted TCW index.

Diagram 31 Relative Unit Cost of labour and Relative Price of Exports, Sweden Compared to US
Index 1993=100



Sources: OECD and NIER.

Diagram 32 Relative Unit Cost of labour and Relative Price of Exports, Sweden Compared to Euro Zone
Index 1993=100



Sources: OECD and NIER.

Diagram 33 Labour Cost Share, Business Sector,
Percent

Note: Prior to 2000, the series is adjusted for e.g. changes in interest subsidies and taxes.
Sources: Statistics Sweden and NIER.

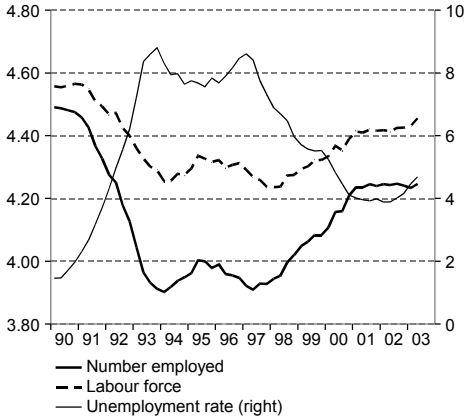
2 The Economy and the Competitive Situation Before the 2004 Labour Negotiations

The economic conditions for wage formation have changed considerably since the 2001 labour negotiations. With the economy slumping, the labour market is now substantially weaker. Employment has stagnated, while unemployment is at its highest level since early in 2000. Demand and output will be increasing more rapidly, but labour-market recovery is not expected until winter next year. The number of layoff notices is still much higher, and the number of newly reported vacancies much lower, than before the last round of negotiations.

Confidence in the Riksbank's inflation target remains high, but inflation is somewhat greater at present than before the 2001 negotiations. On the other hand, underlying inflationary pressure is low because of weak growth and low resource utilization. Inflation is consequently forecast to recede to an average of 1.4 percent in 2004–2005, or 0.9 percentage point lower than in 2001–2003.

Sweden remains competitive in relation to other countries, one indication being the large surplus on current account. However, the strengthening of the krona against other currencies, including the euro and the US dollar, will tend to raise relative costs in 2004–2005 compared to 2001–2003. In view of the weak labour market, the prospect of a subdued rate of inflation and the currently tighter cost squeeze, the assessment is that the nominal rate of wage increases will slacken in 2004–2005 compared to 2001–2003. This picture is also confirmed by the wage expectations of the labour-market parties, which according to the Prospera surveys are lower than three years ago.

Diagram 34 Number Employed, in Labour Force and Unemployed
Millions and percent, seasonally adjusted quarterly values



Sources: Statistics Sweden and NIER.

Diagram 35 Hours Worked and Number of Persons at Work
Millions, seasonally adjusted quarterly values

Sources: Statistics Sweden and NIER.

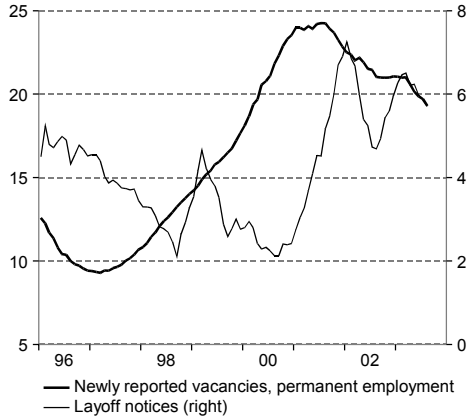
Labour Market

Labour Market Weaker Than in 2001

The labour market is currently characterized by slack demand for labour. The surge in employment that began in 1997 lost momentum in the spring of 2001. The decreasing trend in unemployment was also interrupted at this time. The number of persons employed has subsequently levelled off, whereas unemployment has risen since mid-2002 (see Diagram 34). Employment has been maintained by high absenteeism, whereas the number of persons at work and the number of hours worked have been decreasing since the spring of 2001 (see Diagram 35).

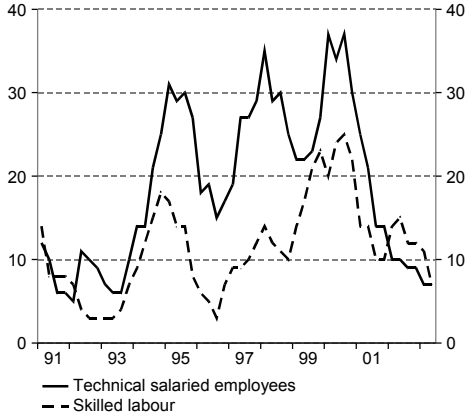
The supply of labour has grown during 2003, primarily from an increase in the working-age population and a decrease in the number of persons in labour-market programmes. At the end of

Diagram 36 Newly Reported Vacancies and Layoff Notices
Thousands, monthly values



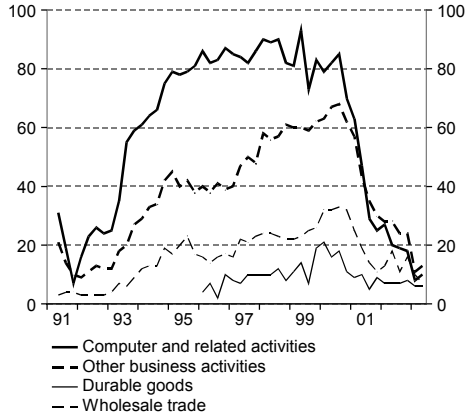
Note: Moving average
Source: Labour Market Board.

Diagram 37 Percentage Reporting Shortages, Manufacturing Sector, in Business Tendency Survey (BTS)
Proportion of firms, quarterly values



Source: NIER.

Diagram 38 Percentage Reporting Shortages, Services Sector, in BTS
Proportion of firms, quarterly values



Source: NIER.

Diagram 39 Output gap
Percent of potential GDP, quarterly values

Source: NIER.

August 2003, there were 28 000 fewer participants in these programmes than a year earlier. The larger supply of labour has not met with an equal demand, but has led to higher unemployment. In August, the number of officially unemployed persons was 241 000, the highest since January 2000. In proportion to the labour force, the seasonally adjusted unemployment rate was 5.0 percent.

The demand for labour has diminished since the spring of 2001. There has been a sharp drop in the number of new vacancies reported to the country's employment offices (see Diagram 36). The downturn has affected most industries, but in the past year it has been somewhat greater in the general-government and private service sectors. The number of layoff notices began increasing again in the summer of 2002 and remains high. The manufacturing sector has accounted for nearly half of the layoff notices.

Thus, the current labour-market situation is considerably weaker than in the autumn of 2000, right before the last round of labour negotiations. At that time, employment had been increasing and unemployment decreasing for three years. The unemployment rate was then more than a percentage point lower than today. In addition, the number of reported vacancies was considerably higher, and the number of layoff notices lower.

Resource Utilization Lower Than in 2001

The weakness of the labour market is also reflected in the NIER's Business Tendency Survey. The proportion of firms reporting shortages of labour is now as low as in the early 1990s. The picture in the manufacturing and services sectors is similar (see Diagrams 37 and 38). The principal factor currently limiting business output is weak demand, not the supply of labour or of other factors of production. Capacity utilization is low in large areas of the business sector. The negative tendency in average hours worked by persons with jobs is another indication of unutilized resources in the economy. The output gap, which is the NIER's aggregate measure of resource utilization in the economy, is judged to be negative at present, whereas it was positive in 2000. Demand pressure on prices and wages is thus considered to be considerably less than at the time of the 2001 labour negotiations (see Diagram 39).

Both globally and in Sweden, economic recovery will be slow. Demand will gradually rise in the next two years, but the impact on the labour market in terms of higher employment will take time. The unemployment rate is forecast to decrease gradually to 4.6 percent by the end of 2005. As the resources of the economy are put to use, the output gap will narrow to some extent, but will not close in the next two years.

Taxes and Transfer Payments

Just before the 2001 negotiations came the first in a series of reductions in the central-government income tax. The purpose was to compensate wage earners for previous increases in the individual social security contribution through four successive tax cuts equivalent in total to 7 percent of income. The first three reductions were implemented in 2000–2002, but the fourth was postponed for budgetary reasons. Instead, local-government taxes were raised by 0.65 percentage point this year, and a further increase of 0.20 percentage point is expected next year.

The autumn budget proposal includes a provision, as part of a so-called "Green Tax Shift," for lowering employer contributions by 0.1 percent beginning in 2004, while reducing income taxes by SEK 200 per person. The proposal also announced a continuation of the Green Tax Shift in 2005 and 2006, but no concrete measures have been specified.

This year the period of an employer's financial responsibility for sick leave was extended to a third week, a step that is expected to increase labour costs by some 0.3 percent, distributed over 2003 and 2004.

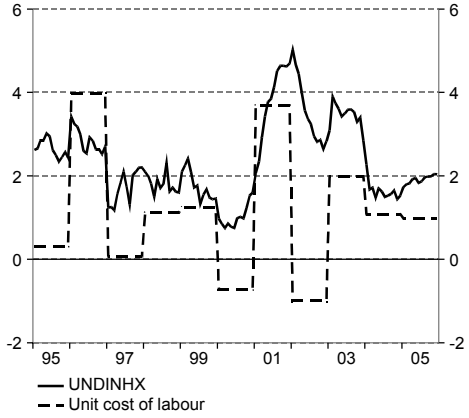
In summary, income taxes were lowered before and after the 2001 round of labour negotiations, while local-government taxes are being raised before and after period to be covered by the coming labour agreements. There is a danger that this situation will complicate the negotiations that are now getting under way.

The Inflationary Development and Expectations

Sharp Variations in the Inflation Rate

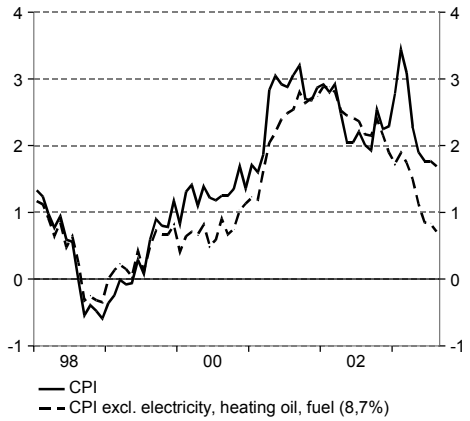
Just prior to the last round of labour negotiations, CPI inflation had gradually risen from an extremely low point to 1.5 percent in the fourth quarter of 2000, a rate somewhat less than the current one. The rate of price increases for domestically produced goods and services had been at an historically low level for some time and was 1.4 percent in the fourth quarter of 2000. The low rate of domestic inflation at that time was due, among other things, to decreasing unit labour costs during 2000, while rising demand pressure had not yet had affected prices (see Diagram 40). Unlike the subdued rate of domestically generated inflation, however, the rate of price increases for import-intensive goods in the CPI was high for most of 2000, mainly because of rising crude-oil prices and a weak krona, primarily in relation to the dollar. But in the fourth quarter of 2000, the rate of price increases for imported goods dropped to 1.7 percent.

Diagram 40 Domestic inflation and Cost Pressure
Annual percentage change, monthly and annual values respectively



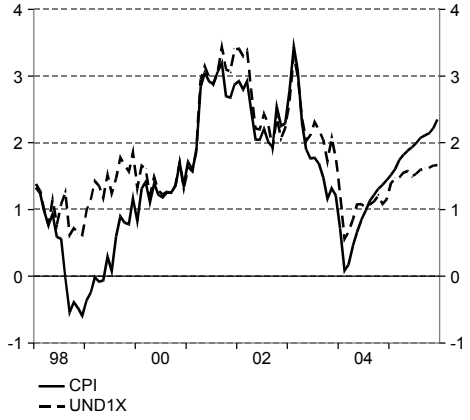
Sources: Statistics Sweden and NIER.

Diagram 41 CPI Excluding Certain Items
Annual percentage change, monthly values



Sources: Statistics Sweden and NIER.

Diagram 42 CPI and UND1X
Annual percentage change, monthly values



Sources: Statistics Sweden and NIER.

Diagram 43 Inflation Rate Expected One Year Ahead
Annual percentage change, quarterly values

Sources: Prospera and NIER.

In 2001 inflation rose rapidly. One reason was temporarily high prices of electricity and certain food products. Another reason – and a major one – was strained resource utilization and higher cost pressure. With the weakening tendency in demand, however, inflation quickly receded early in 2002.

In the autumn of 2002 and the spring of 2003, inflation surged once again, owing primarily to higher prices of electricity and oil. An autumn with little rain and a cold winter led to substantial increases in the price of electricity, which made their largest contribution – 1.2 percentage points – to CPI inflation in February. The increase in the price of oil was due largely to the conflict in Iraq. The price of oil has subsided with the diminishing uncertainty of the geopolitical situation. The price of electricity, on the other hand, is expected to remain high until next spring. In August, the rate of CPI inflation was 1.7 percent. Adjusted for prices of electricity and oil, the inflation rate is only 0.7 percent (see Diagram 41). Thus, underlying inflationary pressure is low.

Aside from the substantial variation in certain energy prices, which will affect the future tendency of inflation, underlying inflationary pressure is expected to remain low because of weak growth and low resource utilization. The output gap is negative and will not close in the next two years. It is estimated that unit labour costs will increase at a relatively modest rate. CPI inflation is forecast to drop below 1.0 percent during the spring of 2004 and to average 0.9 percent for that year. In 2005, when the economy has strengthened, the inflation rate is expected to increase to 2.0 percent as an annual average (see Diagram 42).

All factors considered, CPI inflation is forecast to average 1.4 percent in 2004–2005, 0.9 percentage points less than in the last three years.

Inflation and Wage Expectations

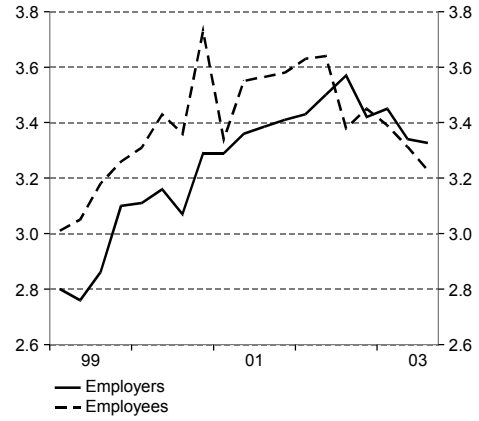
Short-term inflationary expectations, as measured in various surveys, are now generally higher than at the end of 2000. One exception is the inflationary expectations of firms according to the Business Tendency Survey. Households are expecting an inflation rate of 2.1 percent one year from now, whereas the labour-market parties envisage an inflation rate of 2.1–2.3 percent in one to two years (see Table 11).

At the outset of the last round of labour negotiations, the inflation rate expected in two years was about 0.3 percentage point lower than today. Then, however, the actual rate of inflation was subdued. When inflation subsequently surged in the spring of 2001, inflationary expectations rose with it. Since inflationary expectations rather closely follow the course of actual inflation, inflationary expectations are anticipated to decrease with the drop in the actual inflation rate early in 2004 (see Diagram 43).

According to the Prospera surveys, the labour-market parties are expecting that wages will go up by 3.2–3.3 percent in the next two years. Thus, expectations are lower now than at the end of 2000, particularly among employee representatives (see Diagram 44).

In summary, inflationary expectations are presently somewhat higher than in the autumn of 2000 even though the economy is weaker. The actual inflation rate is also slightly higher but is expected to drop sharply during the spring of 2004. Wage expectations have become more modest in the past year, in part because of the weaker labour market.

Diagram 44 Wages Expected in One Year
Annual percentage change, quarterly values



Sources: Prospera and NIER.

Table 11 Inflationary and Wage Expectations Before the Labour Negotiations in 2001 and 2004

Annual percentage change

	2000		2003	
	1 yr	**2 yrs**	**1 yr**	**2 yrs**
Inflationary expectations				
Employer organizations (Prospera)	1.9	2.0	2.2	2.3
Employee organizations (Prospera)	1.9	2.0	2.1	2.2
Money-market operators (Prospera)	1.7	1.8	1.8	2.0
Consumer Survey (HIP)	1.7		2.1	
Business Tendency Survey (all industries)	1.9		0.9	
Average	**1.8**	**1.9**	**1.8**	**2.2**
Wage expectations				
Employer organizations (Prospera)	3.3	3.3	3.3	3.2
Employee organizations (Prospera)	3.7	3.7	3.2	3.2
Average	**3.5**	**3.5**	**3.3**	**3.2**

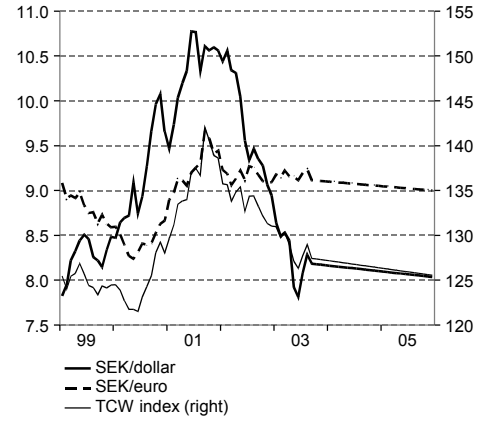
Note: The values for 2000 were measured in the fourth quarter of that year. Expectations in 2003 were measured in the third quarter except for inflationary expectations in the Business Tendency Survey, which were measured in the second quarter.
Sources: Aragon, Prospera, Statistics Sweden and NIER.

The Competitive Situation as Labour Negotiations Begin

Sweden's relative unit labour costs, as measured in national and a common currency, have risen somewhat since 2000. The reason is that labour costs have continued to go up more rapidly than in other countries, while the increase in productivity growth has slowed. The increase in terms of a common currency is also due to the strengthening of the krona against other currencies, including the dollar (see Diagram 45). The tendency in prices of exports has remained weaker than in prices of imports. The profit share in the business sector has decreased by about 1.3 percentage points since 2001.

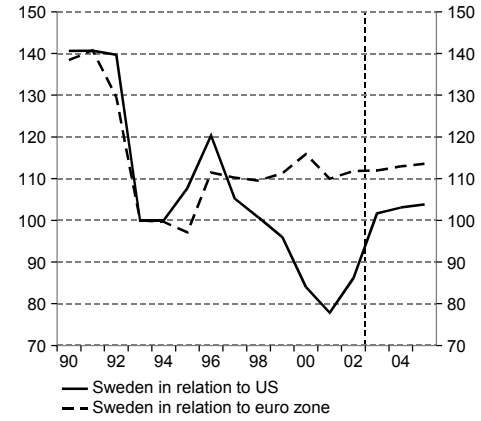
In view of the substantial appreciation of the krona since the autumn of 2001, it is expected to be much stronger in 2004 and 2005 than in 2001–2003 (see Diagram 45). Consequently, even if

Diagram 45 Nominal Exchange Rate and TCW Index



Sources: The Riksbank and NIER.

Diagram 46 Relative Unit Cost of Labour, Business Sector, Common Currency
Index 1993=100, annual values



Note: Vertical line indicates start of calculation example.
Source: NIER.

Swedish unit labour costs in national currency were to increase at the same rate as unit labour costs in other countries, Swedish costs adjusted for the exchange rate would still rise more rapidly. A simple calculation example would be to assume that the cost and productivity tendencies in Sweden, the euro zone and the US are the same and that the relative cost situation between the periods 2001–2003 and 2004–2005 is only affected by the exchange rate (see Diagram 46). The stronger krona would mean that the relative unit cost of labour would increase by about 2 percent in relation to the euro zone and by some 17 percent in relation to the US.

Thus, the appreciation of the krona has pushed up Swedish costs in relation to other countries, particularly the US. Moreover, the future tendency of the exchange rate is uncertain. There is a risk that the global weakening of the dollar will continue as a result of the massive US deficits on current account and in public finances. In this case, the level of Swedish costs will rise further in relation to the US and other countries whose currencies are linked to the dollar.

3 Long Term Conditions for Wage Formation

The margin for wage increases will depend on the development of payroll capacity in the business sector. This capacity is determined in turn by the development of productivity and product prices. Measured per hour worked, payroll capacity increases by an amount equivalent to the sum of the rates of increase in productivity and prices. If labour costs rise more rapidly than payroll capacity, there will be an increase in the labour-cost share, i.e. labour costs in proportion to value added. If such a trend is limited to a few particular years, as is often the case with an economic downturn, it can be offset by slower increases in labour costs than in payroll capacity when the economy later picks up. However, imbalance between labour costs and payroll capacity cannot last. For example, if labour costs increase for an prolonged period at a faster rate than the sum of the increases in productivity and prices, the labour-cost share will successively rise. Sooner or later, it will be so high that the return on an investment will be lower in Sweden than elsewhere. The capital stock used in Sweden will then grow relatively slowly. Employment will go down, and unemployment will go up. As a consequence, labour costs will gradually drop back, adjusting to the payroll capacity of firms.

In the long run, labour costs will thus increase at the same rate as the sum of productivity and prices. The labour-cost share will be at a level where the return on an investment in Sweden is the same as on an investment in other countries. Provided that the return on capital required internationally and thus on capital in Sweden is constant over time and that certain additional conditions concerning technological development are met, the capital stock in Sweden will increase at the same rate as output. The profit share of value added will then be constant over time; in other words, the labour-cost share will be stable.[3]

[3] Expressed in terms of a formal economic model, output (value added) in the Swedish business sector is determined by firms' use of capital and labour according to a so-called linear homogeneous production function. The internationally set percentage return on capital required will then determine the long-term ratio between capital and labour in the Swedish business sector. Given so-called labour-saving technological development and a constant internationally set return on capital, the stock of capital will increase in the long run at the same rate as output. Under these conditions, profits will also increase at the same rate as output; therefore, both profit and labour-cost shares will be constant over time.

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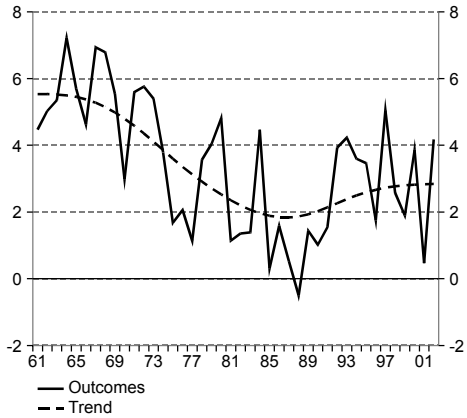
Diagram 47 Labour Productivity, Business Sector
Annual percentage change



Note: Trend calculated with an HP filter (λ=400)
Sources: Statistics Sweden and NIER.

The Development of Productivity

Growth in productivity can be divided into short-term cyclical variations and a variable trend (see Diagram 47). In assessing the long-term tendency in productivity, the development of the trend is more relevant. From the 1960s to the mid-1980s, the productivity-growth trend in the business sector was declining; thereafter, in the 1990s, it was once again increasing somewhat. The first half of the 1990s was a time of massive restructuring, when low-productivity firms were forced out of business. The second half of the 1990s, by contrast, was dominated by the exceptional development of the IT and telecommunication-products industry (ITC).

For the analysis of the productivity tendency, it can be relevant to separate the increase in labour productivity into two components: one that is explained by an addition of capital per hour worked, or increased capital intensity, and the other that is attributable to higher so-called total factor productivity (TFP). Thus, all of the increase in output that cannot be explained by a rising number of hours worked or an increased stock of capital is ascribed to higher TFP, which reflects such factors as new technology, more efficient organization of labour and rising levels of education.

The faster growth in labour productivity in the 1990s is explained primarily by a larger contribution from TFP, due among other things to the rapid technological advances in the ITC sector. Although capital intensity is cyclically variable, its long-term rate of increase is relatively stable and normally corresponds to the long-term increase in labour productivity. This means that the quantity of capital increases in the long run at about the same rate as output. However, the rate of capital formation was somewhat higher in the 1990s than in the 1980s, resulting in a somewhat higher contribution of increased capital intensity to the development of productivity (see Table 12).

It is estimated that labour productivity in the business sector will grow at an annual long-term rate of 2.3, somewhat higher than in the 1980s but lower than in the 1990s. This rate corresponds to a long-term increase in productivity of 1.8 percent for the economy as a whole (GDP). The reason for the difference is the extremely low rate of productivity growth in the general-government sector, as measured in the National Accounts[4].

[4] In the National Accounts, it is assumed that TFP growth is zero in the general-government sector; nevertheless, there is a slight rise in labour productivity owing to a certain increase in capital intensity.

Table 12 Labour Productivity

Annual percentage change

	1981–92	1993–02	Long run
Economy as a whole (GDP)	1.2	2.3	1.8
Business sector	1.7	3.1	2.3
of which contribution from:			
Growth in TFP	1.1	2.3	1.6
Increased capital intensity	0.6	0.8	0.7

Sources: Statistics Sweden and NIER.

Consumer Prices, Product Prices and Terms of Trade

In the long run, the development of prices is determined by the Riksbank's inflation target for consumer prices. The target for monetary policy is an annual increase of 2 percent in consumer prices. However, product prices are more relevant for the payroll capacity of firms. The product real wage, not the consumer real wage, must develop in line with labour productivity for the labour-cost share to be constant over time, as it must be if the internationally determined rate of return required and the capital/output ratio are also to be constant over time. To calculate a sustainable long-term nominal increase in labour costs, it is therefore necessary to study any long-term difference between the development of consumer prices and that of product prices. Consumer-price inflation is usually measured by the CPI, but for shorter periods the Riksbank concentrates on the UND1X measure of underlying inflation. Unlike the CPI, the UND1X excludes costs of interest and the direct effects of changes in indirect taxes and subsidies. And product taxes and subsidies are not included in the calculation of product prices (at so-called basic prices) for the business sector. For this reason, UND1X is used for the comparison of product prices. Since the early 1990s, consumer prices have increased on average somewhat more rapidly than product prices (see Diagram 48). The principal underlying factors have been differences in the composition of the basket of items used in calculating consumer and product prices, changes in terms of trade and differences in the method of calculating consumer and product prices.

Diagram 48 Development of Product and Consumer Prices

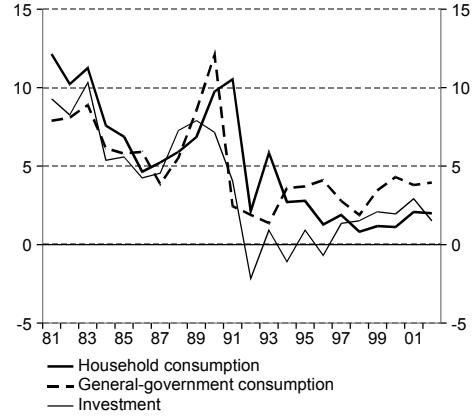
Annual percentage change

Source: Statistics Sweden.

More Services in the Consumption Basket

The Riksbank's inflation target applies only to domestic household consumption. In a closed economy with no foreign trade, the development of prices of the output of the economy is identical to the development of prices of what is used in the economy, i.e. for consumption and investment. In service-producing industries, where productivity growth is usually lower, prices will normally increase at a higher rate than in goods-producing in-

Diagram 49 Development of Prices
Annual percentage change



Note: Prices are measured with implicit price deflators from the national accounts.
Source: Statistics Sweden.

dustries. The long-term price trend for investment is consequently weaker than for consumption since investment consists of services to only a minor degree (see Diagram 49). On the basis of the historical connection of these relationships, product prices in the business sector are therefore expected to increase in the long run at a rate 0.1 percentage point lower than for consumer prices (see Table 13).

Table 13 Prices
Annual percentage change

	1981–92	1993–02	Long run
Product prices in the business sector	6.8	1.2	1.7
Terms of trade[1]	0.3	–1.4	0.0
Consumer prices, UND1X inflation	6.8	2.1	2.0
Difference, product price – UND1X	0.0	–0.9	–0.3
Contribution to difference			
Mix of products	–0.1	–0.1	–0.1
Terms of trade	0.3	–0.6	0.0
Difference in method	–0.2	–0.2	–0.2

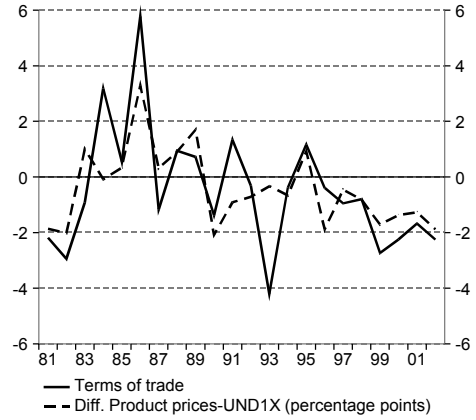
[1] Ratio between prices of exports and prices of imports
Sources: Statistics Sweden and NIER.

Product Prices Dampened by Deterioration in Terms of Trade

Sweden is an open economy with substantial foreign trade. In an open economy, the kinds of goods and services produced are not necessarily the same as the kinds used. It follows that in the long run product prices can differ from prices of consumption and investment. If the prices of items produced in Sweden increase more slowly than those of items used there, the difference will be registered as a deterioration in the terms of trade; in other words, more goods will have to be exported in exchange for a given quantity of imported goods. The terms of trade are ordinarily measured as the ratio between prices of exports and prices of imports in the same currency. Prices of imports have their greatest impact on consumer prices, whereas prices of exports are included only in product prices.

During the 1980s, the terms of trade improved somewhat, helping to maintain the development of product prices. During the 1990s, however, the terms of trade worsened considerably (see Diagram 50), mainly because of three factors: First, the krona weakened in the 1990s, raising prices of imports with no corresponding increase in prices of exports since exporting firms used the weaker krona partly to increase their market shares. The substantial improvement in the current account has thus been achieved in part through lower relative prices of exports. Second, Swedish exports (and thus output) consist largely of telecommunication products and other product groups with a

Diagram 50 Prices and Terms of Trade
Annual percentage change



Note: Difference between annual percentage change in product prices in the business sector and the UND1X inflation rate
Source: Statistics Sweden.

declining price trend. Third, Sweden has considerable net exports of goods, a factor tending to worsen the terms of trade since the prices of goods tend to rise more slowly than prices of services.

In the long run, the terms of trade are not expected to contribute to any marked difference between the development of consumer prices and that of product prices (see Table 13). The explanation is that differences between exports and imports in product mix are expected to diminish and in addition to be counteracted by a decreasing surplus on current account, also in the longer run. Prices of exports will then tend to increase compared to prices of imports.

Differences in Method

A further complication in determining the long-term increase in product prices is that the methods of calculation are different for consumer-price inflation, which the Riksbank seeks to control, and for the development of product prices. In calculating both CPI and UND1X inflation, no consideration is given to price-dampening effects of changes in consumer behaviour resulting from shifts in relative prices – for example, increased consumption of goods whose prices are rising relatively little. This type of behavioural change, however, affects product prices, which are consequently expected to increase at a rate 0.2 percentage point less than the UND1X (see Table 13).

All factors considered, UND1X inflation in the long run is forecast to be in line with the Riksbank's target of 2 percent. Product prices in the business sector are then expected to increase by 1.7 percent per year.

Long Term Increase in Labour Costs

The long-term rate of increase in labour costs in the business sector is thus equal to the sum of the long-term rates of increase in productivity and product prices. Since the difference in the development of productivity has historically been reflected in a corresponding difference in the development of prices, the long-term development of labour costs can be derived in principle from the business sector as a whole, or from portions thereof provided the development of wages in the long run is the same throughout the sector. Of course, this need not be the case for briefer periods, but it is reasonable to assume that in the long run the rate of increase will be the same.

In the long run, labour productivity is expected to increase by 2.3 percent in the business sector. Together with growth of 1.7 percent in product prices, the result will be a long-term increase in labour costs of 4.0 percent per year (see Table 14). Labour costs in the general-government sector can increase by

more or less if tax rates and/or employment in the general-government sector develop in the opposite direction. If labour costs increase more rapidly in the general-government sector, either the proportion of persons employed in that sector must decrease, or the average tax rate must be increased. However, this will not directly affect consumer-price inflation, although it is reasonable to assume that tax rates and the proportion of persons employed in different sectors will be constant in the long run. As a consequence, labour costs in the general-government sector must develop at the same rate as in the business sector.

In the short run, the labour-cost share may deviate from the level sustainable in the long run, for example as a result of an increase in labour costs that exceeds the sum of the increases in product prices and productivity. Sooner or later, there will be a downward adjustment toward the labour-cost share sustainable in the long run, with labour costs temporarily increasing more slowly than the sum of the increases in productivity and product prices. A closer analysis of the tendency in the next few years is presented in Sections 4-6.

Table 14 Labour Costs, Business Sector – Long Run Tendency

Annual percentage change

	1981–92	1993–02	Long term
Product prices	6.8	1.2	1.7
Productivity	1.7	3.1	2.3
Payroll capacity	8.5	4.3	4.0

Sources: Statistics Sweden and NIER.

4 A Main Scenario for Wage Formation, 2003–2010

Since the mid-1990s, the tendency of the Swedish economy has been relatively favourable. Unemployment has decreased, and employment has increased; at the same time, inflation has been in line with the Riksbank's target. Public finances have improved, primarily because employment has been rising, and the deficit on current account has turned into a large surplus.

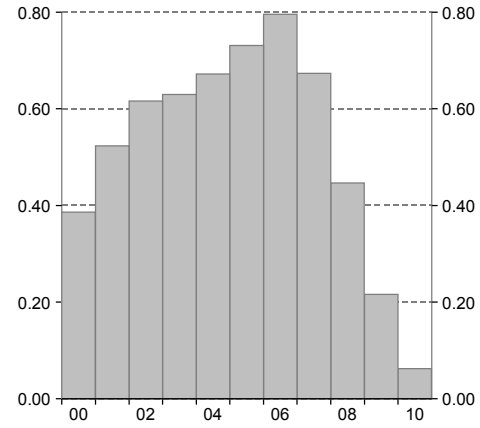
As a consequence of these favourable developments, many persons are now better off. In particular, rising employment has meant that earned income has increased, and more individuals can now support themselves. However, many are still out of work, and there has been a dramatic rise in the ill-health and sickness statistics since the end of the 1990s. In addition, income disparities are now greater, although still small by international standards.

There are a few factors of particular importance for the material living standard of the population, as measured by the sum of private and public consumption per inhabitant. In addition to low unemployment and an equable distribution of incomes, the primary determinants of the material living standard of the population are the number of hours worked per inhabitant, and productivity, i.e. output per hour. More hours worked, like higher productivity, mean more output; aggregate consumption can then be correspondingly higher. In the short run, consumption per inhabitant can increase further at the expense of investment or by increasing imports in relation to exports. However, both of these methods limit potential future consumption to an equivalent degree. Higher consumption today through lower investment means less output in the future. More imports in relation to exports will worsen the country's net-wealth position in relation to other countries, inevitably leading sooner or later to correspondingly lower imports in relation to exports. The conclusion is therefore that sustainably higher aggregate consumption requires an increase in the number of hours worked or in productivity.

In the long run, growth in real hourly earnings is determined primarily by the productivity trend, whereas the development of nominal wages is also governed by the Riksbank's inflation target, which is discussed in greater detail in Section 3 above.

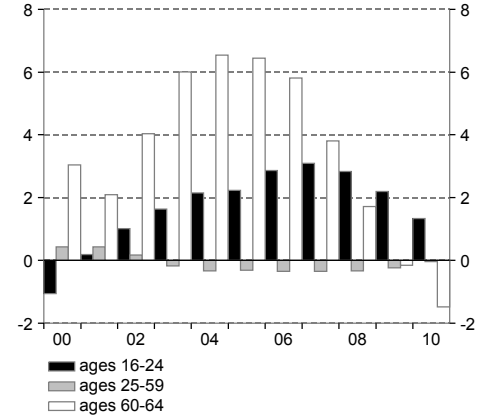
In addition to increasing the margin for aggregate consumption, a higher number of hours worked will strengthen public finances, primarily by enlarging the base for contributions, income taxes and value-added taxes, but possibly also by reducing unemployment compensation and sick pay. With a given target for general-government saving, a higher number of hours worked creates a margin for unfinanced tax cuts or reforms that require additional expenditure. In this manner, the economic gains from greater number of hours worked benefit the popula-

Diagram 51 Population Aged 16–64
Percentage change



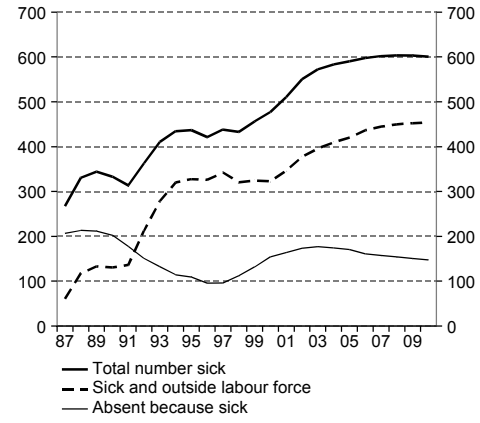
Sources: Statistics Sweden and NIER.

Diagram 52 Population
Annual percentage change



Sources: Statistics Sweden and NIER.

Diagram 53 Total Number Sick
Thousands of persons



Sources: Statistics Sweden and NIER.

tion in the form of higher disposable incomes or improved standards of services like education, health care and other forms of care.

Labour Supply, Employment and Hours Worked

The labour supply is highly dependent on the demographic trend. It is estimated that the number of persons of working age will increase by an annual average of 0.5 percent during 2004–2010, though the rate of increase will be considerably lower toward the end of the period (see Diagram 51). In the group aged 16-64, the age distribution will change, primarily through a growing proportion of persons aged 16-24 and 60-64 (see Diagram 52). Both groups are distinguished by their relatively low rate of participation in the labour force. On the assumption of constant labour-force participation for each age group, the labour force is forecast to increase by an annual average of 0.3 percent during 2004–2010; in other words, the changed age distribution will slow the annual increase in the labour supply by 0.2 percentage point. One of the main reasons is that the large group of persons born in the 1940s will reach an age when many leave the labour force through various forms of early retirement.

The labour supply is dependent on the degree to which individuals of working age are outside the labour force for reasons like education or illness. The total number of sick persons has soared in Sweden since 1998 and is currently higher than in many other countries (see Diagram 53).

The total number of sick persons is forecast to increase slightly through 2005.[5] The subsequent tendency is governed by the assumption of a constant proportion of sick individuals in each age group. The changed age distribution of the population will then bring a continued but slackening increase in the total number of sick individuals. Short-term sick leave has decreased somewhat during the current year and will continue to do so in coming years. There is also a tendency away from full-time sick listing toward part-time sick listing and from long-term sick listing to activity or sickness benefits (previously termed disability pensions). The number of persons absent because of illness is therefore expected to drop to about 147 000 in 2010, or by some 15 percent compared to 2002. The continuing increase in the total number of sick individuals will be due instead to a rising number of sick persons outside the labour force throughout the period 2003–2010. On these assumptions, the labour supply will increase by an annual average of 0.1 percent in 2004–2010.

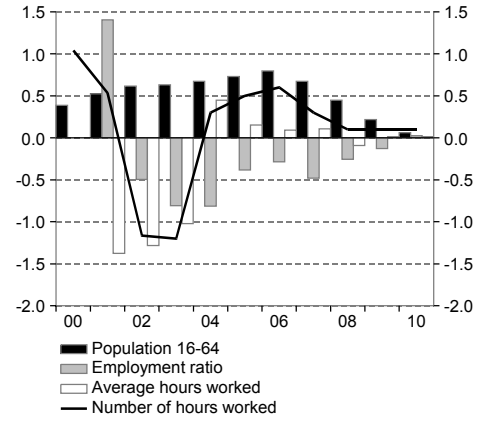
[5] See the box captioned "Sickness Absence in Sweden" in *The Swedish Economy – June 2003* for an analysis of possible explanations for the increase in sick-listing.

Based on the experience of the functioning of the labour market and wage formation since the mid-1990s, and on a large number of indicators, the equilibrium unemployment rate is presently judged to be 4.0 percent. This means that the unemployment rate cannot permanently be lower than this level since wage formation would then be so inflationary that the Riksbank would have to raise the repo rate in order to dampen growth and inflation. This assumption is supported by various econometric analyses such as the estimation presented in the box captioned "The Equilibrium Unemployment Rate" and the so-called SVAR model, the results of which are regularly reported in *The Swedish Economy*. Based on demographic extrapolation, it is estimated that the equilibrium unemployment rate will rise slightly to 4.1 percent in 2010. The reason is that age groups with relatively high unemployment constitute a growing proportion of the labour force.

As the economy recovers, the unemployment rate will decrease toward 4.0–4.1 percent. Together with the development of the labour supply, this tendency means that employment will increase by an annual average of 0.2 percent during 2004–2010 (see Table 15).

Average hours worked is the number of hours worked per employee. The growing proportion of persons over 60 means that average hours worked will decrease since a relatively large proportion of persons in this age group work part-time. Average hours worked will also be diminished by certain negotiated reductions in work hours. As a contrary effect, decreasing sickness absence will tend to increase average hours worked since persons on sick leave are regarded as employed. All factors considered, it is estimated that average hours worked will rise by an annual average of 0.1 percent during 2004–2010.[6] The number of hours worked will thus go up by an annual average of 0.3 percent in this same period (see Diagram 54 and Table 15). The number of hours worked per inhabitant will drop to a lower level than in the crisis of the 1990s (see Diagram 55), possibly leading to financing problems for the general-government sector if tax rates are not changed.

Diagram 54 Contribution to Number of Hours Worked
Percent



Sources: Statistics Sweden and NIER.

Diagram 55 Number of Hours Worked per Inhabitant
Hundreds of hours

Sources: Statistics Sweden and NIER.

[6] It is estimated that average hours worked will be affected more or less equally by the age trend and by labour agreements during the period 2004-2010.

Table 15 Labour Market

Thousands of persons, level and annual percentage change

	2002	2003	2004	2005	2006	2007–10
Population 16–64	5 666	0.6	0.7	0.7	0.8	0.4
Labour supply	4 421	0.7	0.0	0.1	0.1	0.1
Unemployment[1]	176	4.8	4.9	4.7	4.3	4.1
Number of persons employed	4 244	–0.2	–0.1	0.3	0.5	0.1
Average hours worked[2]	1 622	–1.0	0.5	0.0	0.1	0.0
Hours worked[3]	6 885	–1.2	0.3	0.5	0.5	0.1

[1] As a percentage of the labour force.
[2] Number of hours worked per employee and year.
[3] Millions of hours according to the National Accounts.
Sources: Statistics Sweden and NIER.

Composition of the Working Age Population

The Labour Force Surveys (LFS) of Statistics Sweden are the principal source of quantitative analyses of the labour market. Each month, some 21 000 persons aged 16–64 are interviewed by telephone about conditions on the labour market, for example, whether they are employed or unemployed in the week of the survey and whether they are sick. The presentation of the statistics includes a detailed breakdown by group.

This box reviews the distribution of the population according to the LFS. There is also a discussion on the relationship between the number reported sick in the LFS and the statistics of the National Social Insurance Board.

In the LFS the population of working age (between 16 and 64) is divided into persons *in* the labour force and those *outside* the labour force. In 2002 the working-age population consisted of 5 666 000 persons, of whom an average of 78 percent were in the labour force, with the remaining 22 percent outside the labour force. Figure 1 illustrates the LFS breakdown of the population into different categories.

Persons in the Labour Force

Persons in the labour force can be either employed or unemployed. Employed persons, in turn, can be either *at work* or *absent* from work.

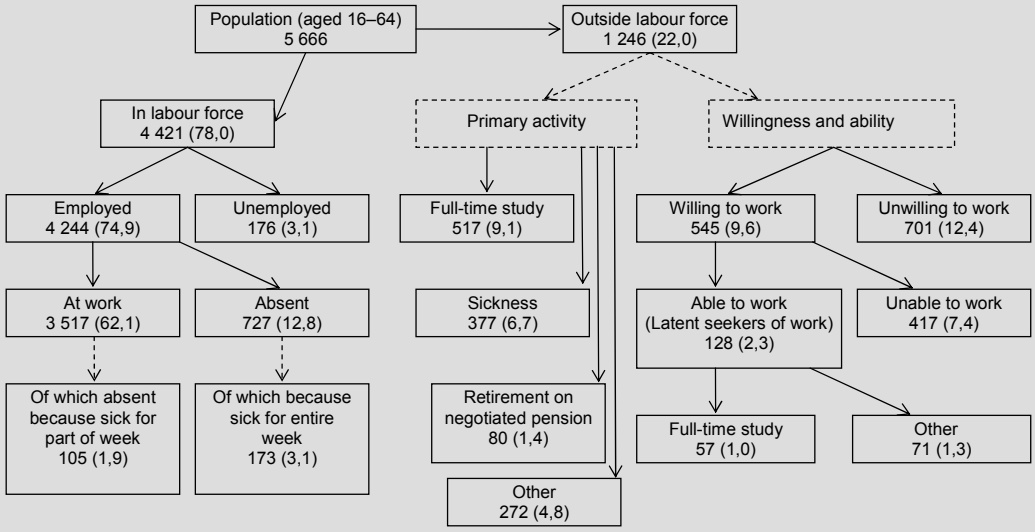
Persons who are employed and *at work* are those who during the survey week perform at least one hour's work as a paid employee, a self-employed person or an unpaid helper in a firm belonging to a family member in the same household. Since one hour of work is sufficient for a person to be considered at work during the week, persons absent for part of the week are also defined as employed and at work. On average, some 105 000 persons were absent for part of the week because of sickness in 2002.

Persons who are employed but *absent* are those who are normally employed but absent from work for the entire survey week, whether the absence is paid or not. The principal reasons for absence are personal holiday, own sickness, care of sick child, parental leave and leave of absence. On average, some 173 000 persons were absent for the entire week because of their own sickness in 2002.

A person is considered unemployed if she/he is not employed during the survey week according to the criteria stated above and also states that she/he is (i) willing to work, (ii) able to start working within 14 days and (iii) has looked for work in the past four weeks or plans to begin at a new job within four weeks of the survey week. Unless all these criteria are met, the person is classified as outside the labour force.

The employment target of the Government and Parliament is for 80 percent of the population between the ages of 20 and 64 to be *regularly* employed

Figure 1 Composition of the Labour Market in LFS, 2002



Note: Thousands and percent of population (aged 16–64) in parentheses, 2002.
Source: Statistics Sweden.

by 2004. A person is considered to be regularly employed if she/he is employed according to the LFS, except for those participating in labour-market employment programmes such as various kinds of subsidized employment and subsidies for starting one's own business.

Persons Outside the Labour Force

Persons outside the labour force are divided into four groups according to their so-called *primary activity*: full-time study, sickness, retirement on negotiated pension and other. The "sickness" category includes persons in early retirement for reasons of health. The "other" category includes, for example, homemakers, persons performing compulsory national service and persons on leave of absence.

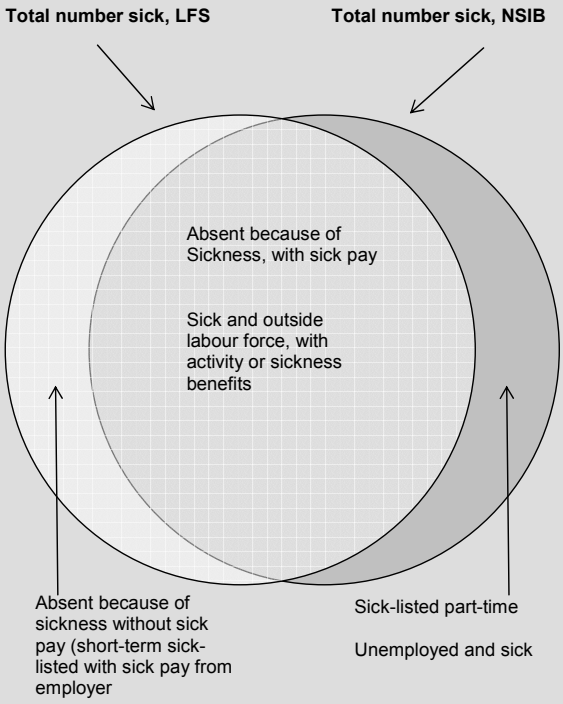
Persons outside the labour force are also categorized according to their *willingness and ability* to work. In this way, information is obtained on the number of so-called *latent seekers of work*, i.e. persons who are willing and able to work during the survey week but who have not looked for work, as well as full-time students who have looked for work. Approximately 45 percent of latent seekers of employment are full-time students. Thus, full-time students who have looked for work are not classified as unemployed in the LFS, though they are included in the ILO's definition of unemployment.[7]

In the NIER's assessment of resource utilization in the economy, the concepts of *expanded unemployment rate* and *expanded labour force* are used. The expanded unemployment rate and expanded labour force include not only persons considered as unemployed and persons in the labour force according to the LFS definitions of these terms, but also latent seekers of employment. The expanded unemployment rate is more strongly correlated than the official unemployment rate with inflation and the development of wages, for example.

Sickness as Defined by the LFS and the National Social Insurance Board

The total number of sick persons, based on the LFS definition, can be calculated as the number of employed persons who are absence on account of their own illness for the entire week plus the number of sick persons outside the labour force. This measure differs in several respects from the total number of sick persons in the statistics of the National Social Insurance Board (NSIB). The NSIB is responsible for disbursements such as sick pay and activity and sickness benefits and is the primary source of data for calculating ill health. The Government and Parliament have set the target of cutting ill health in half by 2008; this target is formulated in terms of the NSIB statistics. Specifically, the goal is to reduce by half the number of sick-pay days (excluding rehabilitation benefits) between 2002 and 2008.[8]

Figure 2 Included as Sick in LFS and NSIB Statistics



The nearest equivalent to the total number of sick persons according to the LFS is the number of persons receiving sick pay (including rehabilitation allowances) plus the number of persons receiving activity or sickness benefits (formerly disability allowances or disability pensions for sickness).

The total number of sick persons according to the NSIB is not the same as the total number according to the LFS, one difference being that the

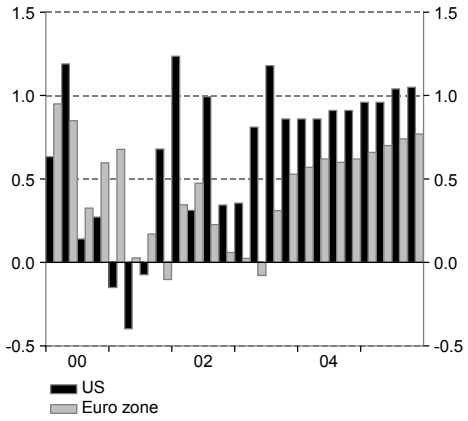
[7] International Labour Organisation (ILO).

[8] At the same time, the number of approved applications for activity and sickness benefits (formerly termed disability allowances or disability pensions for sickness) is to be less on average in 2003–2007 than in 2002. However, the demographic trend is to be taken into account.

NSIB definition does not include persons who are absent because of sickness and receiving sick pay from their employer, as is now the case for the first three weeks of sick leave. The NSIB statistics, by contrast, also include unemployed persons with short-term sickness and persons on part-time sick leave, who are normally classified as employed in the LFS (see Figure 2).

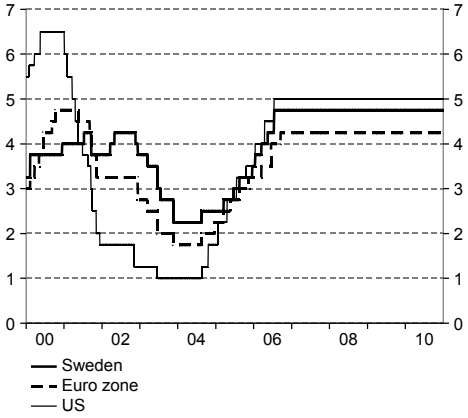
Furthermore, the LFS are sample-based studies, in which classification depends on the individual's response. For example, a person receiving sick pay can claim to be on leave or a homemaker.

Diagram 56 GDP in US and Euro Zone
Percentage change



Sources: Bureau of Economic Analysis, Eurostat and NIER.

Diagram 57 Official Interest Rates
Percent, daily values



Sources: The Riksbank, national sources and NIER.

Slow Recovery in 2003–2006

According to the latest data from Statistics Sweden, the growth of the Swedish economy was only 1.1 percent in the second quarter compared to the same quarter last year. This development was somewhat weaker than expected and suggests that the current recovery of the Swedish economy may be less vigorous, and possibly also take more time, than indicated in the NIER's August forecast. Household consumption increased by more than 1.5 percent in the second quarter on the corresponding quarter last year, or about 0.5 percentage point less than forecast. However, the conditions for economic recovery in Sweden are still relatively favourable, primarily because the international economy is picking up.

The international economy is generally proceeding with the gradual recovery forecast in August. This means, for example, that the international economy is strengthening in response to an expansionary economic policy, particularly in the US, but also in Europe, and that global financial markets are developing favourably. Other reasons for the improving international economy are that the sars epidemic is under control, thus furthering recovery in a number of Asian countries, and that the outlook in Latin America remains bright.

As was previously the case, international economic recovery is being led by the US (see Diagram 56 and Table 16). Growth in the euro zone is more sluggish, and the problems, originating primarily in Germany, still appear substantial. Nevertheless, as forecast in August, growth in Germany is expected to pick up. There is fairly considerable uncertainty about the future tendency in the euro zone, and it is assumed that the ECB, and the Riksbank as well, will reduce their official interest rates somewhat further to boost recovery. Thereafter, interest rates will be raised as the economy strengthens (see Diagram 57). The euro has appreciated against the dollar and is expected to continue doing so, reaching 1.20 dollars to the euro in 2010. The krona has also strengthened and is considered likely to appreciate somewhat more. It is estimated that the TCW index will be just below 125 by the end of 2006, compared to about 131 in 2002.

Although the global recovery is still somewhat tentative, it does indicate that growth in Sweden will increase in the next few years. Another factor pointing in the same direction and related to the international economy is that investment in Sweden has probably passed its low point by this time. Residential investment by households and investment by the manufacturing sector in machinery and equipment are forecast to pick up next year. Industrial investment in buildings and structures is expected to follow suit after 2005.

Table 16 The International Trend

Annual percentage change and percent, respectively

	2002	2003	2004	2005	2006	2007–10
US						
GDP	2.4	2.6	3.7	3.9	3.7	3.2
CPI	1.6	2.2	1.5	1.8	2.1	2.4
Official interest rate[1]	1.25	1.00	1.75	3.50	5.00	5.0
Euro zone						
Cost of labour[2]	2.4	2.8	2.8	3.2	3.3	3.3
GDP	0.9	0.6	2.0	2.7	2.8	2.5
HICP	2.3	1.9	1.5	1.7	1.7	1.75
Official interest rate[1]	2.75	1.75	2.25	3.25	4.25	4.25
OECD 19						
GDP	1.6	1.8	2.7	3.0	3.0	2.6
CPI	1.4	1.7	1.3	1.5	1.7	1.9
Market growth[3]	1.8	3.0	5.5	6.1	7.6	6.9

[1] In December of each year.

[2] Cost of labour per employee, business sector.

[3] Refers to the OECD-14 import of manufactured goods.

Sources: Eurostat, the Riksbank and NIER.

Growth in Swedish GDP is forecast at 1.2 percent for this year and 2.3 percent for next year. In 2004 there will be substantially more working days than in 2003, increasing growth by 0.3 percentage point. The economically relevant rate of growth will thereby be limited to 2.0 percent. In 2005 and 2006, growth is expected to reach 2.4 percent per year (see Diagram 58). Thus, as in other countries, economic recovery will take time (see Diagram 59).

Given the slow pace of recovery, the demand for labour will remain slack. The number of persons employed will continue decreasing this year but begin to increase slightly from the middle of next year on; to some extent, the rise will be curtailed by declining sickness absence. The unemployment rate will go up to about 5.0 percent by year-end, easing gradually to 4.9 percent in 2004 and 4.7 in 2005. Not until 2006 will the labour-market situation improve substantially, with the unemployment rate then dropping to 4.3 percent (see Table 15).

The so-called output gap, i.e. the difference between actual and potential output, is currently negative, as is reflected in low resource utilization. The percentages of employers in different sectors reporting shortages of various types of labour are about as low as in the crisis years of the early 1990s. The percentage reporting shortages is one of numerous indicators that actual output today is less than potential output. However, actual output will be increasing faster than potential output in 2004, so that resource utilization will then be rising. The output gap will close during 2006. Potential output is forecast to rise by 1.9 percent annually during the period 2002–2006.

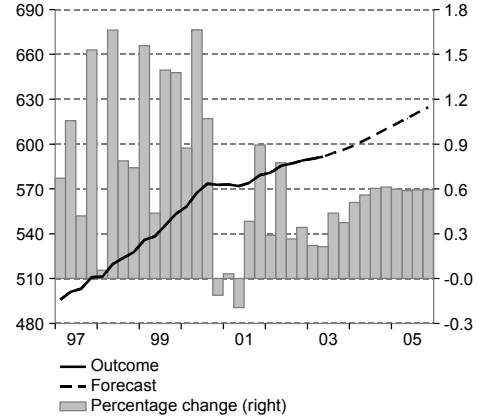
Diagram 58 GDP at Market Prices

Annual percentage change

Sources: Statistics Sweden and NIER.

Diagram 59 GDP at Market Prices

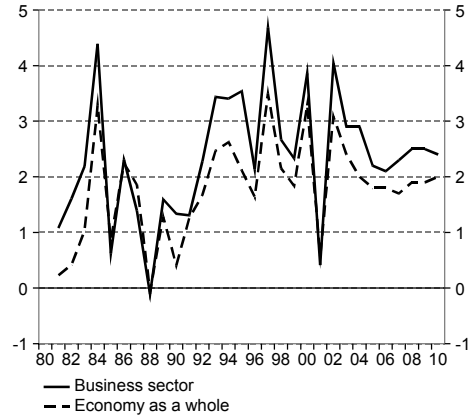
Billions of SEK, constant prices, and percent, seasonally adjusted quarterly values



Sources: Statistics Sweden and NIER.

In the winter of 2003, inflation rose markedly with the surge in prices of electricity and oil. Since then, oil prices have receded. Domestic demand-related inflationary pressure will remain low, while the krona will strengthen. Consequently, inflation is expected to be less than 2 percent in 2004 and most of 2005, but to approach 2 percent in 2006 as the output gap closes. The prolonged economic downturn that began in the spring of 2001 has been countered by an expansionary fiscal policy, particularly in 2002. This year, fiscal policy is slightly expansionary, whereas under current rules it will become slightly restrictive in 2004 and 2005. This fiscal policy is regarded as appropriate by the NIER considering that general-government saving is currently less than the target level of 2 percent, and also that in 2006 the output gap will close and inflation will approach 2 percent.

Diagram 60 Productivity, Business Sector and Economy as a Whole
Percentage change



Sources: Statistics Sweden and NIER.

The Tendency in 2007–2010

With the economic recovery and somewhat higher growth in the next few years, the output gap will gradually close in 2006. Since it is not meaningful to attempt economic forecasting farther into the future, it is assumed that beginning in 2007 actual growth will be in line with potential growth; in other words, the output gap will remain closed throughout the period from 2007 through 2010, and monetary policy will be neutral. Growth will thus be the sum of the rates of increase in number of hours worked and in productivity. The tendency in the number of hours worked is discussed above (see Diagram 54).

Productivity has risen fairly rapidly in recent years and is expected to continue increasing somewhat faster than long-term growth (see Diagram 60). The reason is that a relatively large share of the output of the Swedish business sector is in subsectors with high growth in productivity, such as telecommunication products. It is assumed that this overrepresentation will diminish in the future; thus, productivity growth in the business sector will fall off to the rate sustainable in the long run, estimated at 2.3 percent per year. For the period 2007–2010, productivity will be increasing by an annual average of 2.4 percent in the business sector and 1.9 percent in the economy as a whole. Together with the previously noted average annual increase of 0.1 percent in the number of hours worked, this means that GDP will be growing at an annual average rate of 2.0 percent during 2007–2010.

Table 17 Supply and Demand

Billions of SEK, current prices, and percentage change, constant prices

	2002	2003	2004	2005	2006	2007–10
GDP at market prices	**2 340**	**1.2**	**2.3**	**2.4**	**2.4**	**2.0**
Household consumption expenditure	1 139	1.6	2.4	2.6	3.3	3.2
General-government consumption expenditure	656	0.7	0.5	0.5	0.6	0.4
Gross fixed-capital formation[1]	403	0.7	1.9	5.8	6.5	3.4
Exports of goods and services	1 012	4.3	6.7	6.6	4.4	3.9
Imports of goods and services	871	4.8	6.1	7.7	6.2	5.1
Net exports[2]	142	0.1	0.7	0.0	–0.6	–0.1

[1] Including investment in inventories and objects of value.

[2] Change in percent of last year's GDP.

Sources: Statistics Sweden and NIER.

Labour Costs and Profit Trend

In the long run, the rate of increase in labour costs is determined by the development of productivity and product prices. According to the calculations in Section 3, the long-term rate of increase in labour costs is 4.0 percent. In the short and medium term, however, labour costs can deviate from this trend for several different reasons.

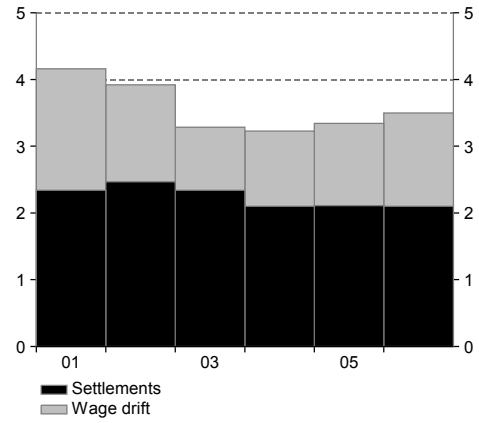
With the economy weakening since 2000, the labour market will be slack and resource utilization low in the next few years. In a number of other respects as well, the setting for the 2004 round of labour negotiations is considerably different than for the 2001 round. As is analyzed more closely in Section 2, this is the case with factors like the inflationary outlook, the exchange rate and the competitive situation. Another relevant consideration is that the renegotiated agreement of the Municipal Workers' Union provides for wage increases of 2.5 percent in 2004 compared with an average of 3.7 percent for 2001–2003.

Given these circumstances, it is estimated that the average negotiated wage increase in the business sector for 2004–2006 will be 0.3 percentage point less than the increase in the 2001 negotiations, or 2.1 percent (see Table 18). In this connection, the same distribution is assumed for the 2004 and 2001 negotiations in regard to different types of central agreements, such as agreements with no stated rate of increase, or with specific provisions that apply if the parties cannot agree locally (in Swedish, so-called "stupstocksavtal").

In addition, wage increases in excess of the negotiated settlements will be curbed by such factors as the continued weakness of the labour market and are forecast to average 1.3 percent in the business sector during 2004–2006 (see Diagram 61).

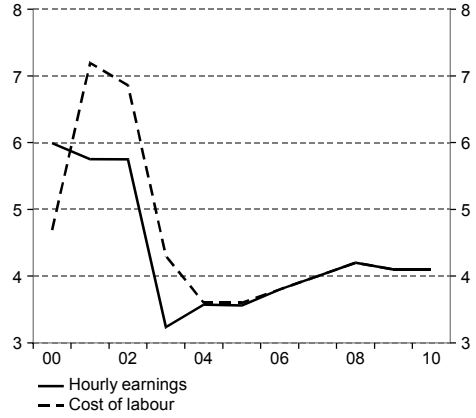
Diagram 61 Settlements and Wage Drift, Business Sector: Probable Development

Annual percentage change



Sources: National Mediation Office (Cyclically Adjusted Earnings Statistics) and NIER.

Diagram 62 Cost of Labour, Business Sector
Percentage change



Sources: Statistics Sweden (National Accounts) and NIER.

Hourly earnings in the business sector, according to the Short Term Wages and Salaries Statistics (WS) are thus anticipated to increase by an annual average of 3.4 percent in 2004–2006.

As is analyzed more closed in the box captioned "Wages and Statistics," the measure of wages used in the WS leads to systematic underestimation of wage increases, whereas the measure used in the NA provides a more correct picture of the trend in labour costs. It is estimated that in the years ahead the underestimation in the WS will be 0.3 percentage point, so that hourly earnings in the business sector according to the NA are forecast to increase by an average of 3.7 percent in 2004-2006.

The increase in NA hourly earnings in the business sector is expected gradually to slacken from 5.7 percent in 2002 to a low of 3.2 percent in 2003, rising thereafter to 3.8 percent in 2006 (see Diagram 62). Labour costs of the business sector are also deemed likely to slow down after rising substantially in 2001–2003, owing in part to higher negotiated contributions and to the extension of employer responsibility for sick pay from two to three weeks. In 2004–2006, the cost of labour in the business sector will increase by an average of 3.7 percent per year. It is important to emphasize that this rate of increase includes not only negotiated wage hikes and wage drift, but also changes in legislated and negotiated employer contributions, reductions in work hours and changes in employer costs of sick-listing and rehabilitation.

Table 18 Labour Costs in the Business Sector
Annual percentage change

	2000	2001–03	2004–06
Negotiated settlement	2.5	2.4	2.1
Wage drift	1.2	1.4	1.3
Hourly earnings, WS	3.7	3.8	3.4
Hourly earnings, NA	6.0	4.9	3.7
Labour costs, NA	4.7	6.1	3.7

Sources: Statistics Sweden, National Mediation Office and NIER.

At the same time as the increase labour costs is slackening, the payroll capacity of the business sector will be increasing somewhat faster. One reason is that in the next year or so productivity is forecast to grow at a higher rate than in the long run. Another reason is that product prices in the business sector will be rising a little more rapidly in 2004 and 2005 than in the long run, partly because of improved terms of trade.[9] The forecast improvement totalling about 3 percent in the terms of trade for 2003–2006 is equivalent to a reduction of almost 1 percentage point in the labour-cost share. After 2006, the terms of trade will stabilize, and product prices will increase at the long-term

[9] See the box captioned "The Effects of Export and Import Prices on the Profit Situation" in *Wage Formation – Economic Conditions in Sweden, 2002*.

growth rate of 1.7 percent. In total, the labour-cost share of value added in the business sector will decrease from its high level in 2002 to one more normal by historical standards in 2006 (see Diagram 63).

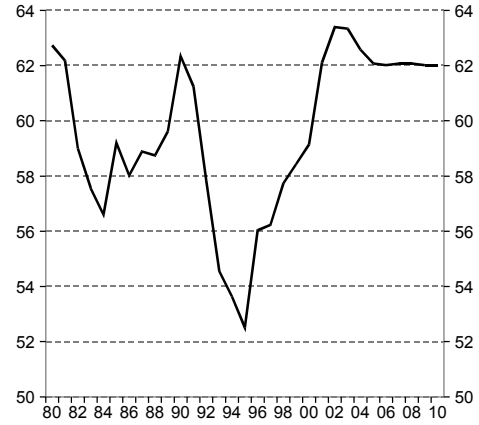
Table 19 Key Numbers, Business Sector

Percentage change, percent

	2002	2003	2004	2005	2006	2007–10
Productivity	4.0	2.9	2.9	2.2	2.1	2.4
Product prices	0.6	1.4	1.9	2.3	1.8	1.7
Payroll capacity	**4.6**	**4.3**	**4.8**	**4.5**	**3.9**	**4.1**
Labour costs	6.9	4.3	3.6	3.6	3.8	4.1
Labour-cost share	63.4	63.3	62.6	62.1	62.0	62.0

Sources: Statistics Sweden and NIER.

Diagram 63 Labour Cost Share, Business Sector

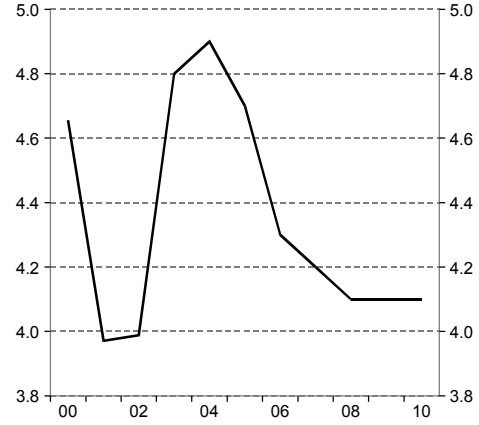


Note: Prior to 2000, the series is adjusted for changes in interest subsidies, taxes and other items.
Sources: Statistics Sweden and NIER.

After 2006 GDP will grow at the same rate as potential GDP. The labour market will adjust with a certain time lag, and the unemployment rate will decrease toward its equilibrium level (see Diagram 64). A tighter labour market will contribute to a slight acceleration in labour costs to an average of 4.1 percent in 2007–2010 (see Diagram 62). The difference compared to the long-term rate of increase (4.0 percent) is due primarily to the assumption that productivity will be increasing a little faster than its long-term rate even in 2007–2010. With this tendency in labour costs, the labour-cost share will be more or less constant after 2006; thus, balance will be achieved in this respect as well. The labour-cost share will flatten out at a level considered sustainable for business profits, i.e. one regarded as consistent with the rate of return required by the international capital market (see Diagram 63).

Diagram 64 Unemployment Rate

Percent



Sources: Statistics Sweden and NIER.

5 Two Paths for Wage Formation Leading to Higher Employment

The main scenario describes the most probably course of development for the Swedish economy until 2010 under the current provisions of tax, social-insurance and other systems. However, development can take other paths. For instance, the rules can be changed in a way that increases the labour supply. In addition, wage formation can function better than in the main scenario, which is based on historical experience.

In this section, two alternate scenarios are analyzed. These are based on more favourable assumptions about the labour supply and wage formation than for the main scenario.[10] The results show that the Government and Parliament, as well as the labour-market parties and their mediators, can help to improve considerably the labour supply, employment and unemployment. GDP would then be higher, and a margin would be created in general-government finances for tax cuts and reforms entailing additional expenditure.

In the *first* alternative scenario, "Economic Effects of an Increased Supply of Labour With Different Degrees of Wage Flexibility," the Government and Parliament take effective action to reduce ill health in the working-age population. The flexibility of the labour market proves to be significant for the speed at which the economy can transform the increased supply of labour into more hours worked and higher GDP.

In the *second* alternative scenario, "Wage Formation That Tolerates Lower Unemployment," the focus is on what the labour-market parties and their mediators themselves can do to increase employment. If the labour-market parties at all negotiating levels give greater consideration to the benefits to the national economy of higher employment and lower unemployment, it will be possible to achieve a lower equilibrium unemployment rate.

Economic Effects of an Increased Supply of Labour With Different Degrees of Wage Flexibility

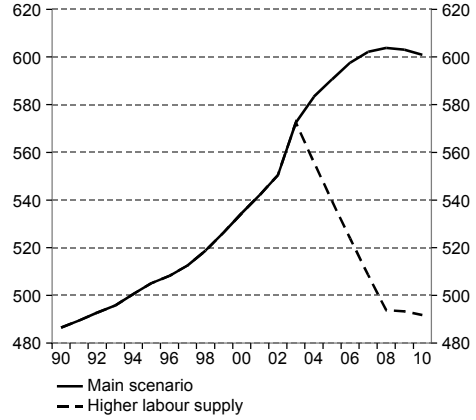
In the NIER's main scenario, the number of hours worked increases slightly until 2010. The principal reasons for the low growth rate are the demographic trend and a lasting high rate of ill health. Demographic changes are relatively easy to forecast, whereas the development of the number of sick persons is less predictable. The persistently high number of sick persons in the main scenario limits output and thus the potential for household

[10] The analysis was performed with the NIER's new macroeconomic model, KIMOD.

and general-government consumption. In addition, greater tension arises between two conflicting aims: to avoid raising taxes, and to provide quality public services and adequate pensions for the rapidly growing number of old-age pensioners. With these and other considerations in mind, the Government and Parliament have set the target of cutting ill health in half by 2008. Steps have been implemented to reduce ill health, and further measures have been announced in the proposed budget for 2004. In addition, further action can be taken to increase the labour supply.

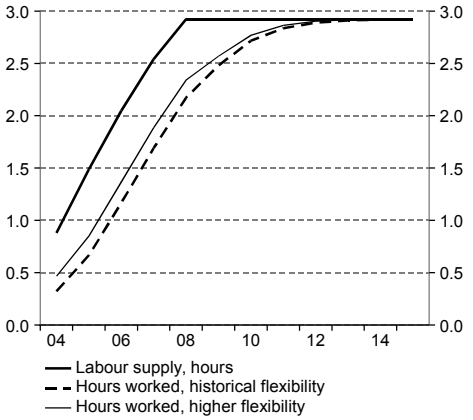
This scenario provides an analysis of the economic effects of a substantial increase in the labour supply resulting from successful measures to reduce ill health. Under historically based assumptions about the functioning of the labour market, it would take a relatively long time before the larger labour supply led to correspondingly higher employment. The delay is caused by various types of friction in the setting of prices and wages. For this reason, the scenario also explores how greater flexibility in pricing and wage formation could speed up the process of adaptation so that employment would adjust more rapidly to the larger labour supply.

Diagram 65 Total Number Sick
Thousands of persons



Sources: Statistics Sweden and NIER.

Diagram 66 Supply and Actual Hours Worked
Percent, difference from main scenario



Source: NIER.

Sources of a Larger Labour Supply

There are a number of reasons why the labour supply can increase. The basic assumption is that the labour supply is enlarged by reducing aggregate ill health among the working-age population during the period 2004–2008. The data on aggregate ill health consist of the number of sick persons outside the labour force and the number in the labour force absent because of illness. One way to lower ill health could be to improve the rules for the sick-listing system and their application; another would be to improve rehabilitation and the work environment (see the box captioned "Sickness Absence in Sweden" in *The Swedish Economy – June 2003*).

Diagram 65 shows aggregate ill health in the main and alternate scenario. In the alternate scenario, a total of 110 000 fewer persons are sick in 2008, reducing total ill health to its 1994 level. As a consequence, the labour supply in 2008 is 3 percent higher than in the main scenario. The increase proceeds gradually during 2004–2008 (see Diagram 66).[11] Diagram 67 shows the effect of the reduction in ill health on the number of sick-days compensated by the NSIB.[12] Despite the relatively substantial reduction in the number of sick persons, the target of halving ill

[11] Except for 2004, the increase in the labour supply in 2004–2008 is assumed to be expected. One possibility is that the Government propose a plan of action to reduce the number of sick persons, a plan that the labour-market parties and Parliament would consider credible.

[12] See the box captioned "Composition of the Working Age Population" for a description of the relationship between sickness absence as defined in the LFS and the number of sick-listed persons according to the NSIB.

health by 2008 is not met.[13] The increase in supply presented here could in principle be achieved in other ways than by reducing ill health, with similar economic effects. For example, only 61 percent of foreign-born persons of working age are in the labour force, compared to 81 percent for persons born in Sweden. If the rate of labour-force participation for persons born abroad were the same as for natives of Sweden, the labour supply would increase by 164 000 persons. Thus, improved integration of the foreign-born to facilitate their joining the labour force could also have a substantial impact on the labour supply.

Diagram 67 Number of Sick Pay Days
Millions of days

Sources: National Social Insurance Board and NIER.

Historical *versus* Higher Wage Flexibility

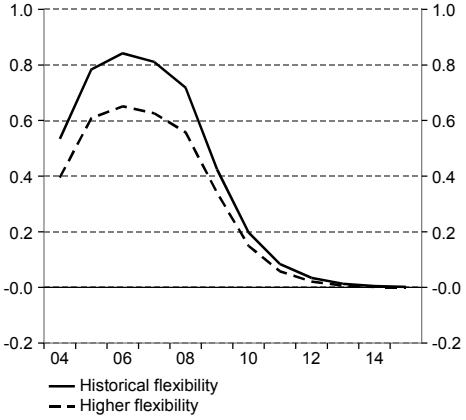
Two different scenarios with an increased labour supply are analyzed. In the first, entitled "Historical Flexibility," the labour market functions as in the main scenario, i.e. in the manner indicated by historical experience. In the second scenario, entitled "Higher Flexibility," the functioning of the labour and product markets is improved in that pricing and wage formation are more flexible. Wages and employment then adjust more rapidly to the larger supply of labour. More specifically, three kinds of behaviour change when pricing and wage formation are more flexible:

First, the labour-market parties react more quickly when unemployment increases. Empirical studies often show that nominal wages respond to increased unemployment with a time lag of one year. In the scenario with more flexible pricing and wage formation, wage increases are instead assumed to moderate directly when unemployment rises.

Second, wages are more sensitive to unemployment than in the main scenario, where their degree of sensitivity is based on historical experience.

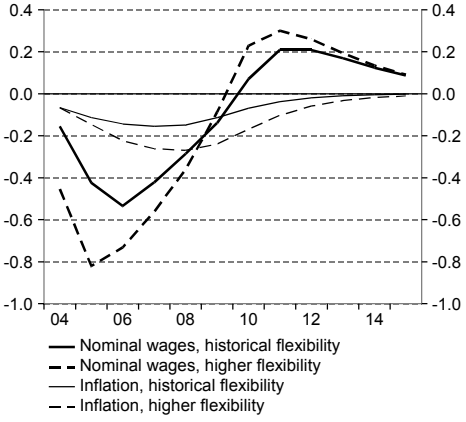
Third, firms are more forward-looking in their pricing, which means that the larger labour supply will have a greater dampening effect on inflation.[14] Thus, the Riksbank can reduce the repo rate more, speeding up the adjustment of employment to the larger supply of labour.

Diagram 68 Unemployment Rate
Percentage points, difference from main scenario



Source: NIER.

Diagram 69 Nominal Wage Growth and inflation
Percentage points, difference from main scenario

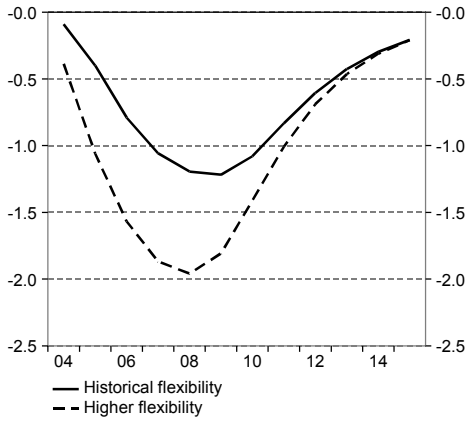


Source: NIER.

[13] The extent to which the reduction in sickness contributes to achieving the target of halving ill health depends on the distribution of the number of sick persons between fewer persons in the labour force absent because of sickness and fewer sick persons outside the labour force. A reasonable division is considered to be that the number absent because of sickness decreases by 35 000 and that the number of sick persons outside the labour force is reduced by 75 000. To meet the ill-health target by 2008 (see Diagram 67), the number absent because of sickness must decrease by an additional 70 000 persons.

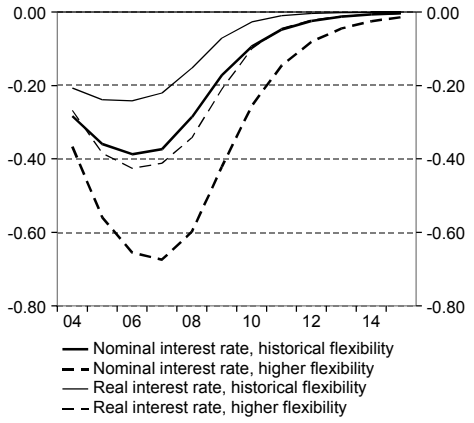
[14] Firms become more forward-looking since the increase in the labour supply in 2004–2008 (of which the increase in 2005–2008 is expected) gives them new information about the future. An increased supply means lower prices than otherwise, which in turn means lower inflation in the short run. Employees will believe that firms will probaby charge lower prices than otherwise, thus contributing to a lower level of nominal wages than in the main scenario.

Diagram 70 Real Wages
Percent, difference from main scenario



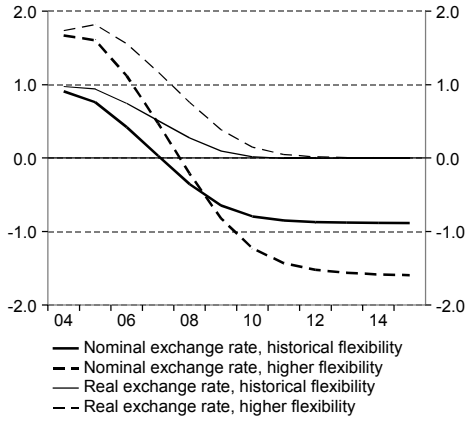
Source: NIER.

Diagram 71 Nominal and Real 1-Year Interest Rate
Percentage points, difference from main scenario



Source: NIER.

Diagram 72 Nominal and Real Exchange Rate
Percent, difference from main scenario



Source: NIER.

Macroeconomic Effects of an Increased Labour Supply

With the decline in ill health, the labour supply will begin growing in 2004, and the full impact will be felt in 2008. The larger labour supply will lead initially to higher unemployment since employment will not increase as rapidly as the labour supply (see Diagram 66).[15] The latter will increase by 0.8 percent in 2004, while unemployment will rise by almost 0.6 percentage point with historical wage flexibility, and by 0.4 percentage point with higher wage flexibility (see Diagram 68).

The larger labour supply will reduce inflationary pressure in the economy, and the inflation rate will be less than 2 percent (see Diagram 69). The decrease in inflation will be greater with high flexibility in pricing and wage formation. The lower inflation rate, together will higher unemployment, will slow the rise in nominal wages (see Diagram 69). This limiting effect will be greater with more flexible pricing and wage formation, in which wage increases will average 0.7 percentage point less in 2004–2006 compared to the main scenario. The more rapid slowdown in wage increases will speed up the rise in employment (see Diagram 66) and have a dampening effect on unemployment (see Diagram 68). With the higher rate of unemployment, real wages will be lower than otherwise (see Diagram 70). With more flexible pricing and wage formation, real wages will decrease more since wages will be more sensitive to unemployment.

The larger supply of labour will also have implications for monetary policy. Lower inflationary pressure will provide a margin for the Riksbank to reduce the repo rate, thus putting downward pressure on market interest rates (see Diagram 71), and in the short run will weaken the exchange rate (see Diagram 72).[16] In this manner, demand in the economy will be stimulated to meet the rising supply.

Resource utilization will be affected by several factors. With the larger labour supply, potential GDP will be higher. Since demand and actual GDP adjust slowly, a negative output gap will arise. The underutilization of resources will be greatest in 2006–2008 (see Diagram 73).[17] Thereafter, resource utilization will increase as a result of the expansionary monetary policy. With more flexible pricing and wage formation, employment will

[15] The unemployment rate increases now that chronically sick-listed persons outside the labour force begin looking for work. Lower sickness absence in the labour force can also entail a short-term increase in the unemployment rate since some of those who previously substituted for the formerly sick will be out of work.

[16] A higher index for the exchange rate in Diagram 72 denotes a weaker krona. In the long run, the krona will strengthen since inflation for a transitional period will be lower than with no change in ill health.

[17] The negative output gap does not mean that the economy is negatively affected, but rather that employment, like output, will be higher in the short run as well. Actual GDP, however, will increase more slowly than potential GDP, temporarily leading to a negative output gap.

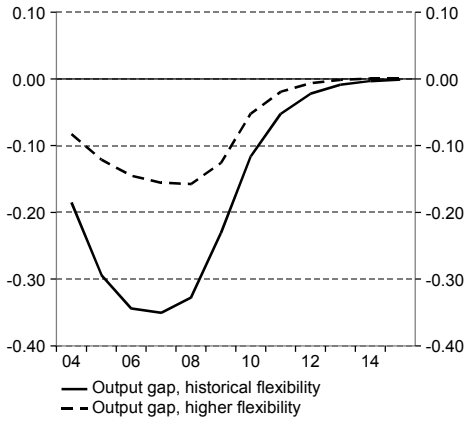
rise more rapidly, and there will be less underutilization of resources.

As a result of the 3 percent increase in the labour supply, employment in terms of hours worked will be 3 percent higher in the long run compared to the main scenario (see Diagram 66). But the Government's target of an 80 percent employment ratio will still not be met (see Diagram 74).[18] The capital stock will also grow by 3 percent, meaning that GDP will be 3 percent greater in the long run. The transitionally higher unemployment rate will have then been eliminated, and real wages will have risen to the same level as in the main scenario. Thus, the larger supply of labour will have no lasting negative effects on either unemployment or real wages. Nor will the return on capital be affected in the long run since it is determined by the international capital market and is thus not dependent on the Swedish labour supply.

The reduction in ill health will also strengthen public finances. With more hours worked (see Diagram 75) and higher GDP, there will be more revenue from sources like employer contributions, income taxes and VAT. Moreover, the cost of sickness-related transfer payments will decrease. Compared to the main scenario, public finances will be stronger in 2010 by about SEK 28 billion, an amount available for tax cuts or reforms entailing additional expenditure.

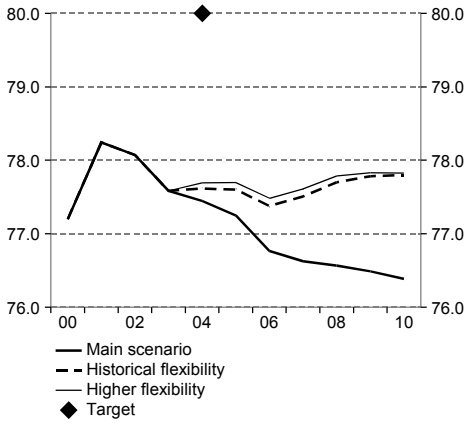
In the long run, total earned income will be 3 percent higher from the reduction in ill health. Greater flexibility in prices and wages will benefit the national economy since the underutilization of resources will be eliminated more quickly. The greater flexibility means that real wages will be lower for a transitional period, but it will not affect real wages in the long run, and it will bring a more rapid rise in employment. Consequently, as early as 2004, total earnings will be higher than with less flexible wage formation.

Diagram 73 Output gap
Percent of potential GDP



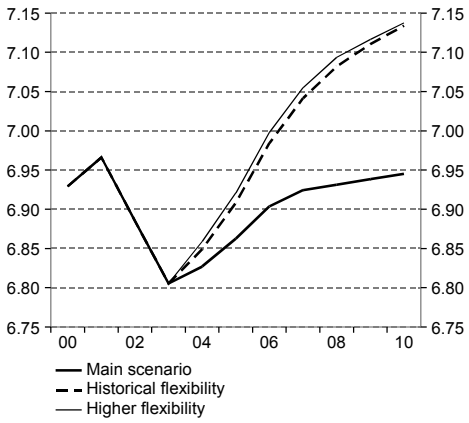
Source: NIER.

Diagram 74 Regular Employment Ratio
Percent of population aged 20–64



Source: Statistics Sweden and NIER.

Diagram 75 Number of Hours Worked
Billions



Sources: Statistics Sweden and NIER.

[18] Only the 75 000 persons who previously were chronically ill will have a positive effect on the employment ratio. The 35 000 sick persons in the labour force who get well were already included in the number of persons employed since while sick they were absent from work.

Equilibrium Unemployment

The level of unemployment in a normal economic situation with a stable tendency in wages is customarily termed the equilibrium unemployment rate. The level of this rate is determined by the structure and institutions of the labour market. The actual unemployment rate may deviate from its equilibrium level from time to time owing to various kinds of friction that retard the adjustment of the labour market. There are so-called nominal frictions, which result when wage settlements are specified in nominal terms, but what actually matters to employers and employees is real wages. Imbalance can arise in regard to real wages, for example when inflation is unexpectedly low after wage settlements have been reached.

In addition to nominal frictions, there are real frictions on the labour market. The reason for these is that after a substantial increase in the labour supply, it takes time to match jobseekers with appropriate vacancies. Real imbalances tend to last longer than nominal ones. In this box, two standard models for the determination of the equilibrium unemployment rate are described. The focus of the first model is the imperfect competition on the labour and product markets.[19] The second model is an extension of the first in that it introduces the search processes of the labour market as an additional source of unemployment.[20] These two models provide the foundation for the analysis and conclusions presented in this report on wage formation. [21]

Wage Formation and Employment

In the first model, real wages and employment are governed by factors like competitive conditions on the labour and product markets. Figure 3 shows real wages on the vertical axis and employment on the horizontal axis. The labour-supply curve shows how many persons will want to work at different levels of real wages. It is assumed that with higher real wages more will want to work; consequently, this curve has a positive slope. The labour-demand curve, D_1, shows how much labour will be demanded at various levels of real wages. It is assumed that with higher real wages, firms will want fewer employees; consequently, this curve has a negative slope. If neither firms nor employees have monopoly power – in other words, with perfect competition – real wages will be set at point 1, where the two curves intersect. Employment is indicated by point L_1, and the real wage by W_1. In this simple model, supply is equal to demand, i.e. the equilibrium unemployment rate is zero.

In reality, however, there are a number of departures from perfect competition. A common assumption is that prices on the goods market are determined in monopolistic competition, where the individual firm has a certain influence on the price of its product. This means that at a given wage level the firm will set a higher price for its product than under perfect competition. Therefore, every level of employment is associated with a lower real wage. In Figure 3, this situation is shown by the location of the labour-demand curve, D_2, below the demand curve. The demand curve under imperfect competition is sometimes called the price-setting curve.

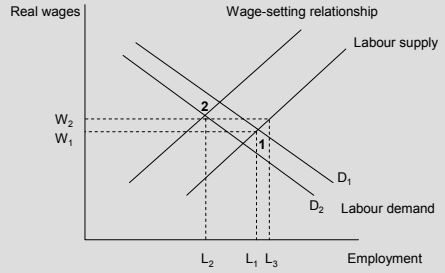
On the labour market, wages are commonly set in negotiations between employee unions and employers. The unions thus have considerable influence over wages, leading to higher wage levels than with perfect competition. This means that the wage-setting curve is located above the labour-supply curve in Figure 3. The wage-setting curve, with its positive slope, reflects the fact that the more different employment opportunities there are in the economy, the greater the incentive for the unions to exert upward pressure on wages. A contributing factor is that an unemployed person has a better chance of finding a new job when employment is high.

[19] For a detailed description of the determination of the equilibrium unemployment rate with imperfect competition on the goods and labour markets, see for example R. Layard, S. Nickell and R. Jackman, "Unemployment, Macroeconomic Performance and the Labour Market", 1991, Oxford University Press.

[20] This presentation of search theory is based primarily on C. Pissarides, "Equilibrium Unemployment", 2000, Cambridge, MIT Press.

[21] In the NIER's macroeconomic model, KIMOD, the labour market is specified in accordance with this theoretical framework.

Figure 3 Employment and Real Wages With Perfect and Imperfect Competition



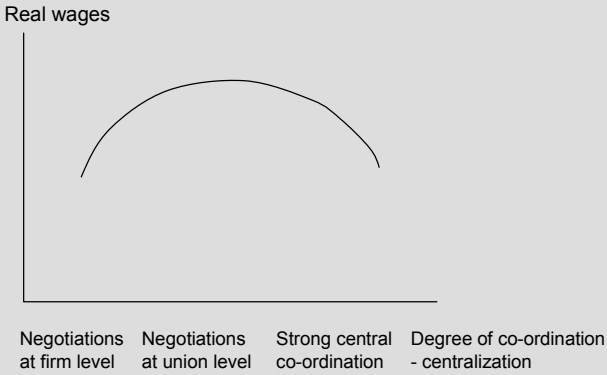
The intersection of the labour-demand and wage-setting curves is at equilibrium point 2 with employment L_2 and wage W_2. Equilibrium is thus at the only point where price- and wage-setting yield a consistent result, i.e. at real wage W_2. Employment is lower than under perfect competition (see Figure 3). Whether real wages are higher or lower depends, among other things, on whether the imperfections are greatest on the product market or the labour market. If the curves shift as in the diagram, the real wage will be somewhat higher than under perfect competition. At this wage, L_3 persons will want to work, resulting in equilibrium unemployment of L_3-L_2. Thus, the equilibrium unemployment rate is the level of unemployment at which price- and wage-setting yield a consistent result. Unemployment is higher, and employment lower, than under perfect competition owing to imperfect competition on the product and labour markets.

Determinants of the Equilibrium Unemployment Rate

The unemployment rate in the model above is determined by the factors that govern the demand for labour and by the wage-setting curve. The position of the wage-setting curve is dependent, among other things, on the level of compensation provided by unemployment insurance, income taxes and the design of labour-market policy, including the extent of labour-market programmes. A higher level of compensation and higher income taxes can conceivably lead to higher wage demands from employees at a given employment level; this is shown by an upward shift in the wage-setting curve, with a decrease in equilibrium employment.

The wage-setting curve may also be affected by the degree of co-ordination in wage formation. One hypothesis is that the greater the degree of co-ordination in labour negotiations, the more all economic effects of unemployment will be considered in wage formation. In this case, wage demands, real wages and the unemployment rate will all be lower. Another theory (the Calmfors-curve) emphasizes that both highly co-ordinated and highly decentralized negotiations lead to lower real wages and thus to higher employment than if negotiations are held at an intermediate level (see Figure 4). When wages are set at the firm level, market forces are strong, countering upward pressure on wages. When wages are set in totally co-ordinated negotiations, all repercussions on the national economy are considered, thus also limiting upward pressure on wages. At an intermediate level, on the other hand, both co-ordination and market forces are relatively weak. Real wages will then be higher and employment lower than with highly co-ordinated or highly decentralized negotiations.

Figure 4 Real Wages and Degree of Co-ordination in Wage Negotiations



The extent of labour-market programmes affects the position of the wage-setting curve, but it is not obvious in which direction. On the one hand, more comprehensive programmes can reduce the incentive for restraint in wage demands since risk of unemployment will be less. On the other hand, programmes that increase the supply of labour in areas where there are shortages can lead to lower wage demands. Thus, the net effect may differ according to the kind of labour-market programmes concerned.

The position of the labour-demand curve depends on the degree of competition on the product market. Increased competition on the product market limits the extent to which firms can charge prices above cost (profit margins). With prices thus

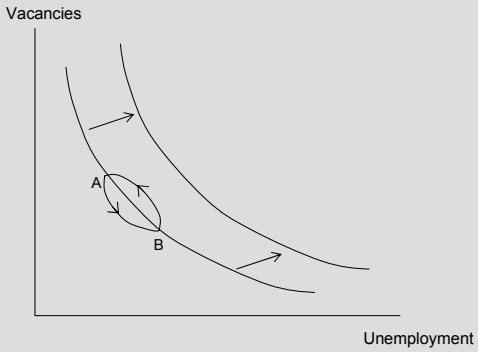
lower, real wages will be higher at a given level of unemployment, as shown by an upward shift in the demand curve. The result is a higher equilibrium real wage, higher equilibrium employment and a lower equilibrium unemployment rate.

Vacancies and Unemployment

The model of the labour market described above explains unemployment solely on the basis of wage formation and pricing. There is an additional explanation that focuses on the search processes on the labour-market: unemployment also arises because it takes time for job seekers and employers to find and evaluate each other. For this reason, the previously presented model of the labour market is supplemented by a description of the search process. Thus, in the expanded model, not only pricing and wage formation, but also the search for employment, are factors that determine the level of equilibrium unemployment.

One central assumption in the description of the search process is that both job seekers and unfilled vacancies are heterogeneous in such respects as level of competence, occupational specialty, geographic location and industry. On the labour market there are both vacancies and unemployed persons at the same time. This situation reflects a continuous process whereby new employment is created and existing employment is terminated, for example, when a person retires or a firm goes out of business. The process of matching vacancies with unemployed persons takes time. The reason is that this process of search and selection entails various kinds of costs.

Figure 5 The Beveridge Curve



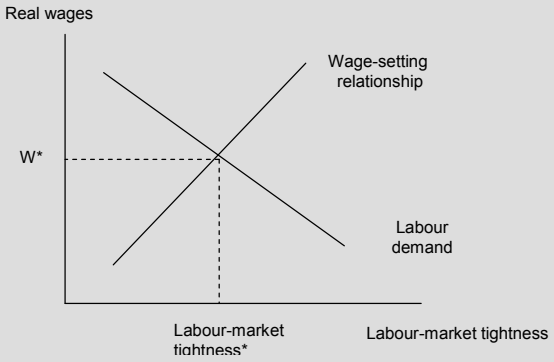
The relationship between vacancies and unemployment is illustrated by the so-called *Beveridge curve* (see Figure 5). The horizontal axis shows unemployment, and the vertical axis, vacancies. Vacancies are measured here in relation to the labour force. The more vacancies there are, the higher the probability that a person can find work; in other words, the lower the unemployment rate will be. For this reason, the Beveridge curve normally slopes downward.

Through studying the development of vacancies and unemployment, one may obtain an indication as to whether changes on the labour market are cyclical or structural in nature. A cyclical change means that unemployment and vacancies are moving in opposite directions along a given curve. For example, slackening demand in the economy leads to a decrease in the number of vacancies, while unemployment will be increasing. In Figure 5, this situation is shown by a downward movement along the curve from point A to point B. When the economy picks up and demand rises, the number of vacancies increases, and unemployment decreases. This is shown by an upward movement along the curve to point A. To the extent that vacancies react more rapidly than unemployment, the curve is not followed in the short run; instead, there are counterclockwise movements around the curve (see Figure 5). On the other hand, a structural change, like deterioration in the matching process due to diminished mobility of the labour force, is reflected in an outward movement of the relationship curve as shown in Figure 6. This shift signifies that with a given number of vacancies, unemployment will be higher.

Thus, the Beveridge curve describes the relationship between vacancies and unemployment, and the position of the curve depends on factors like the functioning of the matching process. The point on the Beveridge curve that shows the equilibrium position of the economy is determined on the basis of wage formation. The description of the interaction between wage formation and the search process is based on the demand for labour, D_2, and the wage-setting relationship, LS, in Figure 3. This figure shows the relationship between real wages and employment. When the search process is considered, it has proven more appropriate to relate real wages to the ratio between the number of vacancies and the number of unemployed persons. This ratio,

known as labour-market tightness, normally covaries with employment and measures demand pressure on the labour market.[22]

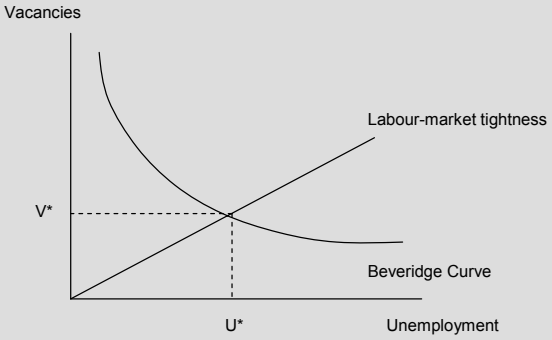
Figure 6 Real Wages and Labour Market Tightness



The downward-sloping curve in Figure 6 shows the demand for labour. The lower the real wage, the more labour employers will want to hire, leading to more vacancies, lower unemployment and thus to greater labour-market tightness. At the same time, a tighter labour market strengthens the position of employees in wage negotiations, leading to higher real wages as shown in the upward-sloping wage-setting curve. The intersection of the two curves determines the equilibrium levels of real wages and of labour-market tightness.

The equilibrium level of labour-market tightness reflects the relationship between vacancies and unemployment as shown by the upward-sloping straight line in Figure 7. The intersection of the line showing labour-market tightness and the Beveridge curve determines the equilibrium levels of unemployment and vacancies.

Figur 7 Equilibrium Unemployment



Compared with the initially described model of the labour market, which only considers pricing and wage formation, Figures 6 and 7 together represent a richer model that considers the search process as well as pricing and wage formation.

On the basis of three central relationships on the labour market – the demand for labour, the wage-setting relationship and the Beveridge curve – the model determines the equilibrium levels of real wages, unemployment and vacancies. This equilibrium features the following properties:

1. Unemployment and vacancies are at levels compatible with the equilibrium real wage according to the wage-setting relationship.
2. Employers are satisfied with the level of vacancies in relation to the equilibrium real wage according to the labour-demand curve.
3. Unemployment and vacancies are at levels compatible with the effectiveness of the matching process as shown in the Beveridge curve.

Thus, in this model the equilibrium unemployment rate is set by the same underlying factors that govern the positions of the wage-setting, labour demand and Beveridge curves. Some of these factors are institutional, such as the level of compensation provided by unemployment insurance, the tax system, the extent of labour-market programmes and the competition on the product market. The wage-setting curve is also governed by the actions of the parties, which means that the parties, according to this standard model, can influence the equilibrium unemployment rate and thus employment.

[22] A more detailed description of the demand for labour and the wage-determination relationship in this form is provided by C. Pissarides in "Equilibrium Unemployment", 2000, Cambridge, MIT Press.

Wage Formation That Tolerates Lower Unemployment

In the main scenario of developments during 2004–2010, it is assumed that Swedish wage formation functions according to historical experience. The emphasis is on the experience of the last five years, when the regime of price stability with 2 percent inflation has been fully credible and wage formation has functioned within the framework of the Agreement on Industrial Development and Wage Formation (Industrial Agreement) and similar agreements in other areas of collective bargaining.

As previously discussed in greater detail in the main scenario, wage formation under these conditions can be expected to function so that the equilibrium unemployment rate will be approximately 4.1 percent in 2010. If the unemployment rate is below that percentage for more than a few brief periods, it is assumed that wage formation will generate wage increases above an economically sustainable level. The attendant rise in inflationary pressure will lead to a tightening of monetary policy that reduces growth and increases the unemployment rate to a level compatible with 2 percent inflation, i.e. at least 4.1 percent.

If wage formation functions in this manner, and the other assumptions in the main scenario apply, Parliament's target of an 80 percent employment ratio in age group 20–64 will not be met in the period 2004–2010. Instead, the employment ratio will gradually decrease, primarily because of demographic changes (see Diagram 74, solid line).

This section describes the economic effects of more effective wage formation, specifically wage formation that tolerates an unemployment rate of 3.1 percent instead of 4.1 percent in 2010 as in the main scenario (see Diagram 76). For this to be possible, the labour-market parties and their mediators at the central, local and individual levels in their actions must accord considerable weight to the benefits to the national economy of high employment and low unemployment. The actors involved know that it is in the interest of wage earners as a group to achieve and maintain high employment, one reason being that as taxpayers and beneficiaries of public services they will be better off than with lower employment. Thus, central and local agreements, like other aspects of wage determination, will be so designed that the actual increase in labour costs will be less than the long-term level of 4 percent as long as the unemployment rate exceeds 3.1 percent.

The question as to how such behaviour can be ensured in practice is not analyzed more closely in this report. The NIER's preliminary assessment, however, is that the Industrial Agreement and corresponding agreements for other sectors would have to be generally accepted, thus helping to make certain that the interests of the national economy are considered in central,

Diagram 76 Unemployment Rate
Percent of labour force

Source: NIER.

local and individual wage formation to a substantially higher degree than in the past ten years.[23]

The distinguishing feature of this alternate scenario is that the parties and their mediators beginning in 2004 change their behaviour so that the rate of wage increases will be lower than in the main scenario at a given unemployment rate under otherwise unchanged conditions. In terms of the model presented in the box above captioned "Equilibrium Unemployment," the change is shown as a downward shift of the wage-setting curve, increasing equilibrium employment and lowering the equilibrium real wage. The change is assumed to be sufficiently great to cause a reduction of 1 percentage point in the minimum unemployment rate that does not lead to inflationary wage increases, in other words, for the equilibrium unemployment rate to be 3.1 percent instead of 4 percent in 2010 as in the main scenario. Since it is the effects of this change that are of interest, the results are presented in terms of differences from the main scenario.

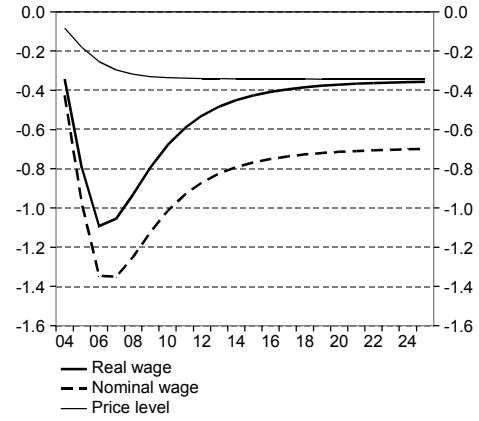
Nominal and real wages, and the differences in the price level, are shown in Diagram 77. Initially, the change in wage formation means that the nominal rate of wage increases averages 0.5 percentage point less per year in 2004–2006. In the long run, the rate of increase in nominal wages is 4 percent, as in the main scenario.

The lower rate of wage increases in the first years leads to a lower rate of inflation, but also to lower real wages. The real wage will initially be 0.3 percent less than in the main scenario and at most 1.1 percent lower in 2006. The Riksbank reacts to the weaker inflationary pressure following the change in wage formation by reducing the repo rate (see Diagram 78). The smaller increases in nominal wages will thus have relatively little impact on the actual inflation rate, which gradually returns to the Riksbank's inflation target of 2 percent.

As a result of the lower repo rate, demand in the economy rises, thus leading to higher demand for labour as well. Lower real wages also help to increase the demand for labour and to reduce the unemployment rate (see Diagram 79). Because of labour-market friction, however, unemployment reacts more slowly than real wages. In the first year, the unemployment rate falls by 0.3 percentage point, dropping subsequently toward its new equilibrium level that is 1 percentage point lower.

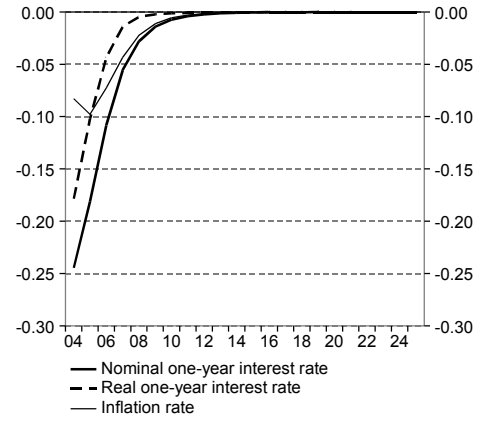
Diagram 80 shows the development of employment and output. The capital stock adjusts slowly, with virtually no change at first. The 0.3 percent increase in employment in 2004 means that output will then be 0.2 percent higher. Firms will therefore employ more labour, while the capital stock remains unchanged. Consequently, the return on capital will have increased. In the long run, though, the return on capital is determined by the rate

Diagram 77 Real Wage, Nominal Wage and Price Level
Percent, difference from main scenario



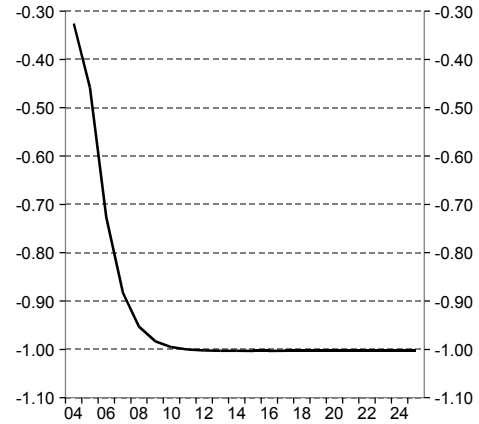
Source: NIER.

Diagram 78 Nominal 1-Year Interest Rate, Real 1-Year Interest Rate and Inflation Rate
Percentage points, difference from main scenario



Source: NIER.

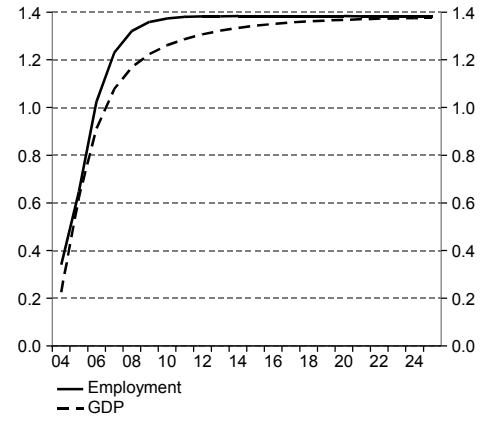
Diagram 79 Unemployment Rate
Percentage points, difference from main scenario



Source: NIER.

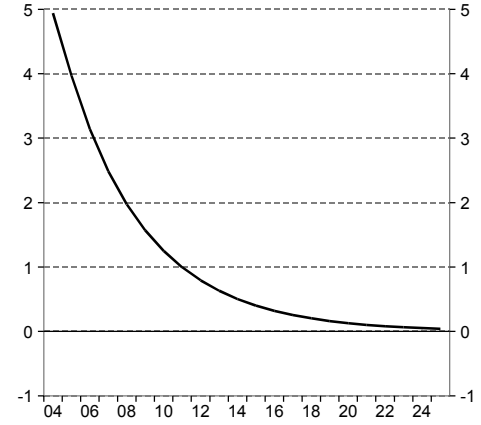
[23] The question as to how institutions and the forms for wage formation can affect the equilibrium unemployment rate are analyzed more throroughly in Calmfors, Lars, "Wages and Wage-Bargaining Institutions in the EMU – A Survey of the Issues", *Empirica* 2001.

Diagram 80 Employment and GDP
Percent, difference from main scenario



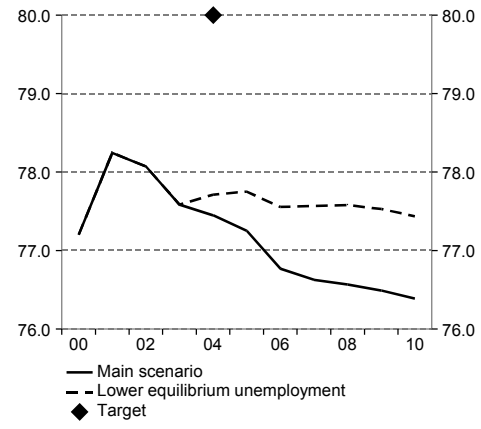
Source: NIER.

Diagram 81 Investment Ratio
Percentage points, difference from main scenario



Source: NIER.

Diagram 82 Regular Employment Ratio
Percent of population aged 20–64



Sources: Statistics Sweden and NIER.

of return required by the global capital market. This means that the capital stock will increase until capital intensity, i.e. the ratio of capital to hours worked, has resumed its original level. Diagram 81 shows the investment ratio, i.e. investment in proportion to output. This ratio increases immediately by 4.9 percentage points. It then gradually moves back to its level in the main scenario as investments restore the ratio between capital and labour.

The adjustment involves various processes. One is matching job seekers with unfilled vacancies, leading to higher employment and a lower unemployment rate. Another is adjustment of the stock of capital to the larger labour force. The larger stock of capital in turn raises the marginal return on labour, so that the demand for labour continues to increase.

The higher demand for labour leads both to more vacancies and to lower unemployment. In terms of the theory on job-search presented above in the box captioned "Equilibrium Unemployment," this means that the economy moves upward along the Beveridge curve. It will thus be easier for unemployed persons to find work, but harder for firms to fill vacancies. As a result, some persons who had not previously searched actively for work, and thus were not included in the labour force, now become active seekers of employment, thereby entering the labour force.

In the new equilibrium situation, the labour force, the capital stock and output have all increased by 1.4 percent. The unemployment rate is 1 percentage point lower. While the higher employment is primarily related to lower unemployment, some of the increase in employment is due to a higher rate of labour-force participation.

In the long run, the growth rate in real wages is determined by the development of productivity and is therefore unchanged. With the higher capital stock, the real wage has approached the level in the main scenario, but is still nearly 0.4 percent below it.

At the lower level of unemployment, employers will hold more vacancies open for longer periods. Total vacancies will increase by 18 percent. This means that the labour-market situation will be one where the unemployed find it easier to get jobs, whereas the recruiting costs of firms will be higher. These costs will be passed on to labour in the form of somewhat lower real wages. The reason why these costs are shifted to labour is that in the long run the owners of international capital are immune to all types of cost increases in Sweden. By the same token, however, the change in Swedish wage formation brings no long-term benefit to the owners of capital in the form of a higher return on capital, for this rate of return is determined internationally and is unaffected by conditions in Sweden.

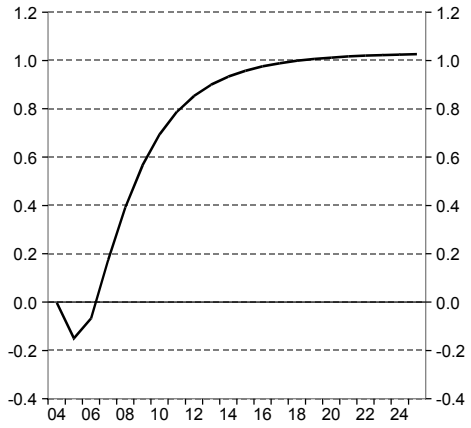
The level of employment in proportion to the population aged 20–64 is shown in Diagram 82. Both lower unemployment and higher labour-force participation contribute to employment

above the level in the main scenario, but the Government's 80 percent target is still not met.

The change in negotiation behaviour thus results in a long-term decrease of 1 percent in the unemployment rate and a long-term increase of 1.4 percent in employment. The price paid for these improvements is a temporarily lower rate of wage increases and 0.4 percent lower real wages in the long term. Thus, in the long run, aggregate real earnings are 1 percent higher than in the main scenario (see Diagram 83).

For the general-government sector, the higher output and employment mean increased tax revenue as well as reduced transfer payments to the unemployed. This budgetary reinforcement creates a margin of about SEK 12 billion in 2010 for tax cuts or reforms entailing additional expenditure.

Diagram 83 Real Total Earnings
Percent, difference from main scenario



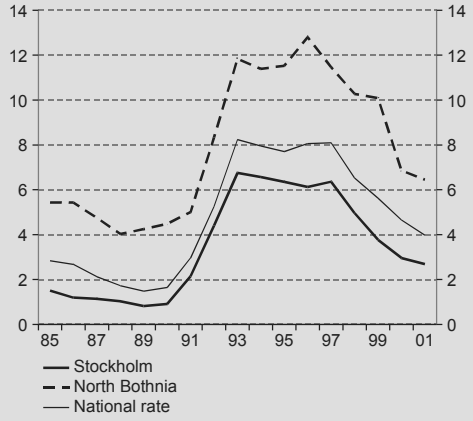
Source: NIER.

The Equilibrium Unemployment Rate in Sweden

In the early 1980s, the unemployment rate soared from about 2 percent to 8 percent. Unemployment remained high for several years before falling sharply in the late 1990s. However, the unemployment rate has not returned to the low levels of the 1980s (see Diagram 84). Part of the explanation may be lack of mobility on the labour market. For example, unemployment in the county of North Bothnia is twice as high as in Stockholm.

This box is devoted to studying whether the equilibrium unemployment rate has increased and whether the functioning of the labour market has deteriorated partly from lack of geographic mobility.

Diagram 84 Unemployment in Sweden
Percent of labour force



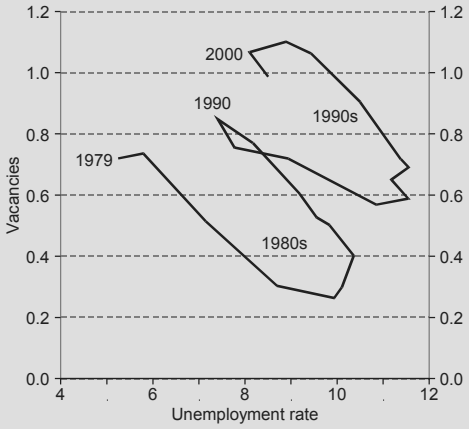
Sources: Labour Market Board and NIER.

The Tendency in Europe

Elsewhere in Europe, unemployment was low until the mid-1970s, but since then it has fluctuated at higher levels. In several European countries, the functioning of the labour market appears to have deteriorated. A frequent explanation is that the institutions and systems of rules for the labour market stand in the way of restoring low unemployment. Studies suggest that although the institutions of the labour market have remained unchanged, in combination with a less stable economic tendency in the 1980s they explain the increase in unemployment.[24]

Diagram 85 shows the relationship between vacancies (unfilled positions in proportion to the labour force) and unemployment, that is, the Beveridge curve for the euro zone (see the box captioned "Equilibrium Unemployment" for a description of the relationship).[25] In the early 1980s, as in the early 1990s, the number of vacancies fell as unemployment rose, a normal situation in a weakening economy. In the latter part of the 1980s and 1990s, the opposite occurred, as is normal when the economy is strengthening. One difference, however, is that in the 1990s these cyclical movements took place when both unemployment and the number of vacancies were at much higher levels. Thus, the downward-sloping curves in Diagram 85, which represent the cyclical relationship between vacancies and unemployment, had shifted outward. This movement suggests that the matching process on the labour market has become less effective since the 1980s.

Diagram 85 Beveridge Curve, Euro Zone, 1979–2002
Percent of labour force



Source: OECD.

The Beveridge curves for individual European countries differ considerably.[26] The clearest indications of a deterioration in matching as shown by an outward shift in the curve are found in Germany

[24] See, for example, Ljungqvist, L, "European Unemployment, Labour Market Institutions and Economic Turbulence", Dice Report, Vol. 1, No. 2.

[25] Data on vacancies are available for only 7 countries in the euro zone (Germany, Austria, Luxembourg, Finland, Portugal, Spain and Belgium). The definition of "vacancies" varies between countries, and this factor probably accounts for only a portion of the total number of unfilled positions in the economy. Nevertheless, existing data can provide certain information on the tendency of the labour market.

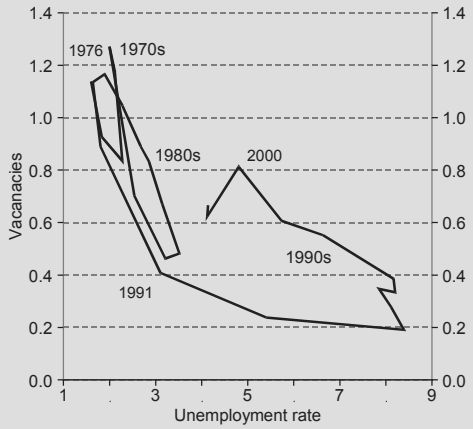
[26] For a more detailed description of the labour market in the euro zone, see *Labour Market Mismatches in the Euro Area*, European Central Bank, March 2002.

and Belgium.[27] One explanation is that regional imbalances in these two countries reduced the effectiveness of the matching process in the less stable years of the 1990s. To the extent that the labour force is unwilling to move, a lasting deterioration in matching thus arises.

How Well Does the Swedish Labour Market Function?

Aside from the increase in unemployment, there are other circumstances suggesting that the functioning of the Swedish labour market has also become less effective. During the 1970s and 1980s, clear cyclical movements are visible in the Swedish Beveridge curve (see Diagram 86). Vacancies decreased in the first years of the 1970s and of the 1980s, while unemployment increased. In the second half of each decade, vacancies rose, while unemployment fell. These tendencies reflect cyclical variations. Diagram 86 shows that the curve shifted outward during the 1990s, indicating a structural change that reduced the effectiveness of the matching process on the labour market. If this is the case, then the equilibrium unemployment rate was also higher in the 1990s than in preceding decades.

Diagram 86 Beveridge Curve, Sweden, 1976–2002
Percent of labour force



Sources: Labour Market Board and NIER.

The equilibrium unemployment rate can be estimated with the aid of the so-called search and wage-formation model described in the box captioned "Equilibrium Unemployment". The method entails estimating the Beveridge curve, and the line representing labour market tightness. In this way it is also possible to study whether either of the curves shifted during the 1990s and thus raised the equilibrium unemployment rate.

The first step is to estimate the model under the assumption that no change has occurred in any of the curves; in other words, the model is estimated for the entire period 1962–2002. As shown in Table 20 below, the equilibrium unemployment rate is calculated to have been about 3.3 percent in that period. In the second step, the model is estimated separately for the periods 1962–1991 and 1992–2002. The possibility of the following three changes is studied:

(i) the Beveridge curve shifted between 1991 and 1992;
(ii) the position of the wage-setting curve or the labour-force curve shifted between 1991 and 1992, leading to a shift in the labour-market-tightness curve;
(iii) both the Beveridge curve and the labour-market-tightness curve shifted.

Table 20 Estimates of the Equilibrium Unemployment Rate, Percent

Case	1962–91	1992–02
No change	3.3	3.3
(i) shift in Beveridge curve	2.9	3.9
(ii) shift in labour-market-tightness curve	2.3	5.5
(iii) shift in both Beveridge curve and labour-market-tightness curve	2.2	6.0

The estimates show that if there has only been an outward shift in the Beveridge curve – i.e. matching between vacancies and unemployment has deteriorated – the equilibrium unemployment rate increases by 1 percentage point between the periods. If only the labour-market-tightness curve has changed, the equilibrium unemployment rate is estimated to increase by more than 2 percentage points. A shift in the labour-market-tightness curve could occur, for example, if the degree of centralization in wage formation decreased, intensifying the upward pressure on wages. The difference in the equilibrium unemployment rate is greatest if both the Beveridge and labour-market-tightness curves have shifted.

[27] These two countries consistute about 35 percent of the euro zone and account for much of the shift in the Beveridge curve for the euro zone.

The shift in the Beveridge curve alone is statistically significant, but not the shift in the labour-market-tightness curve. The finding, therefore, is that the equilibrium unemployment rate is an estimated 3.9 percent for the 1990s and that it had increased by more than a percentage point compared to previous decades, as shown by the shift in the Beveridge curve (see Table 20).

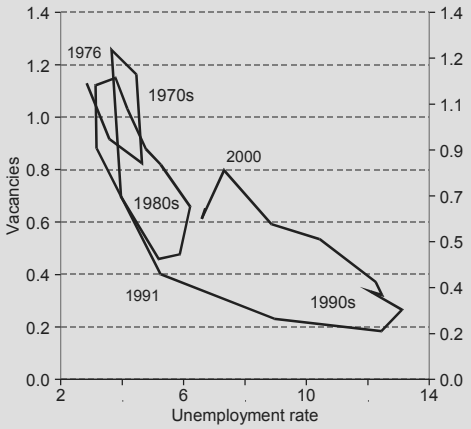
The estimate thus shows that the matching of vacancies and the unemployed has become less effective, but does not explain why. One reason for the deterioration in matching may be generally diminished mobility on the labour market, or unchanged mobility that resulted in a higher number of vacancies and higher unemployment in the less stable environment of the 1990s. If so, the result has been a higher equilibrium unemployment rate and thus lower employment.

However, the estimates above must be interpreted with caution. One reason is that the data on vacancies are those reported to the employment agencies and thus represent only a portion of the total number of vacancies. Another problem is that during the entire period there has been a declining trend in vacancies as measured, particularly in the early 1990s. If the actual number of vacancies has not decreased, but only the number reported to the employment agencies, the outward shift in the Beveridge curve has been underestimated, a further indication in that case that matching has become less effective.[28]

Measures of Unemployment and Equilibrium Unemployment

The analysis above refers to the relationship between vacancies and the official unemployment rate. However, in Sweden there is a comprehensive set of labour-market programmes. An alternate measure of unemployment is so-called total unemployment, which consists of the number of persons officially unemployed plus the number participating in labour-market programmes.

Diagram 87 Vacancies and Total Unemployment, Sweden, 1976–2002
Percent of labour force



Sources: Labour Market Board and NIER.

Diagram 87 shows the Beveridge curve for Sweden based on total unemployment. The cyclical fluctuations in the 1970s and 1980s are still apparent, but the hypothetical structural shift in the later years of the 1990s is no longer so clear. The conclusion is then that all variations were cyclical and that consequently the matching process was functioning no less effectively in the 1990s than in previous decades. The labour-market programmes were much more extensive in the 1970s and 1980s than in the 1990s. As a result, the unemployment rate tended to be lower in the earlier decades, thus explaining why the Beveridge curve for the official unemployment rate in Diagram 86 shifted more clearly outward in the 1990s. In that case, the shift in Diagram 86 reflects a decrease in labour-market programmes rather than a less effective matching process.

The Adult Education Initiative (AEI), especially designed for the unemployed, was taken in the second half of the 1990s. Like the labour-market programmes, the AEI held down the official unemployment rate. It is likely that some participants in the AEI would have pursued studies even without it, but that others would have been officially unemployed. Consequently, the relationship between vacancies and unemployment in the 1990s was affected. Without the AEI, the curve in Diagram 87 would probably have been farther from the origin of the graph in the 1990s. This suggests that match-

[28] One explanation for the decrease in the number of vacancies reported to the official employment agencies may be the emergence of private employment agencies in the early 1990s. Another explanation is that most of the available jobs are no longer in the industrial sector, but in the service-producing sectors. Since openings in the industrial sector are generally reported more often than those in the service sectors, the number of vacancies reported is tending to decrease.

ing in fact functioned less effectively in the 1990s than in previous decades.

Regional Differences in Sweden

There are a number of conceivable reasons for the higher equilibrium unemployment rate in the 1990s: reduced geographic mobility on the labour market, unchanged low mobility in combination with a more uneven regional movement of labour, or the marked rise in unemployment in 1993. One way to explore this question is to study whether the differences between counties in the unemployment rate and employment have increased.

Relative unemployment is the ratio between unemployment in a particular county and unemployment in the country as a whole. A higher value for the variance, i.e. greater variation in regional unemployment, indicates that the labour market is functioning less effectively (see Table 21).

Table 21 Variance in Relative Unemployment

	1985–89	1990–95	1996–01
Official unemployment	0.12	0.07	0.05
Total unemployment		0.03	0.06

Source: Labour Market Board.

The variance in relative official unemployment has lessened over time, an indication of increasing geographic mobility on the labour market. On the other hand, if participants in labour-market programmes are included in the measure of unemployment, the variance has increased over time, suggesting that mobility has lessened.[29] Thus, the official unemployment rate became more evenly distributed during 1996–2001 as a result of educational and employment programmes.

The tendency of the regular-employment ratio in different parts of the country also suggests that geographic mobility has diminished. In 2001, the regular-employment ratio varied between 67.9 percent in the county of North Bothnia and 78.9 percent in the county of Jönköping. The relative employment ratio is the employment ratio in a particular county in relation to that of the country as a whole. A higher variance stands for greater disparity between counties in the employment ratio. As shown in Table 22, the variance in the regular-employment ratio has increased over time, an indication of diminished geographic mobility.

Table 22 Variance of the Relative Employment Ratio

	1990–95	1996–01
Regular-employment ratio	0.0012	0.0016

Note: The regular-employment ratio measures the number of persons employed, excluding participants in employment programmes, as a proportion of the population. County data on labour-market programmes are available only from 1992 on.
Source: Labour Market Board.

In summary, the Beveridge curve appears to have shifted outward, reflecting an increase in the equilibrium unemployment rate from about 3 percent to about 4 percent in the early 1990s. The reason for this increase is that matching between vacancies and the unemployed had become less effective. The regional variance in the official unemployment rate decreased, whereas the variances in total unemployment and in the regular-employment ratio increased. The evidence also suggests that low geographic mobility may explain some of the increase in the equilibrium unemployment rate.

[29] Data on labour-market programmes broken down by county are available only from 1992 on. The findings should therefore be considered with caution.

6 Wage Formation Appropriate for the National Economy, 2004–2006

Labour Costs

The most probable development, shown in the main scenario in Section 4, is that labour costs will increase by an annual average of 3.7 percent during 2004–2006. It is important to emphasize that this rate of increase, in addition to negotiated settlements and wage drift, also includes changes in legislated and negotiated employer contributions, reductions in work hours and changes in costs of sick leave and rehabilitation.

This section is devoted to the question whether there are national economic reasons in favour of a different rate of increase in labour costs. The conclusion is that an economically suitable rate of increase in labour costs would be 3.2 percent per year in 2004-2006. This rate is somewhat less than the 3.5 percent judged to be appropriate in last year's report. One reason for the difference is that this year's report is based on a more thorough analysis and on the continued weakness of the economy.

In the next few years, resource utilization will remain low, and unemployment relatively high. A rate of wage increases somewhat less than the one considered most probable would help speed recovery in employment. Smaller wage increases would mean that firms would demand more labour. Moreover, inflationary pressure would diminish, creating a margin for a lower repo rate. Lower interest rates would fuel domestic demand and weaken the exchange rate, thus stimulating demand for exports. These indirect effects would further increase the demand for labour. A contrary, but weaker, effect is that a slower rise in wages would dampen consumption. All factors considered, it is estimated that an annual rate of wage increases 0.5 percentage point less than the most probable one in 2004–2006 would lead to faster growth in employment, restoring balance on the labour market as early as 2006. A rate of wage increases somewhat below the most probable one would benefit the national economy by more rapidly reducing the unemployment rate toward its equilibrium level, which is currently considered to be 4 percent.

According to the analysis in Section 5, better-functioning wage formation would lead to a lower equilibrium unemployment rate. If the equilibrium unemployment rate were thus brought down to 3.1 percent instead of the 4.1 percent in the main scenario in 2010, the gains for the national economy could be substantial. These would benefit wage earners as a group in the form of lower unemployment, higher total earned income and lower taxes or improved public services. In this scenario, better-functioning wage formation entails an increase in wage

costs averaging 0.5 percentage point less in 2004-2006 than the rate considered most probable.

A reduction in ill health would bring significant economic gains benefiting wage earners as a group in the form of better health, higher earned income, and lower taxes or improved public services; this subject is analyzed more closely in Section 5. From the standpoint of the national economy, it is urgent that other action also be taken to increase the labour supply, such as improving the integration of persons born abroad so that their employment ratio approaches the average for the population as a whole. Another example would be measures to raise the employment ratio for women to the level for men. A third type of action would be steps to help young persons to enter the labour market sooner, for example, by more often completing secondary-school and university education within the normal time.

If the Government and Parliament implement structural reforms that increase the labour supply, the labour-market parties and their mediators can show restraint in wage increases that will facilitate the adjustment of employment to the higher supply. If effective action to increase the labour supply is taken or planned, it is essential that the labour-market parties and their mediators help by reaching more moderate settlements.

In addition, developments may of course differ from the conditions in the main scenario in respect to factors impacting the labour market such as the international economy, productivity and the exchange rate of the krona against the dollar. Both Swedish and international experience shows that it is much more costly to the national economy to correct imbalance when labour costs are excessive than when they are too low, for in the first case there is often a prolonged process of adjustment entailing higher unemployment. Thus, a high degree of uncertainty is another reason for greater restraint in wage formation.

In summary, it would be good for the national economy if the rate of increase in labour costs were less than most probable one of 3.7 percent in view of:

- the benefits of more rapid cyclical improvement in employment,
- the substantial uncertainty surrounding factors like the economic outlook and the development of exchange rates,
- the possibility of implementing structural reforms that increase the labour supply,
- and the possibility of reducing the equilibrium unemployment rate through wage formation where greater consideration is given at all levels to the national economy.

In these circumstances, and in light of what can be considered reasonably realistic, the NIER finds that an economically appropriate rate of hourly wage increases in 2004-2006 would be 0.5 percentage point less than the rate regarded as most probable; that is, the desirable rate would be 3.2 percent per year. By com-

parison, the increase in business-sector labour costs *per employee* in the euro zone is expected to average 3.1 percent in 2004–2006. If the increase in labour costs is dampened, resulting in lower equilibrium unemployment, GDP can be increased by 0.2 percentage point per year in 2004-2010, while employment rises and the unemployment rate is pushed down to 3 percent. The effects on general-government finances would also be beneficial. In time, there would be a margin of SEK 12 billion that could be used for unfinanced tax cuts or reforms requiring additional expenditure.

Hourly Earnings and Settlements

The judgment as to an appropriate rate of increase in labour costs refers to hourly labour costs as defined in the National Accounts. From the analysis in Section 4 above, the most probably rate of increase in labour costs, averaging 3.7 percent per year in 2004–2006, corresponds to an annual increase of 3.4 percent in hourly earnings according to the Short Term Wages and Salaries Statistics (WS). This increase is divided between negotiated wage settlements of 2.1 percent and a remaining 1.3 percent in wage drift.

Table 23 Labour Costs and Earnings, 2004–2006
Average annual percentage change

	Probable	Appropriate
Labour cost per hour, NA	3.7	3.2
Hourly earnings, WS	3.4	2.9
of which: Negotiated settlements	2.1	1.7
Wage drift	1.3	1.2

Source: NIER.

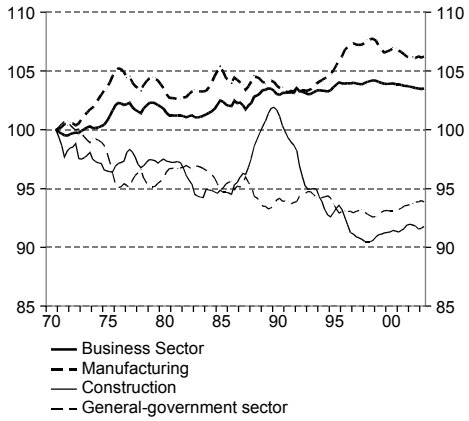
The economically appropriate rate of increase in labour costs, averaging 3.2 percent per year in 2004–2006, corresponds to an annual increase of 2.9 percent in hourly earnings according to the Short Term Wages and Salaries Statistics. It should be noted that the parties and their mediators are in a better position to limit the rate of wage increases at the central level than in local or individual negotiations. For this reason, among others, the appropriate rate of increase for 2004-2006 can be separated into negotiated increases averaging 1.7 percent and a remaining 1.2 percent consisting of wage drift. Compared to the 2001 negotiations, the increases provided by negotiated settlements have thus been adjusted downward by an average of 0.7 percentage point.

7 Wage Structure and the National Economy

The analysis presented above primarily concerns the development of, and the explanation for, what determines the average wage in the business sector. Relatively little attention has been given to *wage structure*, that is, to wage differences between places of work, industries, genders, regions and occupational groups, or to the economic implications of such differences. As shown in Diagram 88, the wage structure changes over time.

In this section, the interaction between wage structure and the development of the economy is analyzed.[30] First, the analysis concerns how the wage structure can affect the development of the economy. Thereafter, the changes in wage structure, and the driving forces behind these changes, are studied.

Diagram 88 Hourly Earnings
Index 1970=100



Sources: National Mediation Office and NIER.

Wage Structure and the Development of the Economy

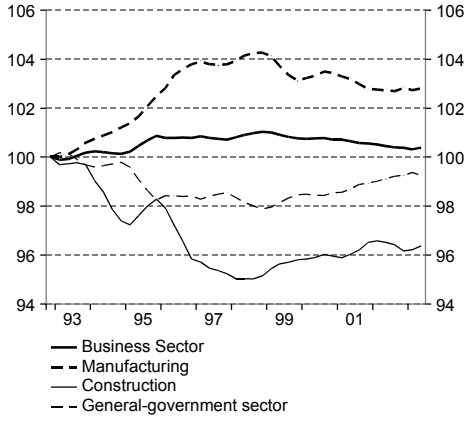
Wage structure can affect the development of the economy in several ways. A high degree of flexibility in wages that permits relative wages to adjust can speed up a process of change in the economy and promote a low rate of unemployment. The wage structure and changes in it can also influence the development of the economy through effects on factors like human-capital formation and structural transformation.

Faster Adjustment with Flexible Relative Wages

At a given overall rate of wage increases, changes in relative wages within and between different places of work, industries, genders, regions and occupational categories can contribute to more efficient use of resources and lower unemployment.

The wage structure affects an individual's choice of occupation and education, and may also influence where the individual decides to live. Flexible relative wages are especially important when major structural transformation is about to take place; without flexible wages, unemployment and shortages can arise at the same time. Diagram 89 shows that wages in the construction industry were increasing less rapidly than in manufacturing for much of the 1990s. One central explanation is the low rate of construction activity in the early 1990s in combination with the

Diagram 89 Hourly Earnings
Index 1992 quarter 4 =100



Sources: National Mediation Office and NIER.

[30] A more thorough analysis soon to be presented in the NIER's *Special Studies* series is entitled "Svenska relativlöner: Utveckling och förklaringar"(Relative Wages in Sweden: Development and Explanations), by M. Apel, H. Braconier and T. Lindström. The study also provides a complete list of references to the articles on which this section is based.

strong growth in exports after 1992 that increased the demand for labour in manufacturing.

Wage Structure and Equilibrium Unemployment

A wage structure that leads to an extremely uneven distribution of unemployment among different industries, regions or occupational categories means that there will be a more shortages entailing inflationary wage increases compared to a wage structure with a more even distribution of unemployment. Consequently, the former type of wage structure will result in a higher level of equilibrium unemployment than the latter.[31]

If wages are prevented from dropping below a certain level, by legislation, for example, this can also affect unemployment. If the productivity of wage earners differs, they will receive different amounts of pay according to the difference in their marginal productivity, provided there is a high degree of competition. A legislated minimum wage can then create unemployment by keeping low-paid individuals from being hired. Similarly, excessive starting levels of pay can limit the opportunities for the young, immigrants and other categories to enter the labour market. However, the labour market, like product markets, features a high degree of so-called market imperfections (see the box captioned "Equilibrium Unemployment"). Under such conditions, a reduction in wage disparities will not necessarily lead to a higher equilibrium unemployment rate, even though low-paid jobs are eliminated.[32] If the unemployed intensify their search for work because of a higher average wage, it is even possible theoretically that the equilibrium unemployment rate will decrease instead. With high levels of unemployment compensation, though, the unemployed will be less inclined to try hard to find work; in such a situation the equilibrium unemployment rate will therefore tend to rise as a consequence of less wage dispersion. One conclusion is that very limited differences in wages, in combination with high levels of unemployment compensation, can lead to a higher equilibrium unemployment rate.

Flexible Relative Wages Speed Structural Change

According to the so-called Rehn-Meidner model, co-ordinated wage negotiations and central agreements are a method of promoting structural transformation and thus also high growth in productivity. Through central agreements and a so-called solidarity wage policy, wage levels for labour at low-productivity firms will be about the same as at high-productivity firms. This

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[31] In the model described in the box captioned "Equilibrium Unemployment," the difference is reflected in a shift in the Beveridge curve.

[32] Acemoglu, D., "Good Jobs versus Bad Jobs", *Journal of Labor Economics*, 19, 2001, pp. 1–22.

situation encourages structural change in which low-productivity firms are forced out of business, while abundant profits encourage investment at high-productivity firms. Through a well-functioning labour-market policy, wage earners who have lost their jobs are channelled into new, high-productivity employment. Thus, it is possible to maintain high growth in productivity and low unemployment at the same time.

An alternate way to facilitate mobility on the labour market and thus to promote structural transformation is to focus on the role of wages as a "carrot" that encourages firms, industries and regions with higher productivity to attract personnel by offering relatively higher pay. The level of compensation appears to be one of the main reasons why people change jobs.

Economists disagree about the effects of a solidarity wage policy on structural change in the Swedish economy. There is more agreement that rapid structural transformation without high unemployment requires a well-functioning labour market. At the same time, it is difficult to see how extensive structural changes that give rise to growing geographic disparities can be countered by a solidarity wage policy. If the demand for labour is increasing more strongly in some regions than in others, regional imbalance will arise on the labour market. For the unemployed in the more vulnerable regions, however, the incentives to move are relatively weak. The benefit in the form of a higher living standard is minor because of the systems of taxation and transfer payments in combination with the fact that living costs are often higher in growing regions. Nor is there much incentive for firms to relocate production to regions with a weaker labour market since regional differences in labour costs are relatively minor.

Another consideration is that currently there are more severe shortages of labour in the general-government sector than in the business sector, possibly because of a prolonged trend of weaker pay increases in the general-government sector (see Diagram 88). To meet the staff requirements of the general-government sector in coming years, when relatively large numbers of employees will be retiring, it may therefore be justified from the standpoint of the national economy to increase wages and salaries in the general-government sector somewhat in relation to the business sector, as has in fact occurred in the last four years. Such a shift in relative wages would also contribute to a more equable distribution of pay between genders since women are strongly overrepresented in the general-government sector.

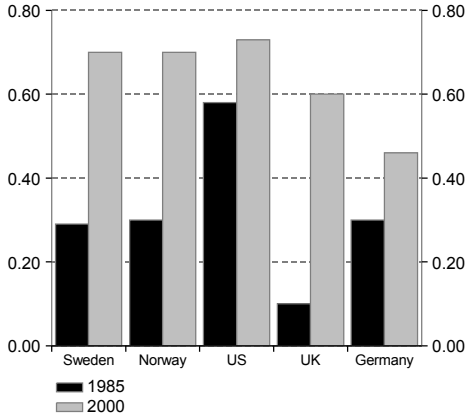
All factors considered, flexibility in relative wages between regions and sectors, for example, appears to be important for ensuring economically appropriate mobility, at least to the extent that labour-market policy does not provide sufficiently strong incentives. It is important, though, that this flexibility be achieved without acceleration in the average rate of wage increases.

Incentives for Education and Learning

There is a significant relationship between relative wages and welfare in the long run because relative wages to some extent influence the choices by individuals in regard to education. A well-educated population contributes to high GDP, at least if the education is provided effectively and without unnecessarily long periods of study. For the long-term development of the economy, it is therefore desirable that education yield a return sufficient to ensure a high general level of education.

According to the so-called theory of human capital, work experience and education are important in setting wages and salaries since the productive skills of an employee with a longer period of education can be assumed to be higher. Consequently, an employer will be prepared to offer more pay for more years of work experience and education. A number of international and Swedish studies also show that differences in the number of years of education are a major source of differences in pay before taxes. At the same time, education-based differences in wages and salaries appear to be relatively limited in Sweden by international standards. Differences in pay, however, are not the only determinant of the degree to which an individual pursues studies. The personal financial return on education is also affected by design of the systems of subsidies and taxes. Among other things, the financing of studies makes a difference; a high level of subsidization, as in Sweden, will increase the personal financial return on education. The availability of places in education and the level of unemployment, perhaps especially for young persons, can also influence decisions in regard to studies.

Diagram 90 Proportion in Post Secondary Education



Sources: Barro and Lee (1993), UNESCO.

The average number of years of education is high in Sweden and, moreover, is currently increasing rather rapidly. The percentage going on to post-secondary education rose less than in many comparable countries during the 1980s, but the rate increased again in the 1990s (Diagram 90).

A difficult, but central, problem in the theory of human capital is that of comparing quality. In order to obtain an accurate picture of the value of human capital, the quality and focus of education must also be evaluated. International comparisons suggest that the knowledge of Swedish students is at the same level as that of students in comparable countries. At the same time, Swedish university education, more than education in the US, for example, appears to emphasize the natural sciences – a factor often regarded as especially important for growth.

Although wage differences, which depend to a relatively limited degree on education, do not appear to have led to markedly less favourable development of human capital in Sweden than in other countries, the effects may be different in the future, particularly in a long-term perspective. The progress of integration on the European labour market, despite all obstacles, appears above all to have entailed high and increasing mobility for well-educated personnel. Since the cost of education to the individual

is relatively low in Sweden, while differences in pay are relatively limited, there is a risk that individuals will first obtain their education in Sweden, benefiting from the relatively generous educational subsidies there, and then choose to work in countries with larger education-based differences in pay. As an example of such a "brain drain," the accumulated net emigration of persons with university-level education in business, economics and engineering between 1987 and 1999 was 4.5 to 5 percent of the total number with this educational background.[33]

The Swedish Wage Structure

Wage Dispersion Limited but Increasing

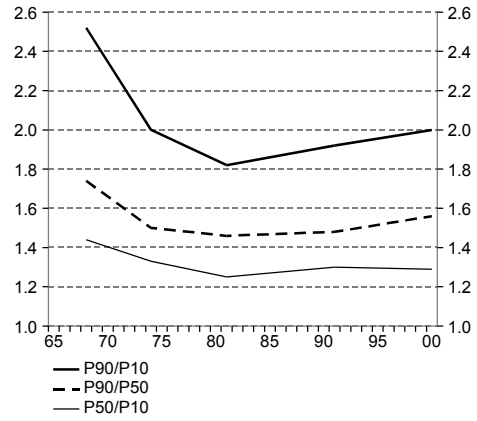
Diagram 91 illustrates the development of wage dispersion in Sweden between 1968 and 2000. Wage earners are divided into 100 so-called percentiles according to hourly earnings.[34] The first percentile consists of the one hundredth of wage earners with the lowest hourly earnings, etc. The ratio between the 90th and the 10th percentiles (P90/P10) is a measure of the relative wages of high-income earners and low-income earners. Diagram 92 shows, for another set of data, the development of the corresponding ratios in terms of monthly earnings during the period 1992–2001.

The picture that emerges is rather clear. Wage dispersion decreased markedly from the late 1960s to around the mid-1980s. The hourly pay of a high-income earner in 1968 was roughly 2.5 percent that of a low-income earner. By 1981 this ratio had dropped to around 1.8. The decrease in wage dispersion in Sweden during the 1960s and 1970s appears sizable by international standards. Since the mid-1980s, wage disparities increased once again, and the ratio between the 90th and 10th percentiles is now back at about where it was in 1974, i.e. approximately 2 times hourly earnings.

The diagram also shows that wage disparities in the 1990s increased the most in the upper half of the distribution of earnings. Thus, it is mainly the disparity between high-income earners and middle-income earners (P90/P50) that has increased, whereas the disparity between middle-income earners and low-income earners (P50/P10) has not changed very much.

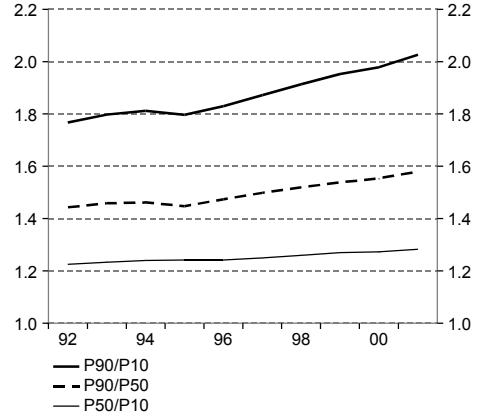
The pattern of first decreasing, then increasing wage disparities is found in many countries, but there are also exceptions like Finland and France (see Diagram 93). The same applies to the tendency for greater disparities in earnings to be concentrated to the upper half of the earnings distribution. However, wage dis-

Diagram 91 Wage Dispersion, 1968–2000
Ratio



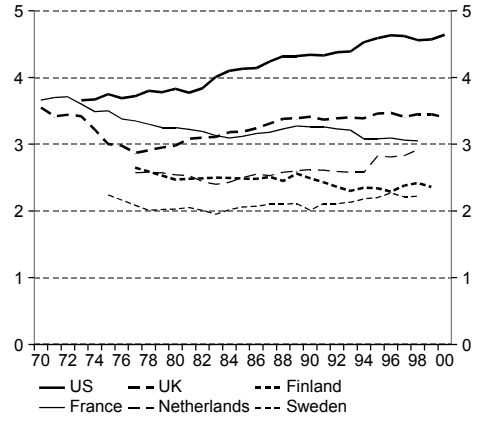
Sources: Swedish Level-of-Living Surveys (LNU), Statistics Sweden.

Diagram 92 Wage Dispersion, 1992–2001
Ratio



Source: Statistics Sweden.

Diagram 93 Wage Dispersion in OECD Countries, 1970–2000
P90/P10

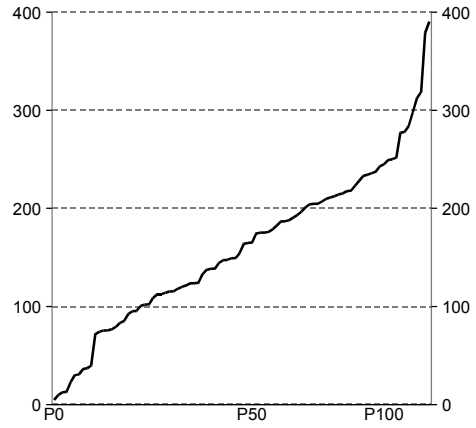


Source: OECD.

[33] Pedersen, P., M. Roed and L. Schröder (2002), "Emigration in the Nordic Welfare States" in T. Andersen and P. Molander (red.), *Alternatives for Welfare Policy*, Cambridge University Press, Cambridge.

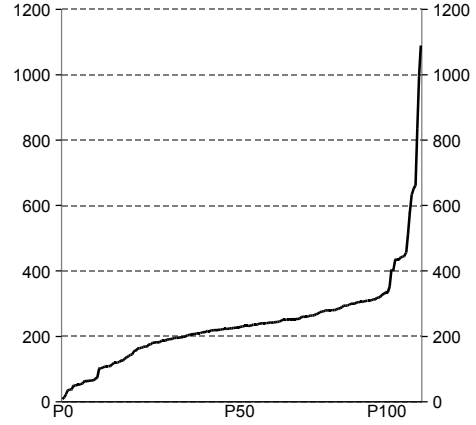
[34] The statistics presented here are based on earnings before taxes.

Diagram 94 Annual Income, Women, 1998
Thousands of SEK



Source: Statistics Sweden and NIER.

Diagram 95 Annual Income, Men, 1998
Thousands of SEK



Source: Statistics Sweden and NIER.

Diagram 96 Development of Gini Coefficient

Note: Gini coefficient calculated for both part-time and full-time employees in the business sector.
Sources: Statistics Sweden and NIER.

persion began to increase at different times in different countries, and both the increase and the decrease vary in amount. In the US, for example, wage disparities had begun to increase by the end of the 1970s. As for the size of the increase in wage disparities, the UK and the US stand out; in those countries, differences in earnings increased substantially, particularly in the 1980s.

Even after the increase in Swedish wage disparities, Sweden remains among the countries with the smallest dispersion of wages. As is apparent, the difference between Sweden and the US is substantial, but the differences are also large when Sweden is compared, for example, to France and the Netherlands.

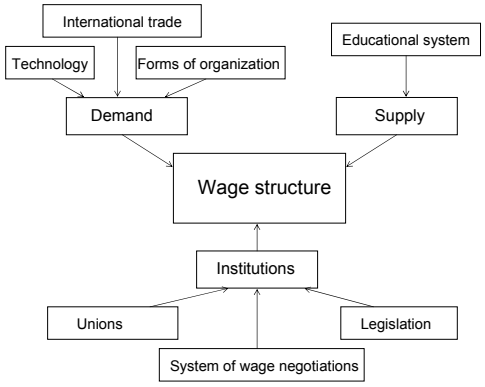
Wage Dispersion for Women and Men

There are many ways of describing the distribution of income. Comparisons between selected percentiles provide simple but rather incomplete measures of dispersion. In Diagrams 94 and 95, women and men are assorted in order of rising incomes, with both hourly earnings and work hours considered. The average and median incomes coincide for women; thus, a woman with an average income (about SEK 160 000) will also be at the midpoint when all women are ranked by income. For men the average income (about SEK 240 000) is higher than the median income (about SEK 230 000), the reason being that a smaller group of men have extremely high incomes. The difference between high- and middle-income earners (P90/P50) is thus greater for men than for women.

Another commonly used measure of income dispersion is the so-called gini coefficient. If all persons have the same income, the gini coefficient is 0. If one individual has all the income, the coefficient is 1. Measured in this way, income dispersion, by contrast, is less for men than for women (see Diagram 96). The explanation is that the gini coefficient considers the entire income distribution and that women work part-time to a greater extent than men. As shown in Diagram 95, a very large portion of men have incomes between SEK 150 000 and 300 000, tending to result in a low gini coefficient. For women, there is no comparable degree of income equality. Diagram 96 shows also that income dispersion as measured by the gini coefficient increased from 1985 to 1998 for women and for men, whereas the gini coefficient for all persons together was virtually unchanged. Measured in this way, income dispersion has thus not increased. The gini coefficient in Sweden is low by international standards.

Global Driving Forces Behind Increasing Wage Dispersion

Figure 8



The international trend toward increased wage dispersion, and particularly the trend in the US, has given rise to considerable research on possible underlying causes. Various explanations have been advanced. Probably the increase in wage dispersion is due to several different factors.

In Figure 8, the principal explanations according to research are presented together and are classified into those focused on market forces and those emphasizing institutional factors. The former can then be separated into theories based on changes in the demand for various kinds of labour, and in the supply, respectively. These different explanations are discussed below.

One theory that many regard as the most probable explanation for the increased wage dispersion in many industrialized countries identifies technological development as the central driving force. The idea is that technological development, primarily in information technology, has changed the production apparatus in industrial countries in a way that has primarily increased the demand for skilled labour (so-called" skill-biased technical change"). For example, computerization has facilitated the automation of routine work that was previously performed manually; at the same time, this change has made more profitable the creative "tailoring" of products to customer needs and the development of new products.[35] This increase in the relative demand for skilled compared to unskilled labour has increased the relative wages of the former and thus disparities in wages.

Although many analysts hold that technological development has played a central role in increasing wage dispersion, this hypothesis is not undisputed. One objection is that the increase in wage dispersion and the technological development in the IT area have not occurred at the same time.

A competing explanation, which also focuses on changes in the demand for various kinds of labour, emphasizes the importance of increased international trade. In general terms, it is often maintained that growing globalization frequently entails "relocation" of simpler production out of developed countries, a trend that tends to decrease the relative wages of unskilled labour. More formally, the point of departure is that industrialized countries have a high proportion of skilled labour whereas developing countries have a high proportion of unskilled labour. According to the so-called Heckscher-Ohlin theorem, increased international trade will lead to growing specialization by countries in products manufactured with local production factors that are relatively abundant. In other words, industrialized countries will concentrate on more advanced products made by skilled labour, whereas developing countries will specialize in simpler

[35] Katz, L.F. and D.H. Autor (1999), "Changes in the Wage Structure and Earnings Inequality" in O. Ashenfelter and D. Card, *Handbook of Labor Economics*, Vol 3A, Elsevier Science, Noth-Holland.

products made by unskilled labour. Increased trade between industrialized and developing countries tends to reduce differences in the relative prices of advanced and simpler products. For the industrialized countries, this tendency leads to rising relative prices of advanced products, meaning in turn that the relative wages of skilled labour compared to unskilled labour will increase in the industrialized countries (according to the so-called Stolper-Samuelson theorem). In this way, the increase in world trade will accentuate wage dispersion in Sweden and other industrialized countries.

This explanation of increased wage dispersion has been questioned since numerous empirical studies have provided little support for the theory. Methodological and data problems, in combination with conflicting results, make it difficult to draw any firm conclusions about the degree to which international trade has contributed to higher wage dispersion.

Another explanation is based on the fact that forms of organization have undergone change.[36] Previously, production was based to a high degree on a system where workers performed certain well-defined tasks (so-called ”Tayloristic” organizations). In recent decades, there has been a movement toward organizations characterized, for example, by a greater role for ”teamwork” and job rotation, fewer decision levels, decentralized responsibility and a growing need for labour to engage in continuous learning (so-called ”holistic” organizations).

When such organizations become increasingly common, the demand for skilled labour increases since such persons are probably better qualified for these kinds of more complex tasks.

This theory can be seen as a complement to the explanations discussed above. Technological progress, for example through advances in the IT area, may have driven developments toward “holistic” forms of organization. The increase in international trade may have made it possible for firms in industrialized countries to shift to products and production processes that require “holistic” forms of organization, whereas more routine production is relocated to other countries.

Domestic Driving Forces

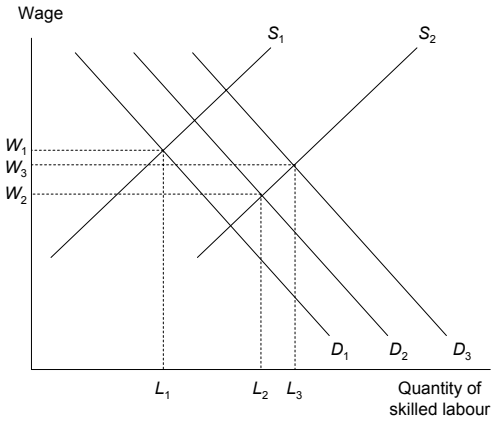
The change in relative wages is dependent on the development of both the demand for, and the supply of, different types of labour. Slower growth in the supply of skilled labour than in the demand for it appears to explain much of the increase in wage dispersion in the 1980s in the US, the UK and Japan.

For Sweden the development of supply in relation to demand may help to explain the decrease in wage disparities from the 1960s to around the mid-1980s and the increase thereafter. This

[36] Lindbeck, A. and D.J. Snower (2000), ”Multitask Learning and the Reorganization of Work: From Tayloristic to Holistic Organization”, *Journal of Labor Economics* 18, 353–376.

is illustrated in a simple diagram showing demand and supply for skilled labour (see Figure 9).[37] Assume that the market starting in the late 1960s was in equilibrium with wages of W1 and employment of L1 for skilled labour. The high wages for skilled labour, in combination with an increased supply of places in education, induced many to seek higher-level education. The number of persons with higher-level education increased in the 1970s and early 1980s, resulting in a shift in the supply curve from S1 to S2. At the same time, as emphasized above, the demand for skilled labour also increased, shifting the demand curve from D1 to D2. The new equilibrium points are W2 and L2; in other words, the wages of skilled personnel are relatively lower. In the mid-1980s, the proportion of the labour force with at least three years of university-level education stagnated, probably in reaction to the gradual decrease in relative wages for highly educated personnel in the 1970s. The demand, however, continued to increase to D3; this trend, in combination with an unchanged supply, resulted in a wage of W3, with employment of highly educated personnel increasing to L3. Thus, wage dispersion could thus be said to have increased in the past two decades because during this period the supply of skilled labour did not keep pace with the demand.[38]

Figure 9 Supply and Demand, Skilled Labour



The Role of Institutions

The wage structure is affected not only by market forces, but also by institutional factors, not least in Sweden. Whereas the changes, particularly on the demand side, are largely the same in the industrialized countries, the institutional explanations for changes in wage structure are often country-specific. Katz and Autor (1999) maintain that differences and changes in institutional relationships on the labour market probably go far to explain international differences in the development of the wage structure in the 1980s and 1990s. As for the US, the fact that the federal minimum wage has not risen at the same rate as the average wage is considered by many analysts to be important in explaining the increase in wage dispersion in the 1980s. In Sweden, with its highly unionized labour market and relatively comprehensive co-ordination of wage negotiations, factors like changes in union ambitions and changes in the system of wage negotiations have probably been significant.

[37] Björklund, A., P.-A. Edin, B. Holmlund and E. Wadensjö (2000), Arbetsmarknaden (the Labour Market), SNS Förlag.

[38] An interesting observation in this connection is that the proportion of persons in the Swedish labour force who consider themselves overqualified for their work has been continuously increasing. This suggests that even though the demand for skilled labour is normally assumed to increase more rapidly than the supply, it appears that a portion of the country's skilled labour is utilized suboptimally.

The development of the Swedish process of wage formation from the 1950s onward can be separated into three phases.[39] In the first phase, roughly from the mid-1950s to 1970, a solidarity wage policy was followed in an effort to reduce income disparities between wage earners with the same qualifications but in different sectors of production. Wage negotiations, which were conducted at three levels – central, industry and firm – were guided by the principle of "equal pay for equal work". During this period, wage disparities between different industries were considerably reduced.

In the second phase, roughly from 1970 to the mid-1980s – the focus shifted toward more general equalization of wages. During this period, there was a relatively substantial reduction of wage differences within industries and at places of work, and also between occupational groups and levels of qualification.

The third phase began with the end of centralized wage formation in 1983, when the Swedish Metal Workers' Union reached a separate agreement with the Swedish Metal Trades Employers' Association. This step was taken at roughly the same time as wage dispersion began to increase. Since then, wage negotiations have normally been conducted at only the industry and firm levels, a factor that may partly explain, for example, the relatively greater impact of industry and regional differences on wage formation.

[39] Hibbs, D.A. Jr and H. Locking (2000), "Wage Dispersion and Productive Efficiency: Evidence for Sweden", *Journal of Labor Economics* 18, 755–782.