

The Long-Term Survey 2008

of the Swedish Economy

Prepared by the Ministry of Finance

Stockholm 2008



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Foreword

The Long-Term Survey 2008 has been prepared by the Division for Structural Issues in the Ministry of Finance. In addition a number of special studies related to the main report have been published as appendices.

The work on the main report of the Long-Term Survey 2008 has been carried out under the leadership of Deputy Director Lena Unemo. The group that has written the main report includes Senior Adviser Kerstin Krafft, Special Advisers Martin Hill and Philip Löf, and Desk Officers Albin Kainelainen and Erik Filipsson.

Senior adviser Thomas Pettersson, Deputy Director Annika Århammar, and Desk Officers Kristian Persson, André Lundvall and Philip Fridborn have also participated in discussions concerning the design and contents of the main report. They have also contributed with input to the main report. Trainees Susanna von Post and Karolina Stadin have likewise contributed input.

Finalisation of the main report was done by Administrative Officer Marit Dozzi, who, together with Assistant Ingrid Pousette, has also been responsible for administrative work.

In the course of the work, seminars were arranged with individual experts in the areas analysed in the Survey.

I wish to express my sincere appreciation to all those who have contributed to the Long-Term Survey 2008.

Stockholm, November 2008

Lotta Medelius-Bredhe
Acting Head of Division

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Summary

The aim of the Long-Term Survey is to provide a basis for economic policy and initiate a debate about economic policy formulation. It should also provide an overall picture of economic developments in the long term. The Survey is prepared by officials at the Ministry of Finance and the political leadership of the Ministry has not taken a position on the contents. The Long-Term Survey 2008 consists of a main report and eight separate appendices.

The main conclusions in the Long-Term Survey 2008 are that in order to create good conditions for growth, economic policy should focus on the following:

- *Encouraging a longer working life.* Efforts should focus on making the educational system more effective and promoting a later exit age from the labour market, in addition to the work already being conducted to reduce exclusion.
- *Working for good adaptability in the economy and more competition.* The policy should take a broad approach to improve adaptability. Competition, not least international competition, should be fostered. This is particularly important in those parts of the service sector where competition is currently limited.
- *Exploring possible arrangements for more private financing of welfare services.* An increased demand for better quality in the welfare services cannot be met within the framework of the existing system. A broad-based inquiry should be appointed to submit proposals for a long-term, stable system for financing welfare services.
- *Working for an international climate policy based on cost-effective policy instruments.* Making use of the opportunities that exist within the framework of the Kyoto Protocol with its flexible mechanisms and working at the international level for an extension of the system.

Trends affecting growth

The central theme of the Long-Term Survey 2008 is the possibilities for promoting healthy growth and a good standard of living. There are a number of trends that can be expected to characterise growth over the next 15–20 years. In particular, the Survey thinks that *the changes in the composition of the population* with an ageing population, *changes in demand patterns* in the direction of greater service content and *continued internationalisation* will influence economic development and policy formulation in the years ahead. To differing extents, these trends have an impact on various parts of the report.

The Survey identifies a number of core areas on which policy should focus in order to better equip Sweden to meet the future. The following need to be achieved:

- A plentiful labour supply
- Strong productivity growth
- A good ability to adapt and change
- A cost-effective climate policy
- Stable welfare systems.

Long-term economic development

Economic development up to 2030 is described in a base scenario, which in principle is based on the continuation of the development patterns of recent decades. The aim of the estimates in the Long-Term Survey 2008 is not to try to forecast the development of the Swedish economy in the long term but rather to illustrate one possible path in a structured way. The base scenario serves as a starting point for analysing and discussing the effects of policy and external changes.

The basic factors for growth to take place are labour supply and productivity. The Survey's starting point for assessing labour supply development is Statistic Sweden's latest population forecast, according to which the number of people of working age increases weakly until 2030. In the base scenario, there is also a weak increase in the number of hours worked, due in part to the assumption that in principle, employment patterns do not change. At the same time the labour force becomes increasingly well educated, which means

an increase in the share of hours worked by people with a postsecondary education.

The scenario also assumes that productivity growth in the business sector continues to be strong even though it is somewhat lower than the average rate of growth between 1980 and 2005 and considerably lower than the relatively rapid growth since 1990. In addition, climate policy is assumed to be cost-effective.

The basis of the scenario is that tax rates are unchanged in relation to the respective tax base, which is sufficient to finance an unchanged standard in public sector activities.

The main results of the estimates are:

- Gross domestic product (GDP) grows an average of 2.2 per cent a year between 2005 and 2030. This is the same as the average rate of growth between 1980 and 2005.
- The structural change calculated in the base scenario, where the importance of the service sector in particular increases, has a dampening effect on total productivity growth in the business sector.
- Household private consumption expenditure grows more rapidly than GDP, at 3.1 per cent annually. Public consumption grows weakly during this period, at not quite 0.7 per cent a year.
- Public finances are sustainable in the long term under the base scenario. One prerequisite for this to be realised is that the estimate's assumption of unchanged coverage and quality in public sector activities is fulfilled.

Higher labour supply

Favourable developments in the labour supply create the conditions for economic growth. Development of the labour supply is also key for financing the public welfare systems. In the Survey, the discussion on the number of hours worked in the economy centres on how labour market entry and exit ages have developed and how they can be influenced. Relatively small changes in the entry age and the exit age would have a substantial impact on the labour supply.

Labour market entry today takes place late. This is largely due to more people getting a longer education, but it is also due to the

long time it takes to go through the education system and to more young people's postponement of their university studies.

The Survey draws the following conclusions on the level of education among young people and how student throughput in the education system can be improved:

- There are two divergent trends in young people's level of education. The percentage of young people with a higher education is growing but at the same time the percentage of young people with less than an upper secondary education is persistently high. More than a quarter of the nation's twenty year olds have not completed upper secondary school and just over a third lack basic entrance requirements for university studies.
- Information needs to be improved on such matters as average income and risk of unemployment after various education alternatives so that people choosing an education can make a well considered decision.
- Greater economic incentives for more rapid throughput to getting a degree or diploma should be considered, for example, via fees for university studies and premiums in the study support system. Currently just over a half of Swedish university entrants get their degree within seven years.

The number of hours worked in the economy can also increase by a later exit age from working life. Even though the exit age from the labour market has risen somewhat in recent years, average life expectancy has increased more than working life has, i.e. retirement time has increased. The new pension system may have a positive effect on the labour supply but it also includes an option to retire earlier if desired. The old-age pension system, at least for large groups, rewards staying in the labour force. However, the system gives certain groups weaker economic incentives to keep on working when they are older. This is the case for people with high incomes, as incomes over 7.5 base amounts do not give public pension rights even though pension contributions are deducted. This is also the case for people with low incomes as the guarantee pension, often combined with the housing supplement for pensioners, does not create incentives to continue working.

The average exit age is still under 65 years and exit generally takes place via benefit systems other than the state old-age pension. It takes place foremost via supplementary pension schemes and via sickness and activity compensation.

The chapter in which this is discussed concludes that there is no simple solution for bringing about a later exit age. Some conclusions are:

- The starting time for taking the old age pension varies increasingly. More people are taking the state old age pension later, but there are also more who are taking it earlier. It may be a sign that the norm of a pension at age 65 is beginning to loosen.
- A later exit age would require tightening the different available exit options for leaving working life.
- Consideration needs to be given to how the age limits in the old age pension system can be tailored to the change in life expectancy. This also applies to private and collective pension savings, which often have a substantially lower age limit for retirement than the state old age pension system.

Strong productivity growth

There has been strong productivity growth in the Swedish business sector since the beginning of the 1990s, which an international comparison also shows. The recent slowdown in productivity does not affect this assessment. The increase in total factor productivity explains a substantial part of the productivity growth in the economy during this period. Total factor productivity can be described as the contribution from technological developments in a broad sense. The contribution of total factor productivity from telecommunications products in particular has been substantial in the latter part of the 1990s.

It is difficult to estimate precisely how much a particular factor affects productivity development. Structural changes – greater macroeconomic stability, training programmes, deregulation and developments in information technology – are important general factors that may help explain the strong productivity growth in recent decades.

Productivity differs considerably from sector to sector. The increased demand for services has led to a shift in employment to the service sector, a sector that has historically had a lower productivity growth than manufacturing. The service sector's growing role as an input factor in manufacturing is the main explanation for the growth of the service sector, although demand by the end-user has also increased somewhat. With a growing service sector, productivity development in the sector is clearly of increasing importance to the whole economy.

Competition, not least international competition, in the service sector is currently limited to a considerable extent by regulatory regimes in Sweden and other countries. To some extent, the low level of competition can be attributed to the nature of services; for example, some services have to be consumed in connection with production. But technological developments also make it possible to purchase a greater percentage of the production of services internationally.

In the chapter on productivity developments we come to the following conclusions:

- The impact of the increased service input in production on productivity developments in the economy as a whole is not obvious. A greater use of services in a sector may lead to productivity improvements.
- Measures promoting competition in the economy are urgent since they can contribute to better productivity development. Such measures are particularly urgent in the service sector, where competition is limited compared with competition in the production of goods.
- A policy aimed at promoting strong productivity growth must take a broad approach and have a general orientation. The policy should focus on creating good and equal conditions for enterprise and entrepreneurs in all sectors. This is important since productivity developments are decided by a number of different factors, which in addition, often interact.

Transformation and adaptability of the economy

From a long-term perspective, there has been a substantial transformation of the Swedish economy. As the internationalisa-

tion of the economy has spread, it is often asserted that the pace of change in the economy has increased. The concept of change has no clear-cut definition and it is relevant to study changes both *between* sectors and *within* sectors. There are therefore a number of different measures of change.

Both companies and workers must constantly adapt to new conditions. Workers adapt to change primarily by changing occupation or employer, while geographic mobility is less common. To increase individual adaptability, both geographic and occupational mobility need to increase.

The effects of change on the Swedish economy are difficult to foresee. The adjustment of production in recent decades has not meant a change in Sweden's areas of specialisation. Likewise in the future Sweden will still have the natural resources and the relatively well educated labour force on which current comparative advantages are based. But technological development now makes it more possible to separate stages in the production process and thus increases the possibilities of moving more parts of the production to other countries.

The chapter's main conclusions are that:

- The pace of change has no clear-cut definition and thus change can be measured in various ways. There are many indications that the pace of structural change has been higher, but has not been increasing, in the 1990s and 2000s compared with the 1980s.
- A well-functioning policy for improving adaptability in the economy must take a broad approach and include several policy areas: the labour market, housing, research, infrastructure, taxes, education, etc. There is no simple individual measure that improves adaptability in the economy.
- The policy neither can nor should aim at preventing job opportunities from disappearing but rather at creating conditions for new job opportunities.

Energy, climate and economic growth

A well-functioning energy supply is essential for the economy. According to estimates, total energy use is expected to increase sharply, both in Sweden and in other countries. There is a clear

connection between energy use and economic growth that has not changed appreciably in the last few decades. Energy intensity, i.e. energy use in relation to GDP, does indeed decline continuously, but any reversal of the trend in the form of a more rapid reduction has not been established.

Energy use in the form of burning fossil fuels gives rise to carbon dioxide and other emissions that are probably a strong contributing factor to climate change. The Survey looks at the connection between carbon dioxide emissions and economic growth. In the 1970s and 1980s, emissions of carbon dioxide in relation to GDP (carbon dioxide intensity) declined more rapidly in Sweden than in the rest of the world. This was due to a change in the composition of energy rather than to more efficient use of energy. Since 1990, carbon dioxide intensity has declined at approximately the same pace in Sweden as in OECD countries in general. The reduction has been largely the result of ongoing structural change in the economy.

In order to achieve national commitments on emission limitations in the most cost-effective manner possible, flexible mechanisms have been established under the Kyoto Protocol. When countries have the opportunity to participate in emissions trading or implement measures to reduce emissions in joint projects with other countries, emission reductions can be accomplished at a lower cost. The Survey's base scenario assumes that this policy will extend over an increasingly large part of the economy between now and 2030. If Sweden chooses to make full use of international emissions trading possibilities, the cost of reducing emissions affecting the environment to a level equivalent to about 70 per cent of 2005 emissions by 2030 would be relatively limited. In an alternative scenario, the Survey calculates the costs of a climate policy that instead focuses solely on national emissions, and limits the possibility of using flexible mechanisms. This policy results in substantially higher costs to achieve the same climate goals.

It is the Survey's opinion that climate policy should take the following into consideration:

- The climate policy should focus on international and flexible solutions. Poorly designed policy instruments result in substantial additional costs to achieve a given effect on the climate. This may in turn limit the possibilities of achieving the

target of an increase in global mean temperature of no more than two degrees.

- The relatively strong correlation between energy use and economic growth indicates that there are greater risks associated with a policy focusing on energy use instead of on the fundamental problem. Given that it is lower greenhouse gas emissions that are to be achieved, policy instruments should first concentrate on this very problem.
- By effectively limiting global emissions, funds can be freed up for other purposes such as research and development, other environmental problems and welfare initiatives.

Welfare systems renewal

The Survey analyses the requirements for financing the welfare systems based on the long-term scenarios for economic development. The proportion of elderly in the population will increase in the years ahead. Even if the elderly gradually enjoy better health, the greater proportion of elderly can be expected to lead to an increase in the need for health care and social services.

Public sector consumption growth is based on the assumptions that the quality of the welfare services, i.e. health care, social services and education, and tax rates remain unchanged. That being so, there is no scope for developing welfare services beyond today's level. An unchanged standard in public sector services will scarcely meet the public's expectations when the overall standard of living increases. The increase in the cost of welfare services has historically been greater than that warranted by population growth and composition.

It is also characteristic of welfare services that the cost of many of these often labour intensive activities can be expected to rise more than the cost of other goods and services. Technological developments in health care are also more likely to increase total costs than to yield lower costs as a result of higher productivity. As new treatments become available, demand for them will increase. Since the provision of welfare services is heavily subsidised, the price does not keep demand for these services in check.

The Survey presents the following message on the possibilities available for developing welfare services in the future:

- The problem of generations of varying size can be handled by the surplus in general government finances. But in the longer term, the welfare systems need to be reformed. The reasons are that life expectancy is increasing and the demand for welfare services rises when the standard of living increases.
- More private financing makes it possible to develop welfare services beyond the current level. A cross-party inquiry should be appointed with the remit to examine how greater private financing can be designed at the same time that the welfare systems contribute to security for everyone in society. Postponing measures in this area may end in undermining confidence in the public welfare systems and their legitimacy.
- A more precise formulation of what society and the individual should be responsible for in the area of welfare services makes it possible for market solutions to emerge under orderly conditions.

A policy for the future

The three trends –changes in the composition of the population, changes in demand patterns and continued internationalisation – affect future development in different respects. Changed conditions make it necessary to adjust the policy in order to make better use of new possibilities that arise and to meet new challenges.

The Long-Term Survey 2008 has found that it is particularly important to encourage a longer working life, work for good adaptability and for more competition in the economy, investigate forms for more private financing of welfare services and work for a global climate policy based on effective policy instruments.

1 Introduction: Trends Affecting Growth

The aim of the Long-Term Survey is to provide a basis for economic policy. A key task is to analyse the challenges and possibilities facing the Swedish economy in the long term and study what they mean for economic policy. The Survey also has the task of providing an overall picture of economic developments in the long term, a picture presented in the form of scenarios for the economy as a whole. In addition, the Survey is to contribute to the economic policy debate.

The Long-Term Survey is published by the Ministry of Finance at intervals of approximately four years.

The Long-Term Survey 2008 is the twentieth in the series and is published sixty years after the first Long-Term Survey appeared in 1948.¹

The work is conducted by officials in the Division for Structural Policy of the Ministry of Finance, who also prepare the main report. The Government has not established any terms of reference for the Long-Term Survey, unlike other official inquiries. Those involved in its preparation choose the subjects and methods judged best to correspond to its aim. The political leadership of the Ministry has not taken a position on the contents.

In addition to this main report, the Survey includes eight appendices published as separate reports.²

¹ The first Survey was written at the request of the OEEC (now the OECD), then a new multilateral organisation.

² See a list of appendices in the appendix to the main report.

1.1 The Long-Term Survey 2008 focuses on the prospects for growth

The Long-Term Survey has traditionally focused on the possibilities of achieving healthy economic growth. The long-term growth prospects have been a key part of the analysis as have the various factors that limit growth. The preceding Long-Term Survey took a somewhat different approach with a narrower focus. It discussed the distribution of welfare and the possibilities of financing the public welfare systems in the future.³ The Long-Term Survey 2008 takes a more traditional approach, which means that it spans many areas of the economy. The main theme of the Survey is the growth prospects for the next twenty years and the possibilities of progressive improvements in the standard of living based on those prospects. The long-term scenarios of economic development are a key element. The scenarios this time extend mostly to 2030, but in some parts to 2050.⁴

Since the Long-Term Survey 2008 is to form the basis for economic policy in the long term, it is relevant to assess the trends expected to characterise economic development during the next 15–20 years. The Survey has chosen to focus on three development trends in particular:

- changes in the composition of the population, including a growing proportion of elderly in the population and more people with high levels of education
- changes in demand patterns, resulting in an increased role for the service sector in the economy
- continued internationalisation, leading to increasing integration of the Swedish economy with world economy.

To differing extents, these development trends have an impact on the discussion in various parts of the report. Together these trends will influence economic development and policy formulation in the years ahead. The following three sections provide an overview of these three trends.

³ The Long-Term Survey 2003/04 (SOU 2004:19).

⁴ The scenarios are presented in detail in appendix 1 to the Survey (SOU 2008:108).

1.1.1 An ageing and better educated population

The change in the composition of the population, i.e. the demographic trend, is the first development trend that the Survey wishes to highlight. The demographic trend has been the focus of the last two Long-Term Surveys but is still a pertinent subject of discussion. The change in the composition of the population has consequences for both future growth potential and the possibilities of financing the public welfare systems.

Longer life expectancy combined with the large baby boom in the 1940s means that Sweden, like many other countries, will have an increasing proportion of elderly in its population in the future. Expected life expectancy in 2006 was close to 83 years for women and almost 79 years for men, which is high in an international perspective.⁵ Life expectancy has increased by almost five years since the beginning of the 1980s. The increase is due primarily to better living habits, such as less smoking, as well as to achievements in health care.⁶ Statistics Sweden's population projections assume that average life expectancy continues to rise in the future. By 2050, average life expectancy is expected to be 86.3 years for women and 83.8 for men.⁷

The trend to a longer life is positive but at the same time it leads to a greater dependency burden for the working part of the population. In the next few years, many people will reach retirement age and will leave working life. Close to 90 per cent of the population increase between 2007 and 2030 will occur in groups that ordinarily are not available and eligible for employment.⁸ Among those who are available and eligible for employment, the increase is mostly in the number of people aged 55-64, which is a group with a relatively low supply of labour.

The trend in the number of births also affects the composition of the population. In Sweden there are typically large annual fluctuations in this trend. The number of births has certainly increased since 1999, but with more people postponing having children, Statistics Sweden estimates that the rise in the number of births will probably not continue in the long term.⁹

⁵ Statistics Sweden [2007c].

⁶ The National Board of Health and Welfare [2008].

⁷ Statistics Sweden [2008b].

⁸ The group aged 0-19 and the group aged 65 and over.

⁹ Statistics Sweden [2008b].

Another important feature of the expected population trend is the considerable importance of immigration. Immigration accounts for most of the population growth and is also of crucial importance for the increase in the number of people of working age. Without immigration, the number of people in the 20–64 age group would decline over the next thirty years. This also means that immigrants' position in the labour market has to be strengthened in order for the future population increase to lead to more than a marginal increase in employment.

The composition of the population is also changing in another respect. The level of education has been increasing at a rapid pace, thanks to initiatives in the education system in recent decades. Since the 1970s the average level of education has risen considerably. The number of people in the labour market with only a compulsory school education will gradually decline in the years ahead even though at the same time, the large percentage of young people who do not complete upper secondary school remains a problem.

The trend to a longer life expectancy and a better educated population is very positive. If the elderly are healthy and also well educated, they may choose to extend their working life. Encouraging a longer working life is among the aims of the reformed pension system. Today most of the older part of the population is relatively healthy. But with a larger proportion of the elderly over 80 years, health care and medical treatment and elder care requirements will increase. The increasing requirements are expected to become all the more apparent in just over 10 years when the number of people who are 80 or older will rise sharply.

1.1.2 Changes in demand patterns with rising incomes

The second trend that the Survey wishes to draw attention to is the change in demand patterns. One clear trend has been the continuing increase in the service sector's role in the economy, due in part to the purchase of more services by households. The service sector's share in the economy has also increased as an input in production.

Services comprise a larger part of household consumption partly because the purchase of services is increasing at a faster pace than the purchase of goods. When incomes rise, the demand for services

tends to rise even more. The demand for services in the form of health and medical care and elder care also increases as a consequence of the increase in the proportion of elderly in the population.

Services as a percentage of household consumption also increase as they become more expensive relative to goods over time. This in turn is due to the different conditions that generally prevail for productivity improvements in goods and services. Many aspects of the production of services are labour intensive compared with the production of goods and often provide relatively few possibilities for continuous productivity increases. Historically, productivity growth is clearly lower in the production of services than in the production of goods, even though the differences between industries are large.

Also characteristic of certain services is that they are predominantly financed by tax revenue, for example, services in health and medical care, childcare and elder care and education. Distribution and efficiency are the main reasons for this. At the same time, the forms of financing limit the possibilities of increasing production of these services.¹⁰ Therefore, it is difficult to meet the increased demand for them in the future using public funding, at least if the ambition at the same time is that tax rates are to remain, in principle, unchanged.

Increased revenue also makes it possible to use part of the increase in welfare in the form of more leisure time. Generally speaking, the length of working life has become shorter over time. One reason, but not the only one, is the longer time in education. For those people who have a job, average weekly working hours have changed relatively little in the last 30 years. However, large differences lie behind the figures. It is women in the labour market who have increased the actual number of hours they work per week, while men have reduced theirs. In the last few years, the number of hours women work has stopped increasing. This may indicate that in future women and men will want to use a greater part of the increase in welfare in the form of leisure time. This, in turn, is important for the development of the number of hours worked in the economy. It thus also affects both the prospects for growth and the possibility of financing the public welfare systems.

¹⁰ The Long-Term Survey 2003/04 (SOU 2004:19).

1.1.3 Internationalisation affects an increasingly large part of the economy

Internationalisation – the third trend that the Survey wishes to highlight – has in a sense been going on throughout modern times, but today it includes an increasing part of the Swedish economy. There are no indications that this trend will wane, even though there have been protests against internationalisation and globalisation. Technological development, not least in the form of information technology, argues in favour of greater integration. Increased internationalisation, for its part, may affect how the national policy can and should be formulated. The consequences of internationalisation are a frequently discussed issue. The Government has appointed a Globalisation Council¹¹ that is to deepen knowledge, design economic policy strategies and broaden the public discussion on globalisation.

Internationalisation and globalisation are often used synonymously and many times lack an exact definition. The Long-Term Survey 2008 uses the concept *internationalisation*, to describe international trade of goods and services, direct investment, international financial transactions and cross-border labour mobility.

The concept of internationalisation also includes international cooperation that in various ways affects national room for manoeuvre. In the EU, economic cooperation has gradually deepened to effectuate a single market with the free movement of goods, services, people and capital. The World Trade Organisation (WTO) aims to further liberalise world trade. Greater awareness of the need to fight climate change on a global level has also resulted in international regulations to which Sweden must adhere. International negotiations on climate change are currently under way. Their aim is to establish a comprehensive global climate regime for the period after the Kyoto Protocol's first commitment period, that is, after 2012. The EU has also established targets for reducing emissions affecting the climate.

For Sweden, with its small, open economy, trade and other economic exchanges between countries are crucial to its prosperity. Trade and direct investment provide companies with the opportunity to broaden their markets. They also provide opportunities for the international division of labour and thus a more efficient use of

¹¹ Government Decision (*Regeringsbeslut*, U2006/9119/IS).

resources. Technological development has made it possible to separate stages in the production process in a way that was not previously possible. Companies can therefore choose to outsource components of production to different countries, and in this way build a business that makes use of different countries' comparative advantages.

The financial markets have been further integrated, partly due to technological developments that have made it possible to move financial capital very rapidly. An increasingly large part of the financial assets in a country are now owned by foreign investors.¹²

While internationalisation means opportunities for the Swedish economy, it sets various kinds of limits and demands on national policy. Internationalisation means greater international competition, which in turn leads to more pressure to restructure. New rapidly growing industrial countries such as China and India have competitive advantages in the form of lower production costs for many products. Many people therefore perceive internationalisation as a threat to Swedish jobs and Swedish growth. An appendix to the Survey shows that, contrary to what is often the preconception, industries that are more internationalised are not more likely to experience cutbacks than other industries are.¹³ But for Sweden to maintain a favourable position in international competition, it must be able to adapt well to new conditions.

1.2 Key policy areas for meeting the future

All three development trends include both opportunities and challenges that may affect the prospects for growth and thus the development of the standard of living in the future.

Chapter 2 in the main report provides a picture of how the Swedish economy would develop in the 2008 Long-Term Survey's base scenario. The estimates primarily cover the years up to 2030, but trends in public finances have an even longer perspective and are calculated forward to 2050. The scenarios in the Long-Term Survey give a comprehensive overall picture of the economy, which differs from other, often more narrowly focussed analyses. It is thus possible to capture how changes in a market affect other parts

¹² Appendix 5 of the Long-Term Survey 2008 (SOU 2008:12).

¹³ Appendix 7 to the Long-Term Survey 2008 (SOU 2008:21).

of the economy. At the same time, the scenario is not to be seen as a long-range forecast of economic development, but rather as a possible path for that development.

The Survey identifies a number of core areas on which policy should focus so that Sweden will be well equipped to meet the future. The following need to be achieved:

- a plentiful labour supply
- strong productivity growth
- a good ability to adapt and change
- a cost-effective climate policy
- stable welfare systems.

Chapters 3 through 7 in the Survey discuss these areas in detail. These chapters discuss and in certain cases vary the assumptions made by the Survey in its projections of the economy. Two alternative scenarios are also presented in these chapters.

Increasing the labour supply (chapter 3) is essential for good development in the coming years. Labour both creates growth and helps finance the public welfare systems. While many other studies have discussed the labour potential in various groups in society, the Long-Term Survey 2008 focuses on the duration of working life. Relatively small changes in the age at which people first enter the labour market and in the retirement age could have a substantial impact on the number of hours worked in the economy. Given the close relationship between entry age and the education system, there is a discussion of the importance of education in getting established in the labour market.

Good productivity growth (chapter 4) is likewise essential for the country's prosperity to grow. The steady growth in output in relation to input, i.e. increased productivity, is an important explanation for the improvements achieved in the standard of living over time. The chapter highlights the differences in productivity growth from industry to industry and the factors affecting productivity.

In particular it discusses how the transition to increased production of services may come to affect productivity growth in the economy.

Economic change and adaptability (chapter 5) in the economy are fundamental as Sweden has a small open economy and is thus highly dependent on developments in the rest of the world. The ongoing internationalisation means that several areas and people

may be affected, which may lead to new demands for adaptability. Adaptability is affected by such factors as the geographic mobility of the labour force as well as mobility between different occupations and employers. Change is a concept that lacks an exact definition. Various ways of measuring change in the economy are discussed in this chapter. The chapter also examines whether the pace of change in Sweden has altered in the past thirty years.

Another key issue to address to prepare for the future is how to design the *climate policy* (chapter 6) so that good economic growth can be combined with limited effects on the climate. The chapter describes how the connection between energy use and economic growth and their linkage to carbon dioxide emissions developed over time, and discusses what mechanisms underlie this development. The scenarios in the Long-Term Survey include carbon dioxide emissions and an alternative scenario includes an analysis of how the costs of achieving a given climate commitment are affected by the design of climate policy.

The Survey's starting point is that Sweden will continue to have a welfare state in the future with publicly financed welfare systems that provide social security for its citizenry. The *public welfare systems* (chapter 7) therefore need to be designed so that they are stable and trustworthy in the future. The chapter focuses on the welfare services – health care, social services and education – and how they are to develop in the future. In line with the increase in prosperity, the demand for welfare services is expected to increase at the same time that tax-based financing will make it difficult to expand the services in the long term. The chapter also provides a picture of the extent of the exchange of welfare services between Sweden and other countries.

The *concluding chapter* (chapter 8) sums up the main report by referring back to the trends described in the introduction. The Survey also highlights the policy changes that should be implemented in order to be better able to take advantage of new possibilities and to meet future challenges. In the chapter the Survey summarises its main conclusions.

2 Long-Term Economic Development

The task of the Long-Term Survey is to provide a basis for economic policy decisions. As part of this basis, the Survey provides an overall assessment of macroeconomic development in Sweden in the long term. The scenarios, i.e. projections of possible long-term economic developments in Sweden, are an important aid in this assessment.¹⁴

The estimates in the scenarios are based on such factors as population projections, productivity trends, forward projections and forecasts of world market trends. The estimates stretch to 2030, with an extended look at the prospects for public finances to 2050. The estimates in the scenarios serve as a starting point for highlighting trends and identifying important economic policy problems and analysing the effects of policy changes and changes elsewhere in the world in alternative scenarios.

The base scenario should not be seen as a long-term forecast. The scenario provides a picture of production and consumption possibilities in the event that no major policy changes are implemented. Over the next few years, the effects of the policy already decided, but which have not yet been fully realised in the economy, will be observed in some measure. Hence, for example, measures to stimulate the labour supply do have some impact in the scenarios.

The scenarios are calculated using both a model that describes real economic flows between various business sectors, households, the public sector and international trade and a model that describes public finance developments in more detail. The estimates in the two models are based on the same assumptions and the results are

¹⁴ The scenarios and the assumptions used in the estimates are presented in more detail in appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

reconciled in order to provide as accurate and comprehensive a description of economic developments as possible.

Among the developments described in the base scenario is the weak increase in the number of hours worked during the period despite more immigration of working-age people. At the same time economic growth is relatively good, largely thanks to a healthy growth in productivity. With an increasing number of elderly in the population, general government expenditure as a percentage of GDP will increase until 2030 even if the quality and the extent of public activities is unchanged on a per person basis. After 2030, the cost pressure from demography will decline. The public finances are sustainable in the long term, but for this to remain so, there can be no change in the standard of public activities.

2.1 Growth remains good

Economic growth in the form of GDP grows in the base scenario at the same pace in the future as it has since 1980, a growth of 2.2 per cent a year. This GDP growth is the result of the assumptions made in the base scenario, including developments in world markets, labour supply and productivity. These factors are described in the following sections.

The estimates do not take cyclical fluctuations into account. The development illustrated in the base scenario should therefore be viewed as the development of a 'potential' GDP with a normal resource utilisation. In reality, cyclical fluctuations will occur that lead to actual production, unemployment and other components that are more or less than the potential.

Table 2.1 shows a number of key indicators from the base scenario.

Table 2.1 Key indicators from the base scenario*Annual percentage change*

	1980–2005	2005–2030
GDP	2.2	2.2
Private consumption	1.7	3.1
General government consumption	1.2	0.7
Central government	0.6	0.1
Local government	1.4	0.9
Investment	2.2	2.1
Private	2.4	2.1
General government	1.2	2.1
Exports	5.7	4.0
Imports	4.4	4.5
Population	0.3	0.4
16–64 years	0.4	0.1
Labour force	0.2	0.2
Employed	0.1	0.2
Hours worked	0.3	0.3
Business	0.3	0.1
General government sector	0.3	0.7
Productivity	2.0	2.0
Business	2.5	2.3
General government sector	0.0	0.0

Note: Demand and output development in volume terms.

Source: Appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

2.1.1 Increasing importance of world trade

There has been considerable economic integration in the past decade and this trend is likely to continue in the years ahead. Global GDP has grown an average of 3.6 per cent a year since 1980 at the same time that global trade has grown an average of 6.3 per cent a year. Underlying the increase in trade is a combination of falling trade barriers and lower transaction costs. Cooperation in the World Trade Organisation (WTO) has been among the factors contributing to lower customs duties and a number of free trade areas have been formed, resulting in increased trade. At the same time, information technology developments have lowered the cost

to business of acquiring, storing and transmitting information. Trade liberalisation and technological developments, together with reduced barriers to business investment, have made it easier for multinational companies to divide up production and locate it in different regions.

In the base scenario, Sweden's international trade grows at about the same pace as the trend in recent decades. Export growth is slower, but still relatively strong. All in all, Sweden's trade surplus declines to about 2.5 per cent of GDP by 2030. This decline is due in part to an ageing Swedish population that saves less and buys more domestically produced services.

The trade in services increases its share of both exports and imports between now and 2030. This does not mean that trade in manufactured goods declines, but rather that trade in services increases somewhat more rapidly. The increase occurs in several service industries but is expected to be greatest in leasing and business services industries.

In the base scenario, the price of goods imported into Sweden rises somewhat faster than the price of exported goods, i.e. Sweden's terms of trade worsen. This is due in part to rising prices for energy producing raw materials. It is also due to falling prices for manufactured goods, which have also caused a worsening in Sweden's terms of trade before.

2.1.2 Weak increase in the labour supply and a higher level of education

Future growth prospects are affected by how the employment rate and the number of hours worked develop. In recent decades the total number of hours worked in the economy has varied with the business cycle. They reached their highest level in 1990 and then fell sharply during the crisis in the 1990s (figure 2.1). In 2007 the number of hours worked had again reached the level that prevailed in 1990. Since the recession at the beginning of the 1990s, the number of hours worked per person of working age has been just over 1 200 hours a year compared with almost 1 340 a year in 1989 and 1990.

Figure 2.1 Number of hours worked 1980–2007

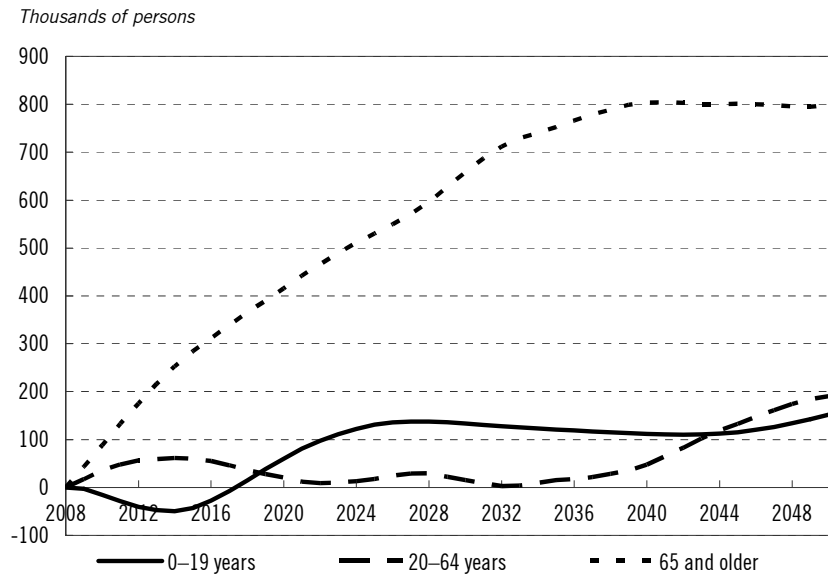
Source: Statistics Sweden [b] and [2008b].

In the base scenario, an in principle unchanged behaviour by labour is the basis for future trends in the labour market. This means that the employment rate, etc. by age, gender, and ethnic background is unchanged. Chapter 3 discusses various ways of increasing the employment rate by extending working life.

The trend in the total number of hours worked in the economy is therefore governed primarily by population changes, which in the scenario are based on Statistics Sweden's population projections.¹⁵

According to Statistics Sweden's projections, Sweden's population will increase from the current 9.2 million to 10.1 million by 2030. By 2050 the population is expected to grow to 10.5 million. Most of the population increase is made up of people who are not of working age (figure 2.2).

¹⁵ Statistics Sweden [2008b].

Figure 2.2 Sweden's population increase 2008–2050

Source: Statistics Sweden [2008b].

Immigration accounts for most of the population growth and is of crucial importance for the growth of the working-age population. People born outside the EU – a group that currently has an employment rate substantially below the average – account for by far the greatest number of immigrants. Consequently the number of people employed only increases weakly up to 2030. The number of hours worked is expected to increase by an average of 0.3 per cent per year during the same period.

The Swedish labour force is becoming increasingly well educated and this trend is expected to continue in the future. Under the scenarios, the percentage of hours worked by people with a postsecondary education increases from 34 per cent in 2003 to 46 per cent of the total number of hours worked in the economy in 2030. The increase in the level of education is particularly strong in the private business sector. At the same time, skilled workers are in increasing demand in production, keeping wage differences between highly educated and less highly educated labour relatively constant in the base scenario.

2.1.3 Strong productivity growth continues

Productivity growth, i.e. greater value added per hour worked, is of crucial importance for the growth of economic prosperity. Since the beginning of the 1990s, productivity in the business sector has increased by an average of almost 3 per cent a year. The high productivity growth, particularly in the second half of the 1990s, was largely due to good productivity development in the telecommunications products industry. In the base scenario, productivity growth in the business sector continues to be healthy and is estimated at 2.3 per cent a year between 2005 and 2030. This is somewhat less than the growth rate between 1980 and 2005 of 2.5 per cent a year and considerably lower than the growth since 1990 (table 2.1).

Productivity growth differs from one industry to another. The rate of increase in manufacturing, particularly that which is knowledge-intensive, has been high while the productivity of certain service providers and the construction industry has grown more slowly. These differences remain in the base scenario where the average rate of growth in manufacturing is 3.8 per cent a year, while the productivity of service providers as a whole increases by 1.8 per cent a year between 2005 and 2030 (table 2.2). The highest rate of growth is still among the knowledge-intensive manufacturing sectors even though they do not reach the high rate experienced in the 1990s. Among service providers, productivity growth is low in education and health related services and business services in particular. The first-mentioned also have a relatively low level of productivity.

Table 2.2 Structural change and productivity in the business sector 2005–2030*Percentage of GDP and hours worked and annual percentage change in productivity*

	2005		2030		2005–2030 Productivity
	Value added	Hours	Value added	Hours	
Manufacturing (SNI 15–37)	30.7	25.1	35.8	20.8	3.8
Services (SNI 50–95)	59.4	60.2	56.8	65.8	1.8
Other industries (SNI 01–14, 40–45)	9.8	14.7	7.5	13.4	1.6
Total business sector	100	100	100	100	2.3

Note: SNI means Svensk näringsgrensindelning (Swedish business sector classification) and is based on the EU NACE standard. Production units, such as companies and workplaces, are classified under the activity conducted.

Source: Appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

The structural change calculated in the base scenario, where the importance of service industries in particular increases, has a dampening effect on total productivity growth in the business sector. At the same time, the use of services as an input in other production is increasing and thus the impact on productivity in the economy as a whole is ambiguous. Chapter 4 discusses at greater length how productivity growth in different industries affects economic development.

Productivity growth in the public sector is assumed to be zero.¹⁶ Structural change also occurs in public production since population trends to 2030 lead to an increase in the production of health care and social services, particularly elder care, and a reduction in the proportion of education services.¹⁷ In total, developments in the

¹⁶ Previously productivity growth in the public sector by definition was zero in the national accounts. This principle has now been revised so that productivity in certain parts of the public sector can vary over time. However, the results reported up to now provide little guidance and the assumption of constant productivity is therefore retained in the Long-Term Survey 2008.

¹⁷ There may be an indirect effect of this development as the public sector's requisitioning of resources, for example, well educated and low-skilled labour, is changed in connection with the changes in the sector's production structure. The production of health and social services uses a lower percentage of highly educated people compared with education services. The structural change in public production thus frees up highly educated labour for production in the business sector.

business sector and in the public sector lead to a growth in productivity in the economy as a whole of 2 per cent a year between 2005 and 2030.

2.1.4 Investment holds the capital ratio unchanged

Investment is essential to maintain and expand the real capital stock. Investment can be classified as housing and the buildings and machinery needed for production in the business and the public sectors. Most of Sweden's capital stock consists of housing and buildings, which together represent over 80 per cent of the total real capital value in Sweden.

Investment growth in the base scenario is based on estimates of the rate at which the capital stock must grow in order for the assumptions about production and productivity growth to be valid. Between 1980 and 2005, the ratio of capital stock to GDP, i.e. the capital ratio, was about 2.3. In the base scenario, the capital stock grows so that this ratio is also valid in 2030.

The annual growth in the public capital stock is assumed to follow general economic trends for the most part. The slow volume growth in public consumption has, however, some impact and the public capital stock will therefore grow marginally slower than GDP. Other investment needed to achieve this capital ratio in 2030 occurs in the private sector. The composition of various types of capital in different sectors and their respective depreciation rates are assumed to remain the same as they were from 1993 to 2005. In order for this growth in capital stock to come about, an average of 18 per cent of GDP needs to be used for investment. Total investment thus grows 2.1 per cent a year between 2005 and 2030.

2.1.5 Uncertainty about energy prices and climate policy

After almost two decades of relatively low and stable energy prices, world market energy prices have once again risen. Analysts are not united on energy price trends but many predict that (real) equilibrium prices will be considerably higher in the long term than they were in the 1990s.¹⁸ Natural gas prices will rise in line with the oil

¹⁸ IEA [2007], the European Commission [2008a], EIA [2008].

price and the price of coal will grow somewhat more weakly. The base scenario assumes that the price of energy resources follows the EU Commission's forecast, which includes a crude oil price equivalent to just over USD 60 a barrel in 2030.¹⁹

In addition to the price of energy resources, the uncertainty about the impact of future climate policy affects energy prices. Most likely climate policy will lead to higher fossil fuel prices for the end-user in the years ahead. The base scenario assumes that an internationally coordinated carbon dioxide market will be in place by 2030. The assumption is based on the policy recommendations for achieving an effective global reduction of carbon dioxide emissions that have been put forward in a number of studies.²⁰ With OECD long-term estimates as the basis, the Survey assumes a 2030 carbon dioxide price equivalent to about SEK 370 per ton,²¹ and an international market for emission reductions largely without trade barriers. According to many analysts, such an internationally harmonised climate policy has relatively little impact on global economic growth. The estimates in the base scenario also show the same to be true of the Swedish economy. Chapter 6 discusses how an alternative climate policy formulation affects the Swedish economy.

2.2 Public finances under pressure

Public finances are decided by both public revenue, primarily tax revenue, and public expenditure, and how these develop over time. A further increase in the demand for publicly financed welfare services, together with limited opportunities to increase tax revenue as a percentage of GDP, puts public finances under pressure in the long term.

2.2.1 Employment determines tax revenue

Most tax revenues come from direct or indirect taxation of work. The bulk of household income taxes and the employers' social security contributions are governed by the size of the payroll.

¹⁹ In 2005 prices. European Commission [2008a].

²⁰ Stern, N. [2007], OECD [2008a], IPCC [2007].

²¹ In 2005 prices. OECD [2008a].

These taxes account for more than half of public revenue. Developments in the labour market also exert considerable influence on household consumption expenditure, which in turn provides tax revenue in the form of the value added tax and excise duties. In the base scenario, all tax rates are held constant in relation to the respective tax base.

**Table 2.3 Taxes and charges as a percentage of GDP
2005–2050**

Percentage of GDP

	2005	2008	2030	2050
Taxes and charges	49.3	47.2	47.4	47.1
Direct taxes and charges on households	18.9	16.9	16.3	16.2
Direct taxes on corporations	3.6	3.4	3.6	3.6
Indirect taxes ¹	13.8	14.1	15.5	15.2
Employers' and self-employed persons' social security contributions ²	12.9	12.8	12.0	12.2

Note: ¹ Excluding wage-dependent indirect taxes.

² Including wage-dependent indirect taxes.

Source: Appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

Even if tax rates are held constant in relation to each tax base, the total tax ratio, i.e. taxes and charges in relation to GDP, will change (table 2.3). As a result of changes in the composition of demand and output, several important tax bases grow more rapidly than GDP. This applies above all to household consumption expenditure, which grows when net exports decline. As there is a higher tax on consumption than on export, the tax ratio in the base scenario rises somewhat up to 2030.

2.2.2 Unchanged quality and coverage in the welfare systems

Public expenditure consists primarily of public consumption, i.e. tax-financed goods and services and transfers in such forms as social insurance and pensions.

Population changes govern public consumption

The base scenario expects an increase in public consumption of almost 0.7 per cent a year between 2005 and 2030. The increase is due to the demographic trend since the basis for the scenario is that consumption by age and gender is constant. This is, of course, simplified since a large number of factors in addition to demography may possibly affect demand and consumption of public services. For example, better health, improved medical technology and changes in preferences may very well have a substantial impact on the growth in public consumption. In the scenario, it is primarily the consumption of health care and social services, particularly elder care, that grows. Table 2.4 shows the growth in public consumption as a percentage of GDP broken down by activity.

**Table 2.4 Public consumption growth by activity
2005–2050**

<i>Percentage of GDP</i>				
	2005	2008	2030	2050
Total consumption	26.4	26.1	26.4	25.7
Childcare	1.5	1.6	1.6	1.6
Child and youth education	3.7	3.6	3.3	3.0
Adult education	1.9	1.9	1.6	1.5
Health care	6.0	5.9	6.4	6.3
Elder care	4.0	4.1	5.6	6.2
Other services	9.3	9.1	7.9	7.1

Source: Appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

The modest growth in public consumption of 0.7 per cent a year up to 2030 (table 2.1) may be seen in relation to the growth in household private consumption expenditure. Private consumption is expected to grow by 3.1 per cent annually, partly as a result of the fall in the household savings ratio when total savings in the economy decline as the population ages.

Assumption of a standard guarantee in the transfer systems

In the estimates it is assumed that public transfer systems' standards are maintained. A large part of the transfers are covered by regulations that automatically raise benefits in line with wage growth. This applies to pensions, which are adjusted upwards using an income index, and to some extent to transfers compensating for loss of income, such as sickness and parental insurance. Transfers lacking this type of automatic standard guarantee, such as child allowances and study support, increase in line with wages in the scenario estimates. Such a standard guarantee counters the erosion that would take place in the long term if the calculation was based strictly on unchanged regulations. The standard guarantee thus assumes that some reforms are carried out at the same pace as economic growth.

The calculation of pension expenditure in the base scenario is based on demographic developments, the macroeconomic assumptions and current regulations. In addition, the average retirement age is assumed to remain unchanged in the future, despite an increase in average life expectancy in the period. Section 3.3 reports the result of one of the Survey's alternative scenarios that assumes a gradual increase in the labour market exit age.²²

Table 2.5 shows the growth in various transfers as a percentage of GDP.

²² The alternative scenario is described in more detail in Appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

Table 2.5 Public transfers 2005–2050*Percentage of GDP*

	2005	2008	2030	2050
Total transfers	21.4	19.1	22.3	21.4
Transfers to households	17.9	15.8	19.1	18.2
Old age	8.5	8.2	8.5	7.6
Ill health	4.2	3.5	3.2	3.2
Children/studies	2.2	2.1	2.1	2.1
Labour market	1.6	0.7	0.8	0.8
Other	1.4	1.3	4.5	4.5
Transfers to companies	2.0	1.8	1.7	1.6
International transfers	1.5	1.6	1.5	1.5

Note: Old age = old-age pension, survivor's pension, state and local authority occupational pensions and the housing supplement for pensioners.

Ill health = sickness and work injury insurance, sickness and activity compensation and assistance allowance.

Children/studies = child allowance, parental insurance, maintenance support and study grants.

Labour market = compensation when unemployed or in employment training as well as wage guarantee.

Included in 'other' is a technical adjustment in the form of a transfer from the central government to households resulting in general government net lending of 1 per cent of GDP in 2015. See appendix 1 for a more detailed description of the basis for this assumption.

Source: Appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

No change in the standard is crucial for sustainable public finances

All in all, public expenditure on transfers, consumption and investment is expected to increase somewhat as a percentage of GDP until 2030 and decline thereafter. Assuming unchanged quality and scope in the welfare services per age and gender, it is population trends that cause the increase in public expenditure as a percentage of GDP until 2030. After 2030, the expenditure pressure from demography will decline.

In order to decide if public finances are sustainable in the long term, the definition is usually that current policy, if maintained in the future, does not lead to uncontrolled debt growth. Under this criterion, public finances are sustainable in the long term in the base scenario. However, this development depends on several critical assumptions made in the scenario.

First, the surplus target (or the balance target), which means that general government net lending is to be 1 per cent of GDP over a business cycle, is met through 2015.

Second, the quality and scope of public activities remains unchanged. Sensitivity calculations have shown that long-term sustainability is totally dependent on the assumption of an unchanged standard in publicly financed activities.²³ As discussed in chapter 7, it is probable that the public will demand increased quality and scope for the services financed by the public sector when the overall standard of living rises.

2.3 Conclusion

In the Long-Term Survey's base scenario, developments through 2030 result in an annual average GDP growth of 2.2 per cent. Such economic growth obviously increases economic prosperity.

The growth is explained principally by higher productivity. However, the contribution to growth from the labour supply is limited owing to the modest growth in the working-age population.

Under the base scenario, private consumption will increase much more rapidly than public consumption. In the long run, the scope for real wages grows more or less in line with productivity. Furthermore, with an ageing population, savings in the economy fall while consumption increases. At the same time, the demand for welfare services will increase and thus add to the pressure on public finances in the long term.

Developments described in the base scenario should not be seen as a forecast but rather as a description of a possible course of events. Growth may be higher or lower, depending on labour supply and productivity growth. The climate policy is a cause of uncertainty, which probably leads to higher fossil fuel prices. But under the assumption that climate policy is designed in an effective way with international cooperation, targets for reduced climate impact will have relatively little effect on Swedish economic growth.

The following chapters discuss a number of factors of crucial importance to growth. First, the possibilities of increasing the

²³ Government Bill 2008/09:1.

labour supply and improving productivity growth in the economy are discussed. Then the adaptability of the economy, which is fundamental for healthy growth when conditions change, is considered. This is followed by an analysis of the connection between energy use and economic growth and how the design of climate policy affects economic growth in Sweden.

The scenarios are based on the assumption that welfare services – health care, social services and education – develop in line with changes in the composition of the population. This means maintaining the current level of welfare services for the next 20–25 years. Therefore, one issue discussed later in the report is the possibility of further developing welfare services within the framework of large parts of the publicly financed welfare system.

3 Increasing the Labour Supply

Weak growth in the number of people of working age, a higher proportion of the population born abroad and a labour force with an older average age imply a risk that the number of hours worked in the economy will fall in the years ahead. As seen in chapter 2, the number of hours worked in the economy, together with productivity, constitutes a country's total production. This in turn provides the basis for both private and public consumption. In our base scenario both the number of people employed and the number of hours worked increase weakly in the future.

Viewed over a long period, the length of working life has declined even though some increase has been discernible in the past ten years.²⁴ The shorter working life may be seen as an expression of the public's desire to take out some of the welfare increase in the form of leisure and to some extent also to devote more time to education.

When the public changes what it wants to include more leisure, it seldom considers what impact such a decision has on the publicly financed welfare systems. Admittedly, some parts of these systems are connected to earned income through the compensation levels. But large parts of publicly financed welfare – health care, social services and education – do not have any such connection with individual labour input. If in future the public also wants to consume publicly financed welfare of good quality, then the public sector will have good reason for working to increase the labour supply.²⁵ There is no indication that the public would prefer a lower standard in the publicly financed welfare services; on the

²⁴ The Swedish Social Insurance Administration [2007a].

²⁵ Possible alternatives would be to raise taxes or charge more fees for public services. As chapter 7 shows, higher taxes are not a long-term sustainable alternative while higher fees may help finance future public welfare services.

contrary, chapter 7 makes clear that the demand for welfare services is expected to increase in the coming years.

The discussion on the labour supply in the Long-Term Survey 2008 centres on the first labour market entry and the last exit, i.e. the length of working life. Several other studies have taken a broader perspective to labour supply.²⁶ Our focus should not be interpreted as an assessment of where the greatest potential for increasing the labour supply exists. The total number of hours worked in the economy is also a result of how long one is gainfully employed between entry and exit from working life. Time spent unemployed, in school, on parental leave and absent due to illness is thus of great importance as are the hours worked. The birth rate and migration also have an impact on the number of people of working age. The chapter therefore does not provide a comprehensive picture of what the total possible increase in the labour supply would be. Rather it should be seen as a contribution to the discussion on some parts of this potential.

Relatively small changes in the age for entry and for exit would have a substantial impact on the labour supply. If the labour force participation pattern had been lowered one year for those between the ages of 20 and 29 and raised one year for those between 55 and 70, the labour force would have increased by 115 000 people in 2007.²⁷ This would have represented an increase in the labour force of more than 2.7 per cent.

3.1 Major changes in the labour market

Economic growth, primarily by greater productivity, has made it possible to reduce gainful employment to a limited number of hours for a limited part of life. The annual average time spent in gainful employment per employed person declined from about 2 000 hours in 1950 to about 1 600 at the beginning of this century.²⁸ In the past fifty years, the number of years individuals have spent in the labour market have also declined owing to more

²⁶ The Long-Term Survey 2003/04 looked at the labour force potential primarily for people born abroad (SOU 2004:73) and for older workers (SOU 2004:44). For a survey of the short-term potential in various groups, see Ministry Publications Series Ds 2008:36.

²⁷ That is to say, 20 year olds had the same participation rate as 21 year olds and 56 year olds the same rate as 55 year olds. The calculations are based on data from Statistics Sweden's Labour Force Survey.

²⁸ Data from www.ggdc.net.

time spent in education and earlier retirement. Nevertheless, both private and public consumption have increased sharply.

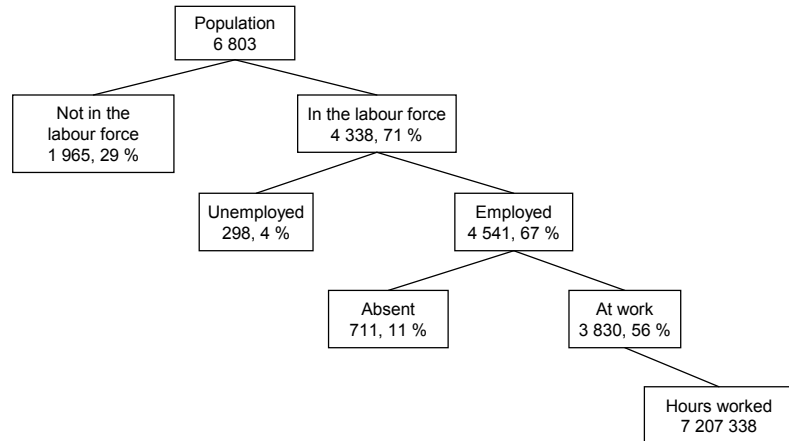
Of course it is neither possible nor desirable to work around the clock or every year from birth to death. Time for education and other events in life and the desire and need for leisure time mean that there are bounds on how much one can work. The actual labour supply is therefore always lower than the maximum possible working hours.

3.1.1 People are working less

The number of hours worked is determined by how many people are working and how many hours they work. According to Statistics Sweden's Labour Force Survey, over 3.8 million people were at work and they worked an average of 1 882 hours per person in 2007 (see figure 3.1).

The total number of hours worked increased in Sweden until 1990, but then fell sharply until 1993. This decrease was followed by an increase until 2007, which was only interrupted by two weaker cyclical downturns. However, the 2007 level was only 0.8 per cent higher than the 1990 level even though the working-age population increased by almost 8 per cent during the period.²⁹ The main explanation for this is that a lower proportion of people were at work, but those who had jobs also worked fewer hours on average.

²⁹ Those aged 15 to 74.

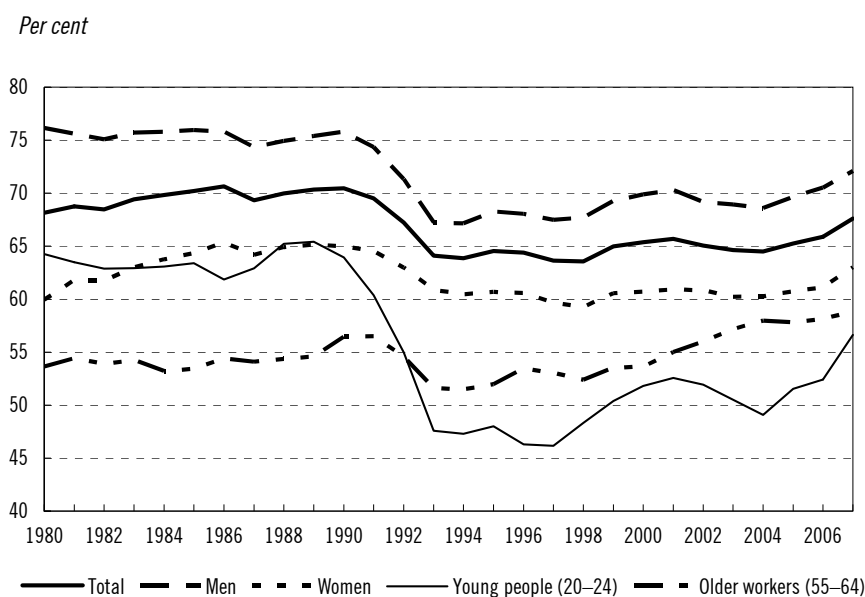
Chart 3.1 Population aged 15–74 in 2007*Thousands, number of people and hours worked*

Source: Statistics Sweden.

The proportion of people with jobs has declined sharply...

Between 1980 and 1990, the proportion of people aged 20–64 who were working increased as more women entered the labour market (see figure 3.1). During the crisis of the 1990s, there was a sharp drop and the upturn that followed has not led to a restoration of the 1980s level. The one exception is the growing proportion of older people who are at work. Due in part to more young people studying longer, the percentage of young people who are working fell sharply and has not regained its earlier level despite a positive trend in the last ten years. The percentage of women working approached that of men until 1990, but thereafter the difference between the groups has remained relatively constant.

Figure 3.1 Proportion of the population aged 20–64 at work, 1980–2007

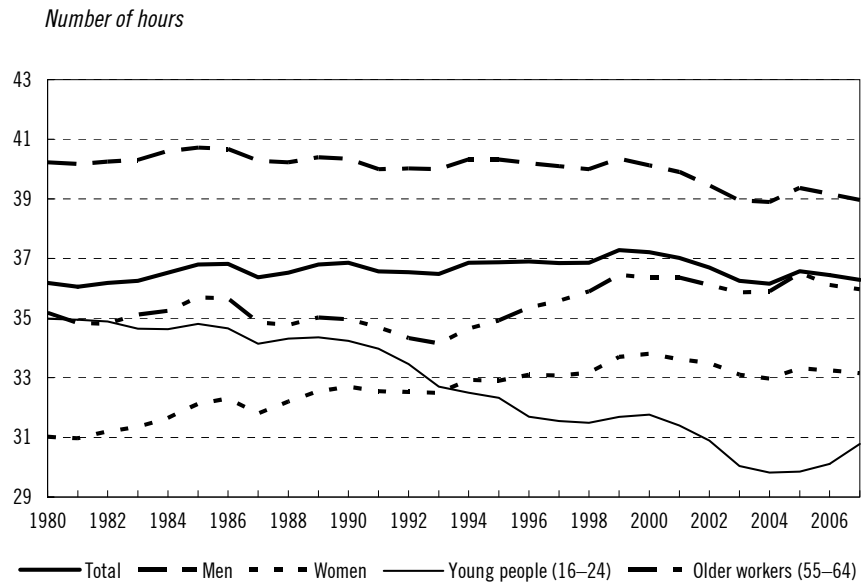


Source: Statistics Sweden and Ministry of Finance calculations.

...and working hours have declined somewhat

The average weekly working hours are more stable than the proportion of people at work (figure 3.2). There was, however, some reduction after 2000, primarily among men. Since the mid-1990s, older workers (55–65) have been nearing and have almost reached the average weekly working hours per person at work. Like women's labour force participation, women's working hours approached that of men up to the beginning of the 1990s, but not thereafter. The average number of hours worked by young people is steadily declining.

Figure 3.2 Weekly working hours per person at work aged 16–64, 1980–2007



Source: Statistics Sweden [a] and Ministry of Finance calculations.

3.1.2 Two divergent trends in the level of education

The contribution made by the labour force to growth is decided not only by the number of hours worked but also by the quality of the labour force and here education is an important factor.³⁰

The number of well educated people has increased...

A number of education policy reforms have led to a steady increase in the number of years spent getting an education in Sweden in the past fifty years and as a result, the labour force is now better educated. There are fewer and fewer people with no more than a compulsory school education while an increasing number have a post-secondary education. The proportion of the population with an upper secondary education is so far relatively unchanged. An

³⁰ The effect of education on productivity is discussed on more detail in chapter 4.

upper secondary education is still the most common highest level of education achieved by those in the labour force.

The chief explanation for the drop in the proportion of people having no more than a compulsory school education is the exit from the labour market of older workers with a low level of education. The rise in the proportion with a post-secondary education is due to more young people entering the labour market.

...but many fail to complete upper secondary school

Even though more young people complete university studies, there is also a large group that do not finish upper secondary school. The percentage of young people who had not completed an upper secondary education increased sharply in connection with the reform of upper secondary education at the end of the 1990s and has not returned to previous levels in spite of a drop in recent years (see figure 3.3). The current trend in the level of education achieved by young people can thus be described as divergent, with many getting a post-secondary education and many failing to complete an upper secondary education.³¹

There are different ways of defining how large a percentage have not completed an upper secondary education. The level varies, depending on what method is used, but the overall trend is similar. In Statistics Sweden's Education Index, the definition of upper secondary educated is to have studied at least one term at the upper secondary level. There is no requirement that one must have earned a school-leaving certificate to be counted as upper secondary educated. Under this definition, 14 per cent of 20-year-olds lacked an upper secondary education in 2007.

With the National Agency for Education's definition, which includes only those who have a school-leaving certificate or the equivalent, the number lacking an upper secondary school education is substantially higher. Twenty-eight per cent of the country's 20-year-olds did not have a school-leaving certificate from upper secondary school in 2007, which is somewhat lower than at the end of the 1990s.³² In addition, approximately 10 per

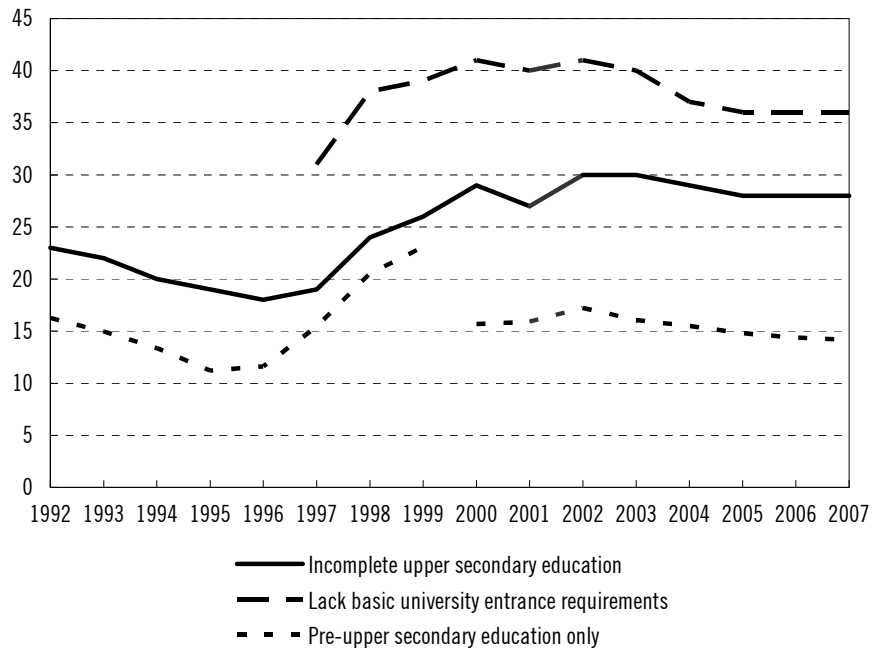
³¹ Heckman, J. [2008] has pointed to an increased polarisation of American society since more people graduate from university but at the same time more do not complete secondary school.

³² National Agency for Education [2008a].

cent of those receiving a school-leaving certificate do not meet basic entrance requirements for university studies.³³ All in all, this means that about 35 per cent of 20-year-olds lack basic university entrance requirements.

Figure 3.3 Different measures of those 20-year-olds who have not completed upper secondary school

Per cent of population



Note: Due to changes in the way data are collected, there is a break in the series for pre-upper secondary school education between 1999 and 2000.

Source: National Agency for Education [2008c], Statistics Sweden [c] and Ministry of Finance calculations.

³³ To meet basic university entrance requirements, courses corresponding to 90 per cent of the credits must be completed.

3.2 Earlier labour market entry age through a more efficient education system

The age at which young people enter the labour market is rising. There are several possible explanations for this, for example, a longer time spent getting an education, a reduced demand for labour without work experience, rising wages and poorer qualifications among some young people.³⁴ The Long-Term Survey 2008 focuses on the consequences of later entry and the reasons for the longer time spent getting an education.

Time in education is determined by the way in which the educational system works, individual choice and individual achievements. A later labour market entry means reduced tax revenues and in those cases involving failures in education, increased public expenditure. Somewhat simplified, this means that the state should get individuals to acquire a given amount of knowledge (human capital) as rapidly as possible.³⁵ According to an estimate, at the end of the 1990s, time lost in various parts of the education system was equivalent to almost 130 000 person years.³⁶

There are relatively well documented problems with both throughput and results in the Swedish education system. These problems in turn affect the transition from studies to work. Acquiring knowledge later in life is possible but it costs both society and the individual considerably more.

3.2.1 Young people begin working later

The age at which young people enter the labour market has risen (see figure 3.4).³⁷ There was a major change in connection with the crisis in the 1990s, but even after the demand for labour recovered to more normal levels, this pattern has persisted. This may be due in part to the extension of the two-year programme in upper secondary school and the higher proportion going on to university studies. Generally speaking, women get established later than men,

³⁴ For a discussion see Åslund, O. and others [2006] and Åberg, R. [1999].

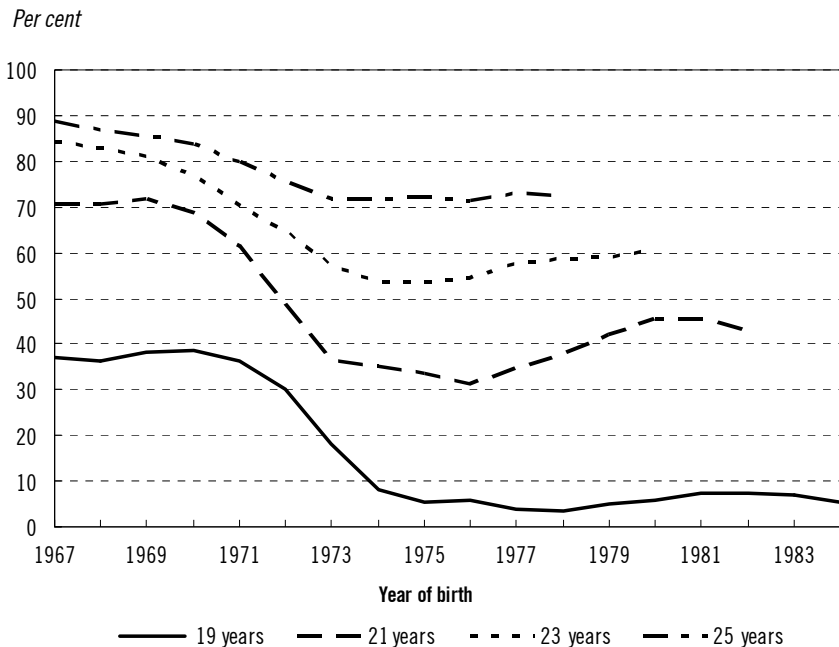
³⁵ Or alternatively, that one attains a higher level of education during a given time in education.

³⁶ Ministry Publication Series Ds 2000:58.

³⁷ Åslund, O. and others [2006].

mostly because a higher percentage of women pursue university studies.

Figure 3.4 Age at which young people obtained their first job, percentage by year of birth



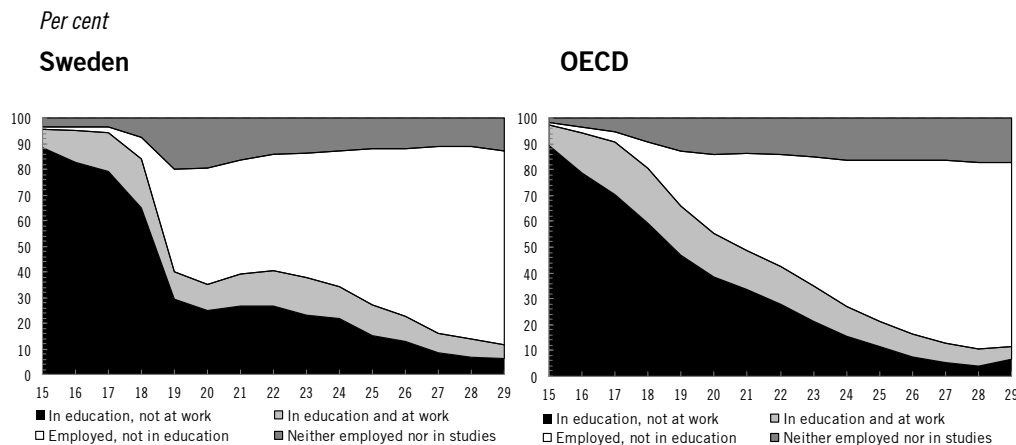
Note: Entry is defined here as when individuals reach an income equal to 50 per cent of the median income for 45-year-olds. Of those born in 1967, about 40 per cent obtained their first job at the age of 19 and by the age of 25, about 90 per cent had obtained their first job. .

Source: Åslund, O. et al. [2006].

Later labour market entry in Sweden as a result of later studies

According to international comparisons, there is a substantial decrease in the percentage of Swedish young people studying between the ages of 18 and 20, after which the percentage increases. Compared with the OECD average, fewer Swedish young people study and more work until the age of 23 (figure 3.5). Swedish young people appear to be postponing their university studies and working for a couple of years instead. It should be noted that Sweden has a relatively large proportion of young people about 20-years-old who neither work nor study.

Figure 3.5 Young people's labour market status in 2006, by age



Note: The OECD average is an unweighted average of 22 countries.

Source: Statistics Sweden and Ministry of Finance calculations.

There is also a large age spread among university students in Sweden, indicating relatively weak norms for when studies are expected to begin. A stronger norm for a rapid transition from upper secondary school to university would mean that more people would finish their studies early. Norms can be defined as the expectations others have for a person's behaviour. Those who fulfil the expectations of those around them are esteemed while those who violate expectations are not.³⁸ But norms are difficult to influence, whereas measures that change the social norm may have considerable effect if many people are included.

Delayed labour market entry owing to uninformed choices

In choosing an education, there is always a risk of making the wrong choice. There may be various reasons for a wrong choice. It may be difficult to form an opinion on the long-term labour market outlook. There may also be a lack of information about

³⁸ Lindbeck, A. [2003].

whether the education chosen will lead to a job or about the knowledge required for a certain education.

Structural change as well as cyclical effects may in some instances mean that what was a suitable choice at the outset is no longer so upon completion.³⁹ In some cases this may mean that the individual has so little possibility of finding employment in the labour market that a new investment in education is necessary. But it is uncommon that changes are so rapid that an education becomes entirely useless.

There are signs indicating that those choosing upper secondary or university programmes are not well informed about the labour market situation facing those who have already completed the education they are now choosing.⁴⁰ It is neither good for the individual nor, under the assumption that the individual's productivity would be higher if their education better reflected their future profession, good for society.

Objective information on labour market outcomes for various programmes of education, such as average income and risk of unemployment, directed at those persons who will be choosing an education is therefore a valuable tool for avoiding major mistakes.

An additional factor increasing the risk of making the wrong choice is that students have too little information about what is required in order to successfully tackle and be able to profit from an education and whether they have these abilities. If study and vocational guidance were an integral part of the instruction, the risk of making this type of mistake would decrease. Such guidance may also help encourage students who are non-traditional learners to continue their studies.⁴¹

3.2.2 Lack of achievement at school leads to problems in the labour market

As seen in section 3.1.2, almost 30 per cent of 20-year-olds do not have an upper secondary school leaving certificate. There are various explanations for this. Some point to the importance of the

³⁹One example where cyclical effects may have led to substantially worse employability is IT trained people in the early 2000s. But structural change indicates that demand for people with a specialisation in this area will, if anything, continue to increase.

⁴⁰ Appendix 8 to the Long-Term Survey 2008 (SOU 2008:69).

⁴¹ Appendix 8 to the Long-Term Survey 2008 (SOU 2008:69).

extension of the upper secondary school programme from two years to three.⁴² Others point to the fact that there was no large rise in dropouts for the first cohort having the three-year programme as their only option, but there was a rise once the upper secondary school reforms were fully implemented.⁴³ Dropouts have also increased in the programmes that were already three years before the reforms. It thus may have been other parts of the reformed upper secondary school, such as the new grading system or grading in individual courses that has led to more dropouts. Other possible explanations for this development are changes in attitudes, more students born abroad, changes in qualifications and the labour market situation.

Fact Box 3.1 Individual upper secondary school programmes

Among those who neither study nor work, students who have dropped out of the individual programme are substantially overrepresented.¹ The upper secondary school individual programmes are intended to prepare students for studies in the national programmes. They are primarily aimed at those who do not qualify for any national programme.

Students take the individual programme for various reasons. Some lack the entrance qualifications in some particular subject while others lack grades in most compulsory school subjects. Another group is comprised of those who have upper secondary school qualifications but have not been able to gain entry to the desired programme or have dropped out of the programme they began. Immigrants with insufficient knowledge of Swedish are also a large group.²

In the 2006/07 school year, about 7 per cent of upper secondary school students were enrolled in the individual programme; there were slightly more men than women. Most of them (76 per cent) were in year one. Over half of the students in year 1 came directly from compulsory school. The percentage of students in the individual programme has been relatively stable since 1999, after having risen in connection with introduction of the requirement for passing grades in mathematics, Swedish and English in order to be able to begin upper secondary school.

The percentage going from the individual programme to the national programme has declined somewhat. About 30 per cent of those beginning the individual programme complete their upper secondary education within four years.

¹ Ministry Publication Series Ds 2003:33

² National Agency for Education [2007].

⁴² Åslund, O. and others [2006].

⁴³ Murray, Å. [2007].

Much worse labour market for those without an upper secondary education

Unlike physical capital, knowledge in the form of education does not wear out when it is used but rather when it is *not* used. For young people, a delay in entering the labour market often results in a decline in the acquisition of knowledge and in the value of the knowledge one already has. One study shows that those who were unemployed for a period directly after upper secondary school have an unemployment risk five years later that is 3 percentage points higher and annual incomes that are 17 per cent lower than those who had not been unemployed.⁴⁴ That the effects can be measured such a long time after the initial period of unemployment indicates that high youth unemployment is a factor that limits the labour supply even in the longer term.

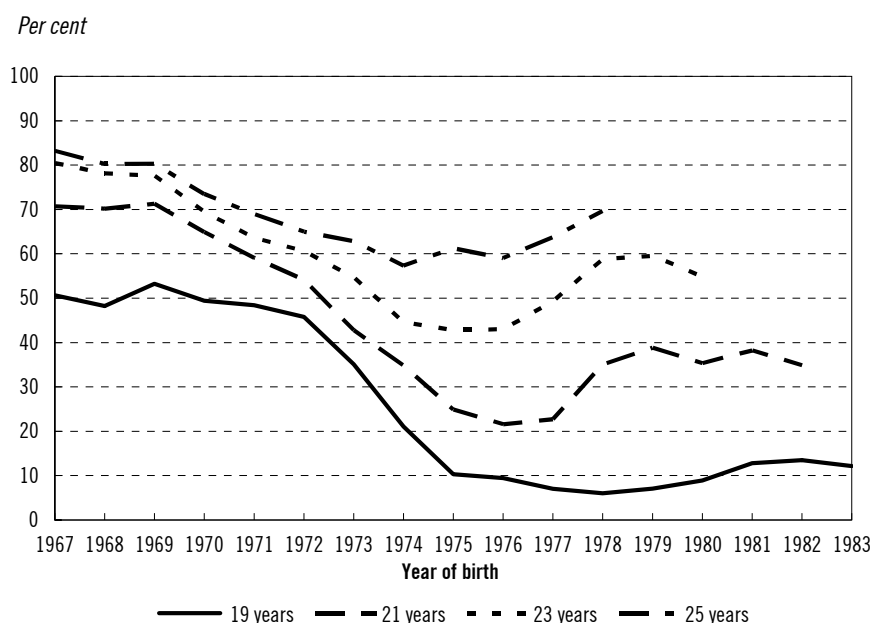
Labour market entry has been delayed more for those who have not completed any upper secondary education programme (figure 3.6). Part of the explanation for this is that practically everyone without an upper secondary school certificate still has some upper secondary school studies. But the chief reason is that it has become more difficult for those without an upper secondary education to get into the labour market.

Cross-country comparisons show that Swedish young people with no more than a pre-upper secondary education have lower employment rates than the OECD average in the first years after quitting school.⁴⁵ But after a couple of years, the labour market outcome for Swedish young people lacking an upper secondary education is better than the OECD average.

⁴⁴ Nordström Skans, O. [2004].

⁴⁵ OECD [2008b].

Figure 3.6 Age at which young people who had not completed upper secondary school at the age of 20 obtained their first job, percentage and year of birth



Note: Entry is defined here as when individuals reach an income equal to 50 per cent of the median income for 45-year-olds. Of those born in 1967, about 50 per cent obtained their first job at the age of 19 and by the age of 25, over 80 per cent had obtained their first job.

Source: Åslund, O. and others. [2006].

Level of education determines labour market outcome

The effects of choosing different education programmes can be seen in an example from the cohort born in 1978. According to Statistics Sweden's definition, at 28 years of age about 16 per cent of the men and about 11 per cent of the women lacked a complete upper secondary school education.⁴⁶ About 40 per cent had studied at university, although about half of these had not received any

⁴⁶ In its definition, Statistics Sweden does not require a school-leaving certificate. Instead it is enough to have managed to get a transcript of final grades describing the courses in which the student has received pass grades, regardless of the number of courses.

diploma. In some groups there were many who were still studying, particularly those in shorter university programmes.

Among women and men with only a pre-upper secondary education, almost 25 per cent are not in the labour market or in the education system, while in the cohort with at least three years of university studies, less than 5 per cent are not in the labour market or in the education system (see table 3.1).

The employment rate differs substantially from one group to another. Among those who had not completed upper secondary school, many fewer were employed, particularly among women.⁴⁷ The employment rate was highest among those who have completed at least a three-year university programme. There was some difference in employment between women who had qualified for university at upper secondary school and those who had not.

There was less difference in income than in employment between those with no more than a pre-upper secondary school education and those who had an upper secondary education but no more. This indicates that those with the least education have more difficulty in getting a job but if they do get one, the differences in income are quite small. Median income generally increases as the level of education rises.

Women more than men appear to strengthen their position in the labour market with higher levels of education. With a university education of at least three years, women have a higher employment rate than men while the rate for women in all other groups is lower than for men. Median income in all education groups was lower for women than for men.

⁴⁷ It should be noted that people on parental or sick leave are defined as employed.

Table 3.1 Labour market status 2006 for people born in 1978, by highest level of education achieved

Highest level of education	Percentage of total		Percentage employed		Percentage in studies and not employed		Median income, employed and not in studies	
	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>
Compulsory school or lower	15.9	11.1	71.1	61.4	5.3	11.2	245 000	191 000
Completed upper secondary school, qualified for university entrance	31.4	29.4	88.5	82.1	3.6	6.2	275 000	205 000
Completed upper secondary school, did not qualify for university entrance	13.2	8.1	84.7	77.5	3.5	7.9	261 000	201 000
Swedish university studies shorter than 2 years or other post-secondary education	5.9	7.5	68.0	64.4	23.3	27.3	265 000	219 000
University education shorter than three years without a degree	4.1	4.4	73.1	66.4	21.0	28.0	286 000	233 000
University education shorter than three years with a degree	2.9	2.6	92.2	89.5	4.0	4.7	300 000	241 000
University studies of at least 3 years, no (Swedish) degree	9.7	11.7	81.4	81.6	12.8	12.9	281 000	243 000
Completed university studies of at least 3 years	12.8	21.6	92.7	94.0	3.0	2.2	328 000	260 000
No data available	4.2	3.7	23.3	14.9	13.9	13.3	176 000	152 000
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>80.6</i>	<i>77.6</i>	<i>7.0</i>	<i>9.6</i>	<i>276 000</i>	<i>224 000</i>

Note: People who immigrated to Sweden after 1990 have been excluded.

Source: Statistics Sweden and Ministry of Finance calculations.

The clear connection between a weak position in the labour market and a short education could very likely be explained by some underlying factor such as family background or integration

problems. There is a strong connection between family background and the level of education individuals acquire.⁴⁸

Research in the United States shows that special measures for children with poorer opportunities are worthwhile if they are initiated early, usually before school age.⁴⁹ According to these studies, the initiatives should focus on children in worse home conditions. Swedish studies with a long-term perspective have shown that young people without an upper secondary school education have had a more difficult time at school than other students as early as the intermediate level.⁵⁰ For students with poorer school results, school problems worsened during the time they attended school. Thus there are indications that early intervention would also be effective in Sweden.

3.2.3 Lengthy university studies

Postponing the transition from upper secondary school to university is expensive for both the public sector and for the individuals concerned. In an international perspective, Swedish students are relatively old when they begin their university studies. As a result, they also graduate at a relatively later age.⁵¹ In addition, it takes Swedish students a long time to complete their education, which further delays labour market entry and establishment. For example, in 2006, gross study time for a Master's degree was six years, which corresponded to four years of full-time studies.⁵² Compared with other OECD countries, Sweden also has relatively many who begin studies but do not complete them.⁵³

About two thirds of those who study at university are under 30 years, but most of the increase in the number of university students since the beginning of the 1990s has occurred in the group older than 30 years.⁵⁴

The percentage with an upper secondary school certificate who begin university studies within five years rose in the 1990s (see figure 3.7). Between the 1988/89 and the 2000/01 academic years,

⁴⁸ Appendix 8 to the Long-Term Survey 2008 (SOU 2008:69).

⁴⁹ Heckman, J. [2008].

⁵⁰ Murray, Å. [1994].

⁵¹ OECD [2007c].

⁵² Statistics Sweden [2007b].

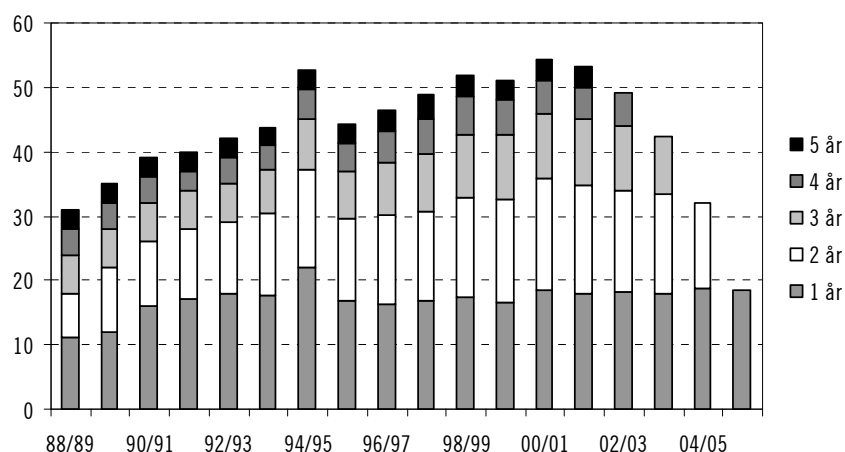
⁵³ OECD [2007c].

⁵⁴ Statistics Sweden [2007b].

the percentage of those who began university within two years of completing upper secondary school studies increased, only to decrease somewhat thereafter.

Figure 3.7 Percentage beginning university studies within 1-5 years after the end of the upper secondary school year

Per cent with an upper secondary school certificate



Source: Statistics Sweden [c].

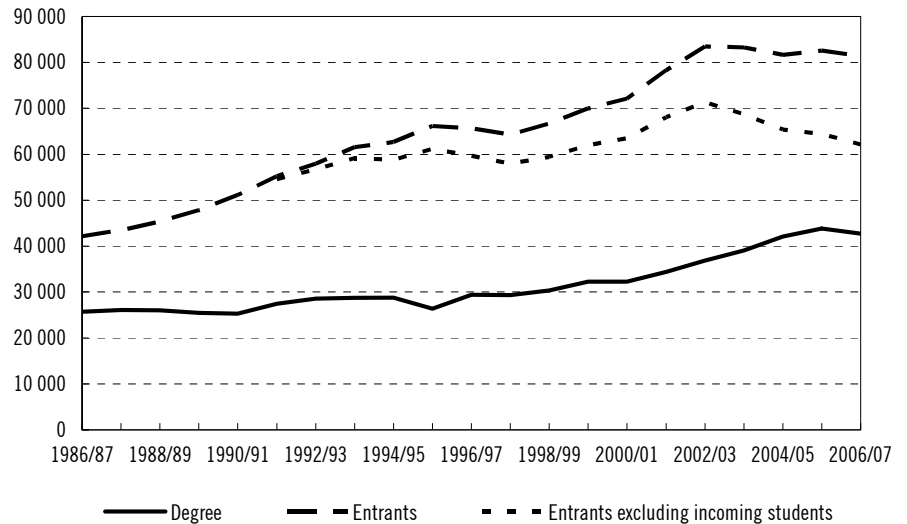
The number of new university students increased by 39 000 between 1986 and 2006. It is of interest here that the number who earned their first degree only increased by 17 000 during the same period (figure 3.8). Even though there is presumably some lag since it takes a number of years of studies before qualifying for a degree, the difference between these numbers is remarkable. One explanation is that a relatively high percentage of new university students are foreign students who do not intend to take a degree in Sweden, but rather only to study here a short time.⁵⁵ If the incoming students are excluded, the number of students beginning university has declined in recent years and is back to approximately the same

⁵⁵ Statistics Sweden [2007b]. Ninety per cent of the foreign students stay no more than two terms.

level as in the mid-1990s. This drop cannot be explained by smaller cohorts of young people but rather by the declining frequency at which students go on to post-secondary education.

Figure 3.8 University entrants and graduating university students 1986/87–2006/07

Number of people



Note: Graduating students include those earning their first degree.

Source: Statistics Sweden and Ministry of Finance calculations.

Fact Box 3.2 Incoming students, academic year 2006/07

Incoming students made up about 7 per cent of all students in the 2006/07 Swedish academic year. In comparison, they represent about 25 per cent of university entrants. Almost all (95 per cent) incoming students study individual courses and 40 per cent come via some exchange programme. Most of the incoming students come from Europe. About 20 per cent come from Asia and the sharpest increase has occurred in this group.

Source: National Agency for Higher Education [2008a].

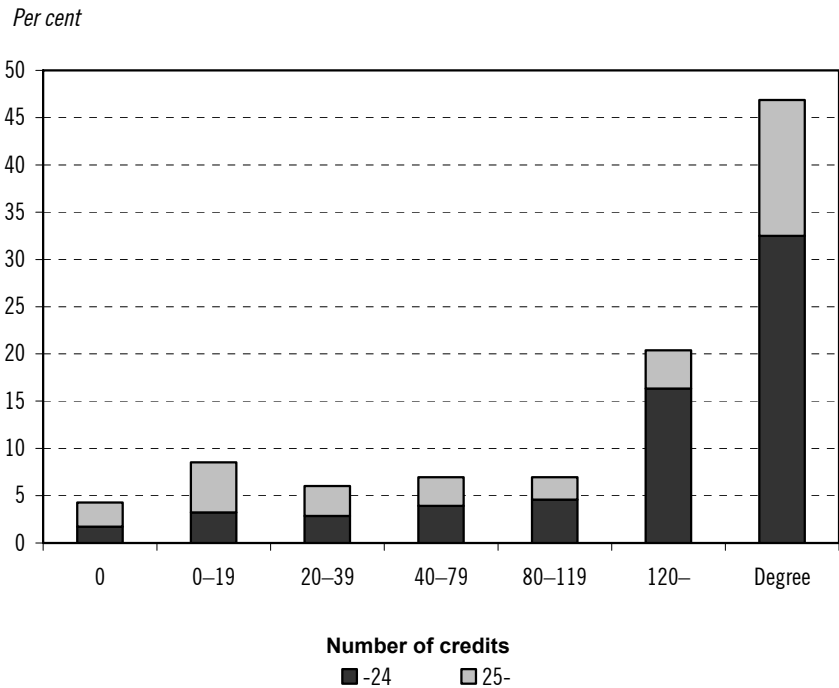
Only about 47 per cent of Swedish university entrants earn a degree within seven years.⁵⁶ Some of those who have not earned a degree would be able to do so. About 20 per cent have earned more than 120 credits, but it is unclear how many of these meet the degree requirements. A high proportion earn relatively few points; seven years after registering, approximately 25 per cent have earned fewer than 80 credits.

Those beginning their studies when they are under 25 are over represented among those who have earned degrees and more than 120 points, while those over 25 are over represented among those who have earned relatively few points (figure 3.9). This could be due to the older students having other motives for their studies, but it may also be due to more difficulty in beginning university studies a relatively long time after upper secondary school studies.⁵⁷

⁵⁶ Statistics Sweden [2007b].

⁵⁷ In 2007 a system of university degrees that was new in part was introduced. At the same time, the credit system for universities was changed from 'credits' to 'higher education credits'. One term of full-time studies is equivalent to 30 higher education credits.

Figure 3.9 Percentage who had earned a specified number credits seven years after first registering for the university term 1999/00, by age



Note: Incoming students are excluded from the survey.

Source: Statistics Sweden [c] and Ministry of Finance calculations.

All in all, this survey shows the problems with having an influx of university students as a goal of education policy. The relatively low percentage earning more than 120 credits in seven years also indicates problems of efficiency in the Swedish higher education system. But from the point of view of the labour market, it is not clear that it would be optimal if all who began university took a degree. For some positions, only certain knowledge from university is needed, not a degree. There is relatively little information about incoming students. More information is needed on the reasons for studying in Sweden and why most stay such a short time.

3.3 Many factors steer labour market exit

Exiting the labour market later in life can also increase the number of hours worked in the economy. In an alternative scenario reported in more detail in appendix 1 to the Long-Term Survey, the impact of such a change in labour market behaviour on GDP is estimated.⁵⁸ In the alternative scenario, the exit age increases by 0.1 years every year from 2012 to 2021. Thereafter the exit age in the alternative scenario is assumed to be permanently one year higher than in the base scenario. The higher employment results in an increase in the GDP level of approximately 2 per cent in the long term. In addition to giving a generally higher standard of living, it would also generate more tax revenue.

3.3.1 Exit now occurs both earlier and later

Generally the decision to exit working life is permanent. Few who retire or are awarded sickness and activity compensation return to the labour market.⁵⁹ Between 1970 and 1995, there was a downward trend in the average exit age for men in Sweden, while there was a weak increase in women's actual exit age (see table 3.2). Since the mid-1990s, the average exit age has increased for both men and women.

Table 3.2 Average exit age in Sweden

<i>Year</i>								
	1970	1975	1980	1985	1990	1995	2000	2006
Men	66.1	65.0	64.1	63.7	62.9	62.2	62.7	63.4
Women	61.4	61.6	61.3	61.5	61.8	61.6	61.9	62.7

Note: Exit age is calculated based on the average labour market exit age of people over 50 years who were in the labour force at 50.

Source: National Social Insurance Board (RFV) [2000] and the Swedish Social Insurance Administration [2007c].

The exit age differs from the age at which people start to collect the old age pension. In 2006 the average age at which people started

⁵⁸ See appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

⁵⁹ Ministry Publication Series Ds 2007:21.

to collect the old age pension was 64.7 years. This age remained basically constant between 1998 and 2006.⁶⁰ But the spread has increased since more start to collect the pension both before and after the age of 65. The percentage of people who began to collect the old age pension at 65 fell from 82 to 64 per cent between 2002 and 2007. The percentage of 60–64-year-olds with income from the state old age pension increased both for women and men between 1991 and 2005 (see table 3.3).

Exit from the labour market before age 65 usually occurs via benefit systems other than the state old age pension system. Table 3.3 shows the percentage of people with specified types of incomes and table 3.4 shows various types of income as a percentage of total income from gainful employment, sickness benefits, unemployment benefits and pensions.⁶¹

Even though more people aged 60–64 start collecting the old age pension, the old age pension as a percentage of income has not increased to any great extent. There are large differences between how many people have a particular type of income and how large a percentage of total income these types of income represent. The old age pension is a small part of 60–64-year-olds' incomes. It may mean that many work at the same time that they collect the old age pension. Supplementary pension schemes are a considerably more important source of support than the old age pension is for 60–64-year-olds. It is worth noting that the disability pension/sickness and activity compensation are an important source of income for 60–64-year-olds, particularly for women. The importance of this source of income has, however, diminished over time. Many more had private pension income in 2005 compared with earlier years, and private pensions as a percentage of income have also risen for 65–69-year-olds.

About a quarter of 65–69-year-olds have earned income, which constitutes about an eighth of income. The importance of earned income has, however, increased, while the old age pension makes up a considerably lower share of income in 2005 than it did previously. A sharp increase in supplementary pension schemes and private pension schemes is a contributing factor.

⁶⁰ The Swedish Social Insurance Administration [2007c].

⁶¹ The figures do not show the percentage of disposable income for each type of income.

Table 3.3 Percentage with a particular type of income*Per cent*

<i>Income</i>	Men			Women		
	<i>1991</i>	<i>1995</i>	<i>2005</i>	<i>1991</i>	<i>1995</i>	<i>2005</i>
<i>60-64 years</i>						
Supplementary pension schemes	20.1	26.1	23.1	16.6	24.2	18.7
Private pension	8.7	11.8	13.0	5.4	8.2	13.0
Disability pension/SA	33.2	31.5	23.4	33.4	33.3	33.8
Old age pension	4.1	5.8	9.3	2.7	3.3	8.1
Salaries	64.9	57.0	66.5	59.0	53.6	64.8
<i>65-69 years</i>						
Supplementary pension schemes	75.6	82.0	89.6	61.3	73.0	86.9
Private pension	15.2	23.3	37.9	7.8	14.3	40.5
Old age pension	98.7	98.9	97.0	98.6	98.5	97.7
Salaries	29.2	24.6	29.4	19.1	15.5	23.6

Note: Since individuals may have several different types of income during a year, summing the items is not possible. SA is sickness and activity compensation.

Source: The Swedish Social Insurance Administration (ordered data).

Table 3.4 Income as a percentage of the sum of income from gainful employment, sickness benefits, unemployment benefits and pensions

Per cent

<i>Income</i>	Men			Women		
	<i>1991</i>	<i>1995</i>	<i>2005</i>	<i>1991</i>	<i>1995</i>	<i>2005</i>
<i>60-64 years</i>						
Supplementary pension schemes	8.8	14.3	12.7	5.8	13.1	8.0
Private pension	1.3	2.3	2.4	0.9	1.6	2.0
Disability pension/SA	18.6	18.5	10.6	22.9	22.4	17.8
Old age pension	1.6	2.6	2.3	1.2	1.6	1.5
Salaries	55.0	48.3	62.6	55.7	49.8	61.9
Other	14.7	14.0	9.3	13.5	11.5	8.8
<i>65-69 years</i>						
Supplementary pension schemes	12.5	16.3	21.9	9.7	13.4	14.9
Private pension	2.7	4.0	6.6	1.8	2.9	7.2
Old age pension	70.5	69.1	55.6	78.1	76.5	64.4
Salaries	11.3	8.1	13.5	8.5	5.8	11.9
Other	3.1	2.5	2.4	2.0	1.5	1.5

Note: Only income from work, pensions and public income insurance schemes are included in the survey. Public transfers, for example, the housing supplement for pensioners, are not included. This survey does not therefore describe disposable incomes. SA is sickness and activity compensation.

Source: The Swedish Social Insurance Administration (ordered data).

3.3.2 Health and education affect work opportunities

Good health is vital to make working to a more advanced age possible. Health generally worsens with increasing age, a significant factor in being able to work. The rising average life expectancy is a clear sign that health has improved over time. Together with exit age developments, it has meant that the number of years after exiting working life has steadily increased (see table 3.5).

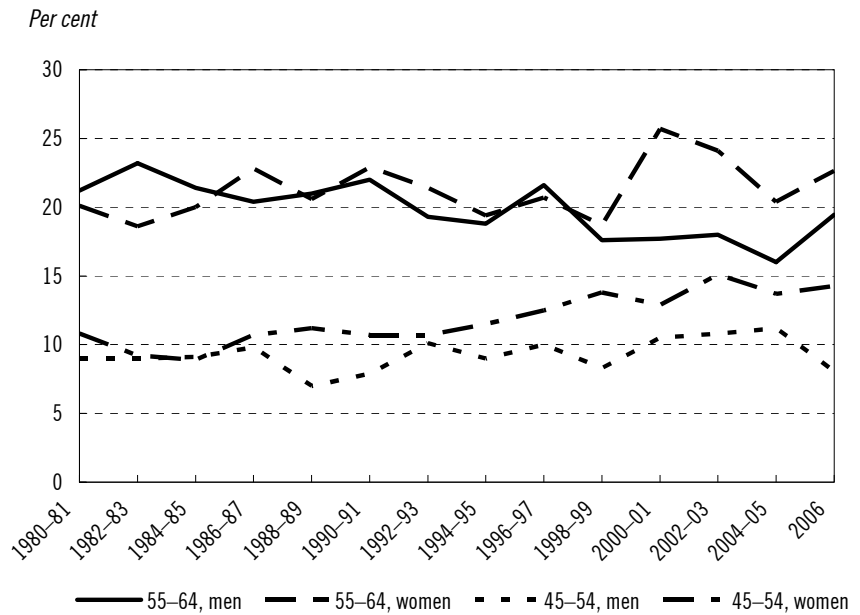
Table 3.5 Expected remaining average life expectancy at age 65

<i>Year</i>							
	1970	1980	1985	1990	1995	2000	2005
Men	14.1	14.6	14.7	15.3	15.9	16.7	17.4
Women	17.5	18.4	18.5	19.0	19.7	20.1	20.6

Source: Statistics Sweden [b].

Self-reported ill-health for older men has been relatively stable over time, but has increased for women aged 45–54 (figure 3.10). It increased sharply for women aged 55–64 during the early 2000s but subsequently returned to earlier levels. It is important to emphasise here that self-reporting health measures may often be hard to interpret. What individuals experience as a high degree of reduced work capacity may vary over time, depending on social norms and other factors. Moreover, developments in medical technology and more health education and knowledge on the part of the public contribute to increased diagnosis of health problems over time and thus also to their disclosure in health interviews. The interventions possible by health care providers will also be important in making it possible to work to a later age in the future. Health care has contributed to the increase in average life expectancy, but at the same time there are differing views on how longer life expectancy affects quality of life (see also section 7.2.3).

Figure 3.10 People with a substantially reduced work capacity owing to long-term illness 1980–2006



Note: The questions posed were: "Do you have any long-term illness, trouble after an accident or any other debility?", "do you regularly take medicine for anything?" and "does the problem result in a major reduction in work capacity?".

Source: Statistics Sweden [d].

Those now nearing retirement age have a better level of education than did earlier generations and work in other occupations. One explanation for the rise in the exit age in the past 10 years may be that compared with previous generations, people born in the 1940s are the first generation having a substantially higher proportion of people with a university education. Most quantitative studies of actual retirement age show that people with a university education retire later than those without.⁶²

⁶² This should be interpreted taking into consideration that the level of education, in addition to being purely human capital, is also a proxy for other explanatory information for a later retirement. For example, university education leads to fewer periods of unemployment and greater employability and has less impact on health, making it difficult to isolate the impact of education on retirement age.

Today a considerably larger part of the population chooses to get a university education. It is therefore unclear if the existing correlation between higher education and actual retirement age will also hold true for tomorrow's older workers. Nor has the value of older workers' education compared with that of younger workers been made clear. An education received a long time ago is generally less responsive to the needs of the labour market, but the value of an education can also increase if it is combined with long work experience.

According to an OECD survey of research on the importance of age in productivity, productivity declines with age.⁶³ These productivity decreases can, however, be partially compensated for with the help of assistive measures and changes to the work environment. In contrast, a review of studies at the macro level shows that economies with an older labour force grow more rapidly than economies with a younger labour force.⁶⁴

3.3.3 Not everyone benefits from working for a longer time

Economic incentives can explain a large part, but not all, of an individual's decision to retire.⁶⁵ One basic intention of the pension system reform was to strengthen the incentives to work.

In most instances there is a clear connection between the length of an individual's working life and the pension provided by the system. But for relatively large groups, the financial incentives are weaker.⁶⁶ This is true of people with relatively high incomes, as incomes over 7.5 base amounts do not give public pension rights, even though pension contributions are deducted. It also holds true for those with low incomes who are only eligible for the guarantee pension or those with incomes from sickness or activity compensation who receive the same pension regardless of whether or not they start to work.⁶⁷ For people with low incomes, the housing supplement for pensioners also reduces the incentives to work after

⁶³ OECD [2006].

⁶⁴ Malmberg, B., Lindh, T. & Halvarsson, M. [2008].

⁶⁵ Palme, M. & Svensson, I. [2004].

⁶⁶ Appendix 5 to the Long-Term Survey 2003/04 (SOU 2004:44).

⁶⁷ About 10 per cent of those having pensionable income in 2005, received it from sickness and activity compensation. The Swedish Social Insurance Administration [2007b].

age 61 since the housing supplement is also granted to those with sickness benefits.⁶⁸

The old age pension system thus encourages continued labour force participation, but not necessarily continued work, for those with income from sickness and activity compensation. For those with sickness and activity compensation that exceeds the guarantee pension, there is a strong incentive to wait until age 65 to start collecting the old age pension since sickness compensation is pensionable. The prospects of financing an early labour market exit via public income insurance thus eliminate the flexibility in the pension system for some groups.

It is not only the state pension system that affects the retirement decision – pensions regulated by collective agreements and private pension savings are also important factors.⁶⁹ These can often be started at considerably lower ages than the state pension. An early retirement pension is considered to have a strong influence on the decision to move retirement forward.⁷⁰ There are tax and deduction regulations that can make it advantageous for employers to offer a pension settlement instead of continued employment.⁷¹ Employers' costs for occupational pensions for older workers are often quite high. This is due both to older workers often having a relatively high wage and the premiums in some systems rising with age.

It is important to remember that labour market exit decisions are generally made in a household with two people and they often coordinate their retirement decisions.⁷² Every opportunity to stop working will therefore affect more than those who have the opportunity. This makes it even more important to review the

⁶⁸ The maximum compensation in 2008 was SEK 4 650 per month for someone who is single. The housing supplement for pensioners can be granted to people who have the old age pension, sickness and activity compensation, widow's pension, a special survivor's pension, extra allowance for the wife of a pensioner or the equivalent benefit under the laws of another EU/EEA country. The housing supplement for pensioners is not awarded to those who start to collect the old age pension before age 65.

⁶⁹ Estimates of the extent of supplementary insurances can be found in Sjögren Lindquist, G. & Wadensjö, E. [2007].

⁷⁰ Eklöf, M. & Hallberg, D. [2006]. According to their estimates, the probability of early retirement would fall by 10–30 per cent if no one was offered an early pension.

⁷¹ Ministry Publication Series Ds 2007:21.

⁷² Ministry Publication Series DS 2007:21. The National Social Insurance Board [2001b] finds that people living together are more likely than single people to choose to retire before the age of 65.

economic incentives and regulations that concern the decision to retire.

3.3.4 The norm of a pension at age 65 has begun to loosen

Both employees and employers want to have low pensionable ages. In a 2005 survey, about 65 per cent of the employees stated that they wanted to retire before the age of 62.⁷³ According to surveys, Swedish employers' representatives are unwilling to take on people over 50-years-old and think that most employees should retire early.⁷⁴ It is uncertain whether these attitudes to older workers will last in the future if the shortage of workers, particularly younger workers, increases.

Before the Swedish pension system was reformed in the 1990s, the mandatory retirement age was 65. There are signs that this was standard and functioned as a generally accepted upper limit for working life. In the new pension system, the retirement age is flexible and wage earners have the right to stay on the job until aged 67.

Retirement at 65 is still very common, but it cannot be explained by financial incentives.⁷⁵ The norms concerning the retirement age are strong although there are indications that they are beginning to loosen. Thus far the average retirement age has remained relatively unchanged while the spread in retirement ages has increased. The dissolution of the norm thus appears to promote both lower and higher retirement ages. In other words, it may have become more socially accepted to start collecting a pension both late and early. If relaxing the norm means that early retirement will be all the more common, there could be major consequences for financing welfare services and pensions. However, as shown earlier in this chapter, the percentage of 60–64-year olds taking early retirement increased substantially more than the percentage of their income coming from this source. Rather, income from supplementary pension schemes in particular, but also from private pensions, has increased.

⁷³ SIFO Research & Consulting [2005].

⁷⁴ National Social Insurance Board [2001c].

⁷⁵ Ministry Publication Series Ds 2007:21.

3.4 Conclusion

An earlier entry into the labour market and a later exit could provide a considerable boost to the number of hours worked. A stronger growth in the labour supply than found in the Survey's base scenario could increase growth and improve the prospects for financing development of the welfare services in the future.

Labour market entry is closely connected with the duration of education and the education system's efficiency. As for young people's level of education, there are two diverging trends. The percentage of young people with a higher education is growing but at the same time the percentage of young people with only a pre-upper secondary education remains constant. Young people who lack an upper secondary education find it more difficult to get established in the labour market. Since the percentage of young people without an upper secondary education is relatively constant, there is a risk of creating a large group with a weak foothold in the labour market. There is a strong argument that early initiatives in the schools are most effective to counter failure at school.

University studies in Sweden begin late and take a long time. Changing this would help increase the number of hours worked with relatively high productivity. Inefficient use of the time devoted to getting an education is costly not only for the public purse but also for individuals, whose life income is sharply reduced. In view of Swedish university students' older age and long road through the education system, it is worth considering the introduction of financial incentives of some kind via fees and premiums in the student support system. To reduce the risk of the fees leading to recruitment that is more socially skewed, it could be possible to borrow the fees or introduce a system of grants.⁷⁶

Since education takes time and structural change is rapid, it is difficult, but not impossible, for society to steer individuals to choose the 'right' university education.⁷⁷ Nevertheless, it is important to improve the information to make it possible for the individual to make informed decisions. With clear, simple and objective information and expanded study and vocational guidance relatively early in the education process, the public sector could,

⁷⁶ Appendix 7 to the Long-Term Survey 2003/04 (SOU 2003:57).

⁷⁷ Appendix 8 to the Long-Term Survey 2008 (SOU 2008:69).

with modest resources, achieve a more efficient and less costly education system.

In addition, society can and should use various tools to create the incentives that both encourage people to get an education and induce schools, colleges and universities to offer good education.

Longer life expectancy has resulted in a longer retirement. To increase the financial incentives to older people to work, the state has implemented reforms in a number of transfer systems in recent years. As for pensions, the reformed pension system should ensure the balance between revenue and expenditure. In view of demographic trends, it is reasonable to consider the need for further measures before the full effects of the new pension system can be evaluated.

One example of measures that have been implemented in other countries is the adjustment of age limits in the old age pension system to average life expectancy. This should also be considered in Sweden. Likewise, the rules for the guarantee pension and housing supplement scheme for pensioners should be reviewed. At the same time any such review must take into consideration the distributional effects of a change in the regulatory regime.

Most people exit the labour market via systems other than the state old age pension system. In order to raise the exit age, it is therefore important to take into account the financial incentives and norms in all the relevant systems, not just the state old age pension system. The age limit for claiming private and collective pension savings is often considerably lower than the limit in the old age pension system. Consideration can be given to whether it would be appropriate for the state to try to influence these age limits, for example, via the tax system.

4 Good Productivity Growth

Productivity developments have been of great importance in the development of welfare in Sweden. In the past fifty years, there has been only a marginal increase in the number of hours worked in Sweden while productivity has more than quadrupled. Productivity growth varies from one industry to another and from one period to another. Since the beginning of the 1990s, productivity growth in Sweden has been good. The scenarios for the Long-Term Survey 2008 summarised in chapter 2 assume that growth will continue to be healthy in the years ahead.

Owing to increased demand for services in the economy, there will be a shift in employment from manufacturing to the service sector. Productivity growth is higher in manufacturing than it is in the service sector. Consequently, the shift in employment means that there will be more production in service industries having relatively weak productivity growth. But the effect of productivity in the economy as a whole is unclear. Services are often used as an input in other industries' production and thereby affect productivity growth in other industries.

A number of factors affect productivity growth, including macroeconomic stability, education level, access to risk capital, research and development, conditions for entrepreneurs and business people, and competition. Thus a policy aimed at promoting good productivity growth must take a broad approach and have a general orientation.

4.1 Productivity growth varies substantially

Productivity gains are of great importance for the long-term development of welfare, both historically and in the future.

Productivity gains mean that economic resources are used in an increasingly efficient manner.

Productivity can be measured in various ways. In this chapter, primarily labour productivity, the value added per hour worked, is used as a measure of productivity. At the same time, one should be aware that there are substantial problems associated with measuring productivity growth, particularly industry level growth; see fact box 4.1. This chapter discusses only business sector productivity, while productivity in the public sector is considered in chapter 7.

4.1.1 Healthy productivity growth since the early 1990s

Productivity growth in Sweden has varied over time. After the strong productivity gains of the 1950s and 1960s, productivity growth in Sweden weakened during the subsequent two decades.

Low productivity growth during the devaluation policy of the 1980s...

Macroeconomic instability marked most of the 1980s. Public finances deteriorated, inflation was high and the economy suffered several cost crises. To meet the cost crises, a devaluation policy was pursued and as a result, industry in the short term experienced strong competitiveness. But in the long term, the pressure on enterprises to change lessened, owing to the drop in the cost of labour (real wages) compared with the cost of machinery. Hence, the incentives to replace labour with new machines and new investments and rationalisations declined, resulting in less productivity growth.⁸⁰

... followed by high productivity growth after the crisis in the 1990s

In the beginning of the 1990s, the devaluation policy was abandoned and the krona was pegged to the then currency unit of the EU (the ECU). This led to lower inflation but also resulted in sharply rising real interest rates. Together with an international economic slowdown, this contributed to rapidly falling demand

⁸⁰ Eklund, K. [1993].

and rising unemployment in the economy. At the same time, public finances deteriorated sharply, owing to the rising unemployment and the developing banking crisis. The public sector was forced to rationalise, resulting in still more unemployment.⁸¹

As a result of the deep economic crisis, GDP fell three years in a row. An extensive elimination of production resources took place at which time mainly less productive production disappeared. One consequence of rationalising away a not inconsiderable part of the labour force in a short time was a rapid increase in productivity. As the fall in employment affected those with a low level of education more than the well educated, the change in direction to a higher proportion of well-educated people may have boosted the productivity increase. At the same time, it may have involved permanent exclusion of parts of the labour force, since even now the employment rate is lower than it was before the crisis of the 1990s. In that event, it would mean that the positive growth effect of the productivity gain was overestimated if the productivity increase is partly due to lower employment. In order to estimate the impact on growth, both effects have to be taken into account.

To some extent, the increase in productivity after the crisis can be explained by the cyclical effect brought on by the recovery. But the healthy productivity growth has lasted well into the 2000s, although it has moderated in recent years (figure 4.1). One factor contributing to the strong productivity gains was the abandonment of the devaluation policy. This increased the pressure for change in the business sector and, together with a policy aimed at low inflation and stable public finances, it has contributed to more stable macroeconomic development and lower interest rates. Most indications are that internationalisation, information technology (IT) developments, innovation and the deregulation of the product markets also account for the positive growth

For more than ten years, productivity gains in the business sector in Sweden have also been good by international comparison. This is true of both the business sector in general and many individual industries, including many service industries. The recent slowdown in productivity does not affect this assessment.

According to the National Institute of Economic Research,⁸² productivity grew by 3.5 per cent in 2006, declined by 0.5 per cent

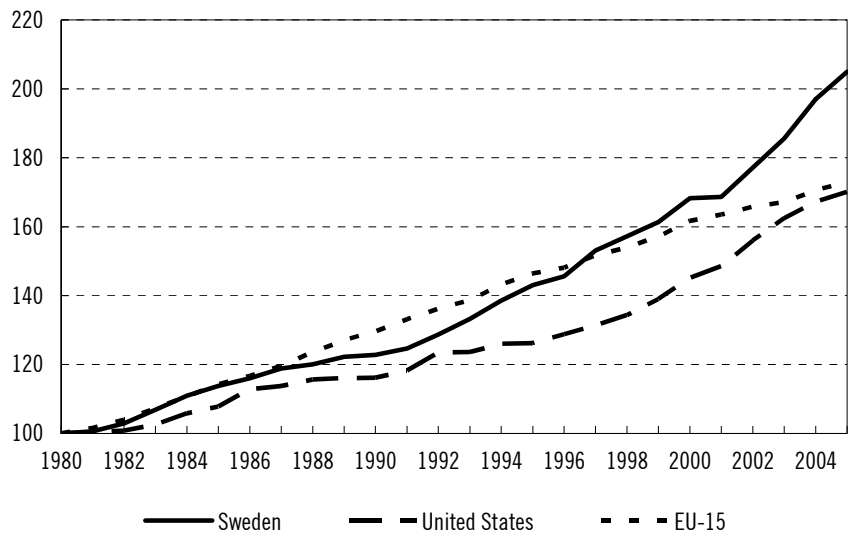
⁸¹ Södersten, B. & Tson Söderström, H. (eds.) [2004].

⁸² National Institute of Economic Research [2008].

in 2007 and is expected to fall by an additional 0.5 per cent in 2008. The Long-Term Survey estimates that the short-term downturn in 2007 and 2008 is largely cyclically induced rather than structural and productivity in the next few years is expected to approach a long-term productivity growth of about 2.5 per cent a year for the business sector.⁸³

Figure 4.1 Labour productivity in Sweden, the EU-15 and the United States (all parts of the economy) 1980–2005

Index 1980=100



Note: Labour productivity is defined as the value added per hour worked. EU KLEMS is an EU financed project which is to develop comparable time series for national accounts from 1970 onwards. EU KLEMS has data for 47 industries. More information and data series are available on the project's website: <http://www.euklems.net>.

Source: EU KLEMS.

⁸³ The National Institute of Economic Research [2008]) also believes there will be a recovery and forecasts productivity growth of 1.6 per cent for 2009 and 3.5 per cent for 2010.

4.1.2 Productivity growth varies from industry to industry⁸⁴

Average productivity growth is higher in manufacturing than in the service sector (table 4.1). Productivity growth in manufacturing has been particularly strong in electronics and optical equipment, which includes telecommunications products.

Table 4.1 Growth in the number of hours worked and labour productivity 1980–2030

Industry	1980–2005		2005–2030	
	Hours worked	Productivity	Hours worked	Productivity
Agriculture, forestry, hunting and fishery	-2.7	2.9	-3.2	4.0
Mining and quarrying	-3.0	4.0	-1.7	4.3
Manufacturing	-0.8	4.4	-0.6	3.8
Electricity, gas, heating, water	-0.2	1.8	-0.1	1.2
Construction	-1.0	1.3	0.7	0.9
Wholesale and retail trade	-0.1	3.2	0.7	2.6
Transport and storage	0.2	1.8	-0.4	2.8
Post and telecommunications	-0.5	6.0	-0.7	4.1
Credit institutions and insurance	1.0	1.7	-0.7	2.6
Business services (including leasing)	3.4	-1.1	0.7	1.0
Personal services (incl. hotels, restaurants), education, medical care*	2.1	-0.2	0.9	0.7
Business	0.3	2.5	0.1	2.3

Note: Labour productivity is measured as value added per hour worked. The historical values are calculated on the basis of trend estimates while the projections refer to the average difference between the actual value in 2005 and the estimated equilibrium value in 2030.

*Since in EU KLEMS, personal services, education, medical care, and business also include public production, they have been estimated separately based on Statistics Sweden's National Accounts.

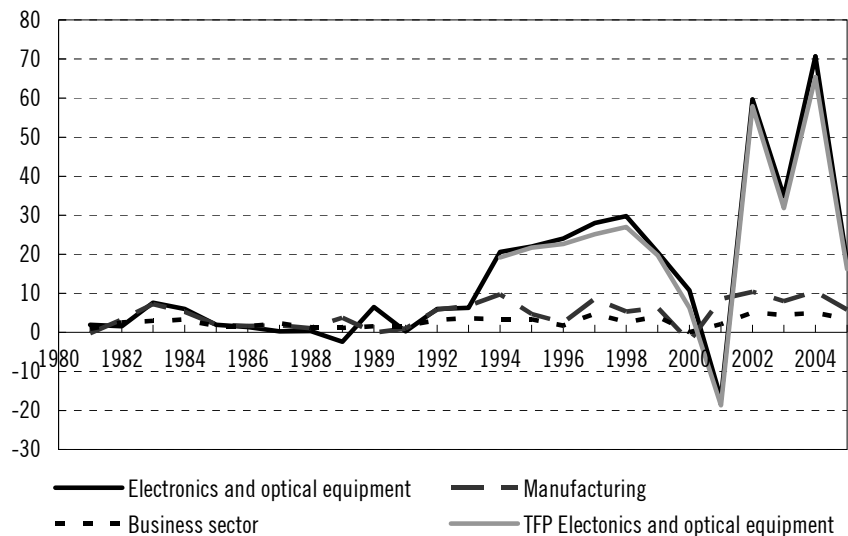
Source: EU KLEMS, Statistics Sweden [e] and Ministry of Finance calculations.

⁸⁴ There is a more detailed description of productivity gains in Appendix 1 to the Long-Term Survey 2008 (SOU 2008:108), where the scenarios are presented.

Productivity in the electronics and optical equipment industry has been on an upward trend, growing at about 11 per cent a year between 1980 and 2005, which is the highest growth rate in the private sector. Since the 1990s, there have been strong productivity gains in this industry (figure 4.2). Major technological developments account for this productivity growth.

Figure 4.2 Productivity growth in the electronics and optical equipment industry, manufacturing and the business sector 1981–2005

Annual percentage change



Note: TFP is an abbreviation of total factor productivity, described in more detail in section 4.3. Before 1993, productivity growth in electronics and optical equipment was stated as an average of the productivity growth for the manufacture of machinery (SNI Swedish Standard Industrial Classification 29), electricity and telecommunications products (SNI 30-33) and the vehicle manufacturing industry (SNI 34).

Source: EU KLEMS and Statistics Sweden [e] for the business sector.

Even though productivity growth in the service sector is, on average, lower, there are several service industries in which productivity growth is at least as high as it is in manufacturing. Post and telecommunications has had the highest productivity growth at almost 6 per cent a year since the beginning of the 1980s.

Productivity gains in business services (including leasing) have, however, been weak. For many service industries, the construction industry being one exception, productivity growth after 1990 exceeded that of the 1980s. Compared with the United States and the EU, productivity growth in many service industries in Sweden has been good in the past decade.⁸⁵ At the same time it is difficult to measure, and thus to compare, productivity gains in different industries; see fact box 4.1.

Fact Box 4.1 Difficult to measure productivity

There are significant problems associated with measuring productivity gains, not least with respect to individual industries. When different parts of the economy are compared, the extent of the measuring problem is affected by whether the problems are bigger in some industries than in others and if this difference changes over time.

One problem is the change in products owing to constant technological development and improvements in quality. When calculating productivity, production development must be calculated as though there were no changes in quality. For example, to be able to compare production per hour at different points in time, technological development has to be frozen to avoid comparing apples and oranges. Statistics Sweden accomplishes this by creating quality neutral prices and value weights. Using televisions as an example, this means that when the old cathode ray television is exchanged for a new flat screen television, the technological change is captured by using a value weight that measures the value of production instead of the number or the weight in kilos. This method means that a flat screen television is equivalent in value to two old televisions. By using value weights, Statistics Sweden can create a quality neutral price. It goes without saying that quality and technological change are very difficult to estimate as volume changes (how many old televisions are equivalent to a new flat screen television?). The estimates are particularly problematic for products where technological change happens very rapidly. In order to estimate technological and qualitative changes, Statistics Sweden sends questionnaires to manufacturers.

The weak productivity gains in some service sectors, not least business services, may at least in part be due to measurement problems. For many of the business services, there is a high degree of differentiation, which makes price and quality comparisons difficult. The more knowledge intensive business services are also often individually adapted to the client, which naturally makes price comparisons even more difficult. The weak productivity gains for these

⁸⁵ In international comparisons of productivity gains in the service and other industries, productivity per person employed is sometimes measured. See for example Lundgren, S. (ed.) [2007]. If so, gains in several Swedish service industries will be worse than if productivity is measured per hour. One explanation for the difference is that average working hours differ from country to country.

services could be at least partly due to underestimating quality improvements and the consequent overestimation of price trends.

Overestimating price trends in certain services (or products) does not necessarily result in large errors in estimating productivity growth in the economy as a whole. This is true since many of the services, particularly business services, are used as inputs in manufacturing.

If measurement is a bigger problem for services than for other products, too large a part of the total productivity growth will be attributed to manufacturing and too small a part to service industries.

Structural change affects productivity gains

Structural change means that some industries grow and some contract and this change is significant for productivity gains throughout the economy.⁸⁶ Structural change can lead to an increase in productivity either by labour moving to activities with higher productivity *levels*, the static effect, or to activities with higher productivity *growth*, the dynamic effect. In addition there is an 'in effect' that depends on factors in the industry or firm and that explains the rest of the productivity growth.

The in effect explains most of the productivity growth from 1975–2004.⁸⁷ Employment, relative to other industries, has not increased after 1990 in industries with higher productivity or higher productivity growth. Even at the corporate level, the contribution from the dynamic and static effects of the structural change to productivity growth was small between 1997 and 2003.⁸⁸

Analyses of the importance that entering and exiting firms have for productivity growth in manufacturing have arrived at partly different results.⁸⁹ The relatively short time span analysed could explain why some studies of Sweden do not find any major

⁸⁶ See also chapter 5 for a discussion of the pace of structural change in the economy.

⁸⁷ Lind, D. [2007]. The analysis is based on data from EU KLEMS at the two digit level in accordance with the Swedish Standard Industrial Classification (SNI). Lind, D. [2003] shows in an earlier study of manufacturing that with the exception of the telecommunication products industry, the dynamic effect made a negative contribution to productivity growth after 1990.

⁸⁸ Andersson, L-F. [2006]. The analysis is based on individual and corporate data bases from the Swedish Institute for Growth Policy Studies (ITPS). Firms with less than one employee and sole proprietorships (where the owner is not counted as employed) have been excluded from the analysis.

⁸⁹ Hedén, Y. [2005] finds that from 1990 to 2000, 40 per cent of the increase in labour productivity and 50 per cent of the increase in total factor productivity came from starting new firms and closing others. Edquist, H. & Vikström, P. [2007] find that existing firms were responsible for 85 per cent of productivity growth from 1997 to 2002.

contribution to productivity growth from changes in employment in the industries investigated.⁹⁰ The new firms' importance is primarily evident in the long term. In the short term, the impact on economic growth can be expected to be less. International studies extending over longer periods find a higher correlation between corporate dynamics and productivity growth.⁹¹

The rise in demand for services has resulted in a steady increase in the number (and proportion) of hours worked in the service sector, while the number of hours worked in manufacturing has declined. Business services are definitely the fastest growing service industry and the most rapidly growing parts of the business services industry are research and data processing services. The number of hours worked there more than doubled between 1993 and 2005.⁹² The increase in employment in business services is not unique to Sweden. It can also be found in most OECD countries.

Productivity growth has generally been weaker in the service sector than in manufacturing. It is therefore not very surprising that studies have had difficulty substantiating that the structural change to more production of services has made a positive contribution to productivity. In the long term, this change may lead to lower productivity growth in the economy as a whole, but it is not a foregone conclusion since services as inputs in other production have increased. Section 4.2 has a more in-depth discussion about what importance service industries may have for productivity in other parts of the economy. It is also important to point out that there is no basis in the statistics for the conclusion that productivity growth would have been higher without the structural change.

Employment is also increasing in industries with the services most consumed by households. In particular, the personal services industry, an industry in which productivity gains have been weak, is growing. Increased employment in industries that have weak productivity growth and make products consumed by households without question contributes to lower productivity growth in the economy as a whole. Even though the impact on productivity growth is negative, this does not mean that the growth is necessarily negative from a welfare point of view. Instead, the

⁹⁰ Karlsson, C. & Nyström, K. [2007].

⁹¹ Ahn, S. [2001].

⁹² EU KLEMS and Ministry of Finance calculations.

increased demand for personal services from households reflects changes in household preferences.

Many of the services provided by the public sector are similar to personal services in that they are primarily consumed by households and productivity growth is weak. Public service productivity is discussed in chapter 7.

**Table 4.2 Structural change in the business sector
2005–2030**

Percentage

Industry	2005		2030	
	Value added	Hours worked	Value added	Hours worked
Agriculture, forestry, hunting and fishery	2.3	4.4	1.5	1.9
Mining and quarrying	0.2	0.3	0.3	0.2
Manufacturing	30.7	25.1	35.8	20.8
Electricity, gas, heating, water, and sewage treatment plants	2.6	1.1	1.9	1.0
Construction	4.7	8.9	3.8	10.3
Services	59.4	60.2	56.8	65.8
Business	100	100	100	100

Source: Statistics Sweden and Ministry of Finance calculations.

The proportion employed in the service sector continues to increase

The scenarios in the Long-Term Survey assume that the healthy productivity growth since the beginning of the 1990s will also continue in the future. Productivity growth in manufacturing is assumed to be unchanged and to increase by 3.8 per cent per year on average. This is despite the assumption of clearly lower productivity growth in the electronics and optical equipment industry. For most other manufacturing industries, productivity growth is assumed to be about the same as it was from 1980 to 2005.

Continued deregulation of services, not least in the EU, will increase international competition in the service sector. Since the service sector is still relatively highly regulated, there is considerable potential for better regulations both in Sweden and inter-

nationally.⁹³ The implementation of the EU Services Directive is thought to have an effect on both international competition in the service sector and on GDP.⁹⁴

In light of this, it is assumed in the base scenario that productivity growth in the business services industry (including leasing) will be higher in the future than during the past 25 years. The increase in productivity in the industry in recent years also indicates that this is likely. This also is true of the transport industry, which is also assumed to have higher productivity growth in the future.

The increasing demand for personal services will lead to an increase in the proportion of people employed in the industry in the years ahead. Both the level of productivity and productivity growth are expected to continue to be low in this industry. The increasing demand for welfare services anticipated by the Survey will contribute to an increase in the share of the workforce employed in the public sector and a corresponding decrease in the private sector.

With employment in the service sector increasing, future productivity growth in the business sector as a whole is expected to be somewhat lower: 2.3 per cent a year compared with 2.5 per cent a year over the last 25 years.

4.2 Services affect productivity in other industries

With the increase in employment in the service sector, the question arises as to whether this will lead to lower economic growth in the long term.

Up to the beginning of the 2000s, the productivity *level* was higher in the service sector than in the product sector. Thus the earlier shift in employment from the product sector to the service sector contributed to higher productivity in the economy as a whole. But for the last few years, the productivity level has been lower in the service sector than in the product sector. Since a large part of the services are used as an input in other production, this shift in production towards the service sector may yet contribute to more efficiency in the economy as a whole.

⁹³ OECD [2008d].

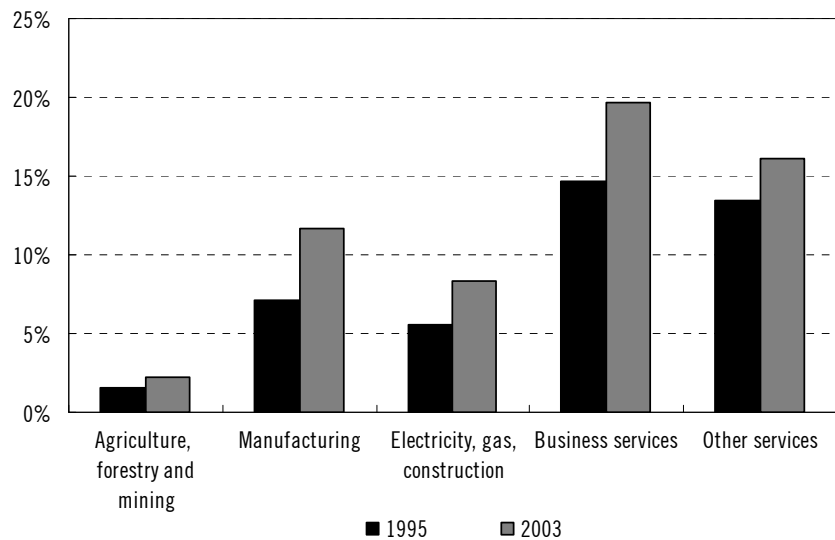
⁹⁴ Kox, H., Lejour, A. & Montizaan, R. [2005] and Copenhagen Economics [2005].

4.2.1 The increasing importance of business services as an input in industry

The purchase of services as a percentage of the value of production has increased in manufacturing. Business services, particularly the group 'other business services', have increased their share of the input in manufacturing firms (figure 4.3). Included in 'other business services' are cleaning, telecommunications, employment agencies, recruitment, architect services and security services; see fact box 4.2. The share of input attributable to R&D services has also increased somewhat.

The use of other services (transport, communications, trade, financial services, hotels and restaurants) as manufacturing inputs has grown at approximately the same pace as the increase in production and hence their share of input is relatively unchanged.

Figure 4.3 Business service inputs as a percentage of total production 1995 and 2003



Source: Statistics Sweden [e] and Ministry of Finance calculations.

The percentage of business service inputs has increased in all product sectors except coal and petroleum products. Business service inputs as a percentage of the value of production have increased more in manufacturing than in the service industries. In this connection, it is worth noting that the most rapidly growing industries in manufacturing (chemicals and electronics and optical equipment) are also the industries in which the percentage of business service inputs has increased the most.

The shift in work from manufacturing to service companies can only partly account for the increase in the production of business services. Another explanation is the increase in the service content of products, particularly the knowledge content. Among the indications that this is the case is the fact that while employment in manufacturing has declined, the percentage of those employed in manufacturing firms that have service-related work tasks has increased. This increase has thus been taking place at the same time that the number of people employed in business services has increased and manufacturing firms have increased their purchases of business services. The service content of consumption and production in manufacturing has increased considerably.⁹⁵

The relative price changes between product inputs and service inputs are another explanation for the rise in the percentage of service inputs. The high productivity in the production of a number of goods has meant that business services have become more expensive compared with other inputs. This may have contributed to the rise in business service inputs as a percentage of the value.

⁹⁵ Kox, H. & Rubalcaba, L. [2007].

Fact box 4.3 Leasing and business services in a statistical perspective

SW (Swedish Standard Industrial Classification 2002)

- 71 Leasing of machinery and equipment without operator and of personal and household goods
- 72 Data processing and related activities
- 73 Research and development
- 74 Other business activities
 - 741 Legal and financial consultant activities, holding activities
 - 742 Architectural and engineering activities and related technical consultancy
 - 743 Technical testing and analysis
 - 744 Advertising
 - 745 Labour recruitment and provision of personnel
 - 746 Investigation and security activities
 - 747 Industrial cleaning
 - 748 Miscellaneous business activities

4.2.2 Importance of business services for productivity in other industries

Moving work tasks out of manufacturing into the service sector affects productivity in all parts of the economy. This move can contribute to more specialisation and economies of scale in the production of different services. It may contribute to higher productivity growth throughout the economy even though it may appear from the statistics that the move contributes to growth in industries with low productivity growth while industries with higher productivity growth contract.

Services as inputs may also have indirect effects on productivity in those industries that use them, for example, by the transfer of knowledge. They may do this even though they are not reflected in economic transactions. Indirect effects may also arise if the service being used as an input is improved and does not increase in price. Under pricing may be the result of the market structure for some knowledge products and occur, for example, during an economic slowdown.

Analyses of the indirect effects of business services on productivity by various forms of spillover effects are incomplete and rather fragmented. But it is relatively clear that IT services have

positive effects on productivity gains in other industries. For other business services, a study cautiously concludes that the growth in business services in the 1980s had positive spillover effects on productivity in the economy as a whole. According to the study, it appears that business service firms at that time did not want to or could not charge prices equivalent to the value of the services to the purchaser. Developments in the 1990s had more mixed results.⁹⁶

4.3 Productivity is determined by investment, labour force skills and technological developments

In the long term, the determinants of productivity are the quality of the labour force and capital, the way in which capital intensity develops in production and technological developments in a broad sense. Investments in different types of real capital and in education, together with measures that promote technological development, are therefore important for long-term productivity gains.⁹⁷

In the statistics, gains in labour productivity can be classified as changes in real capital, human capital and technological development. In practice, this division is an attempt to estimate the contribution from changes in IT capital, other real capital and the composition of the labour force. That part of the change in labour productivity not explained by these three factors is called total factor productivity.⁹⁸ It is often used as a measure of the contribution from technological development in the broad sense, a factor that cannot be measured directly.

Increased real capital and technological development have been the most important factors in productivity gains in Sweden for more than ten years and together represented two thirds of the

⁹⁶ Kox, H. & Rubalcaba, L. [2007].

⁹⁷ See also appendix 1 to the Long-Term Survey 2008 (SOU 2008:108) for a detailed description of methods for analysing productivity gains and various data sources. The growth accounting method applied in this section has in recent years been used in a number of studies to analyse Sweden's productivity gains as, for example, in appendix 6 to the Long-Term Survey 2008 (SOU 2008:14) or Skyttesvall, T. & Hagén, H-O. [2008].

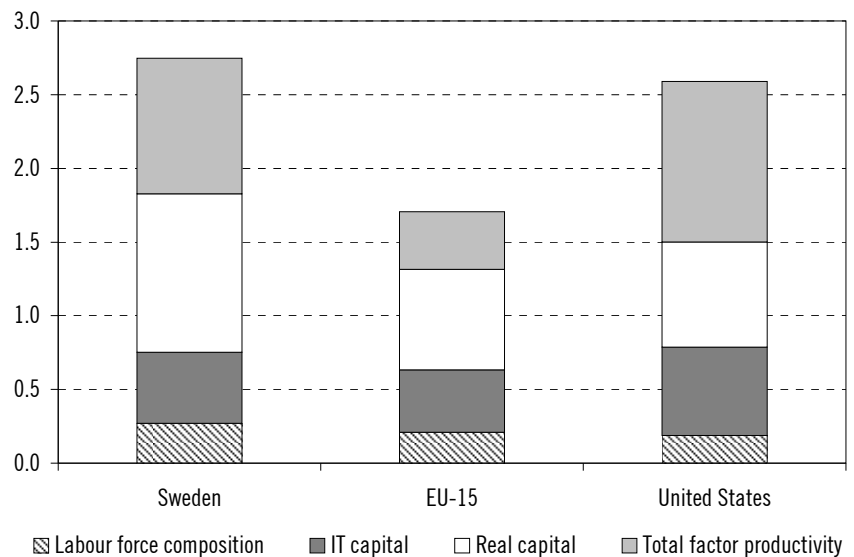
⁹⁸ In growth accounting, which is based on Solow's growth model (Solow, R. M. [1957]), technological development is a residual often called total factor productivity. The change in total factor productivity is usually defined as the increase in production minus a weighted average of the increase in factory inputs.

productivity growth in the Swedish business sector between 1994 and 2005 (figure 4.4). IT capital contributed a fifth while changes in the composition of the labour force with more well educated workers contributed to a lesser extent.

There are large differences in how various industries contributed to total productivity growth in the economy. There are also large differences between industries in what contributed the most to the industry's productivity growth. The increase in total factor productivity in the telecommunications products industry explains a substantial part of the total productivity growth over the last ten years.

Figure 4.4 The contribution of productivity to the total economy, average per year 1994–2005

Annual percentage change



Source: EU KLEMS and Ministry of Finance calculations.

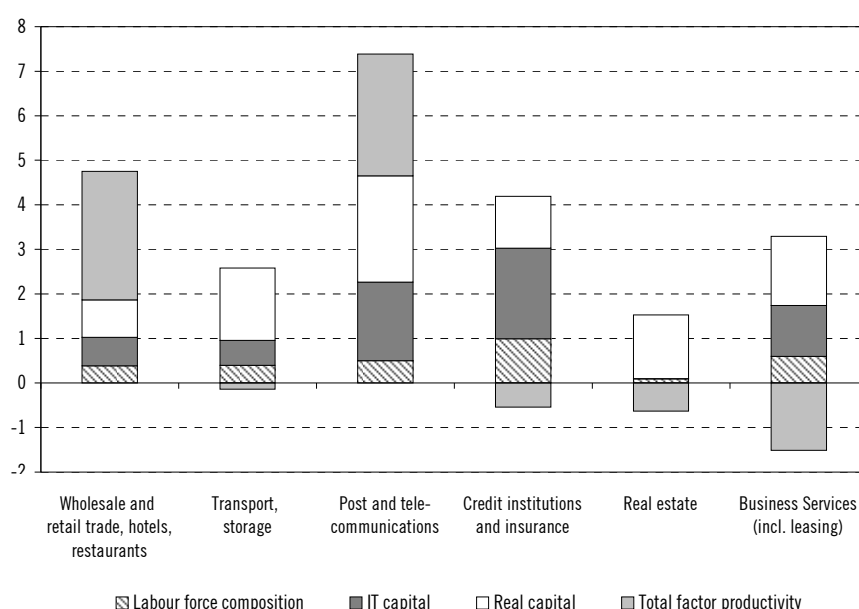
Also in the service sector, there are large differences between industries in the factors that contributed to productivity growth.

Productivity growth in business services has been weak, even though it has improved in the last decade. The weak growth is due to the negative growth in total factor productivity in the industry in the last decade (figure 4.5). Here it should be noted that it is difficult to measure both price and quality developments in this industry; see fact box 4.1.

In several service industries, investment in IT and other capital has been important in accounting for productivity growth in the last decade. In the financial industry (credit institutions and insurance), the changes in the composition of the labour force in the direction of more well educated workers have also made a positive contribution to productivity growth.

Figure 4.5 The contribution of productivity in service industries, average per year 1994–2005

Annual percentage change



Source: EU KLEMS and Ministry of Finance calculations.

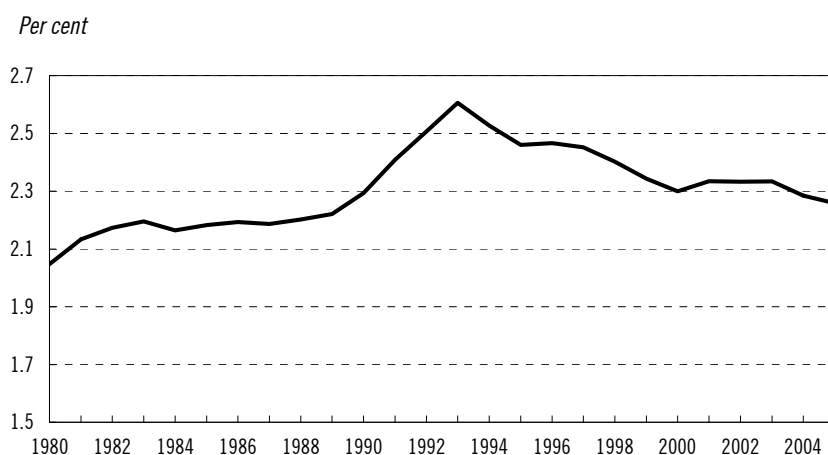
In the United States and a number of EU countries, increased use of IT capital and a well educated labour force have made a substantial contribution to the labour productivity increase in the service sector. At the same time, the differences in labour productivity between countries are not solely explained by differences in these factors. Instead the countries with the highest growth characteristically have relatively strong total factor productivity growth.⁹⁹

4.3.1 Investment is important for productivity growth

More and better capital accounts for around half of the productivity growth in the business sector. Providing the labour force with a larger amount of capital has led to an increase in labour productivity. Investment in real capital affects productivity in the business sector in two ways. It both increases capital in relation to the number of hours worked, i.e. increases capital intensity, and it supplies production with new technology as new capital replaces old.

The real capital stock in the form of machinery and buildings has historically grown as a result of investment. Investment is necessary to replace worn out capital and to make the introduction of new economic activities possible. Low investment results in failure to replace machines and buildings at the same pace as they wear out, i.e. the capital stock decreases; likewise, major investment results in the growth of the capital stock.

⁹⁹ Inklaar, R., Timmer, M.P. & van Ark, B. [2008].

Figure 4.6 Capital ratio 1980–2005

Note: The capital ratio is the capital stock divided by GDP. Before 1993 capital stock is calculated according to the Perpetual Inventory Method (PIM), i.e. the value of the stock is calculated with the help of assumptions about investment and depreciation rates based on an observed initial value.

Source: EU KLEMS and Ministry of Finance calculations.

The Swedish capital stock grew more rapidly than GDP from 1980–2005 (2.6 per cent annually compared to 2.2 per cent). The capital ratio¹⁰⁰ was somewhat higher in the first half of the 2000s than in the 1980s (figure 4.6). The sharp increase in the capital ratio during the recession in the early 1990s is more a reflection of the fall in GDP than of high growth in the capital stock. Likewise, the declining capital ratio at the end of the 1990s primarily reflects the sharp recovery in GDP growth.

During this period, private capital's share of the total stock relative to the public sector's share has risen. The reduced public capital ratio is due to the decrease in local government capital stock in relation to GDP while the central government capital stock has remained constant.

Between 1980 and 2005, the capital ratio was about 2.3. In the base scenario, this relationship between capital stock and GDP is also 2.3 in 2030. The scenarios in the Long-Term Survey assume that in the long term, the private capital stock grows at the same pace as the private sector's value added. Since local government expenditure is linked to its extensive responsibility for health care,

¹⁰⁰ The capital ratio is the capital stock divided by GDP.

schools and social services, local government consumption is assumed to have some impact on the growth in the local government capital stock. Some of the incentives for the growth of the central government capital stock are assumed to be different, as the major part of central government investment is used for infrastructure. Therefore the scenarios assume that the central government capital stock grows at the same pace as GDP.

Financial markets affect investment

According to empirical studies, the way in which the financial markets operate has a significant effect on the level of investment over and above the cost variables.¹⁰¹ The explanation for the financial markets' impact on investment is that companies, particularly small companies, often encounter a liquidity restriction. In addition, small companies in highly industrialised countries have limited access to credit in the financial markets and consequently their investment decisions are dependent on their liquidity.

IT capital makes a relatively large contribution to productivity in Sweden

Part of capital's contribution to the productivity increase in Sweden, particularly in the latter part of the 1990s, has been due to a higher percentage of IT capital in production. IT contributes to increased productivity both because companies in every sector invest in IT capital and because productivity growth is higher in IT than in other sectors. The rapid technological development in production using IT capital has at the same time contributed to lower prices for IT equipment. The contribution to productivity from IT capital in Sweden and the United States was higher than the EU average (figure 4.4). But IT capital's importance for productivity growth appears to have declined somewhat in the 2000s. Lower growth in the IT sector in recent years is the likely explanation.

¹⁰¹Appendix 5 to the Long-Term Survey 2008 (SOU 2008:12).

4.3.2 The quality of the labour force is important for productivity

The quality of the labour force affects productivity. The labour force's level of formal education is often used as a measure of its quality, even though several studies use additional factors such as sex and age.¹⁰² According to the theory, a well educated person contributes more to the increase in value added than a person with less education.¹⁰³

The increase in the proportion of well educated people has contributed to higher productivity

In Sweden, the percentage of hours worked by those with a post-secondary education has increased since the mid-1990s. This can be partly explained by the weak labour market in Sweden during the 1990s and the simultaneous rapid increase in the number of places in post-secondary education. This development has led to a change in the composition of the labour force with an increase in the proportion of well educated workers. The composition of the labour force is also changing as considerably more of the younger people now entering the labour market have a post-secondary education compared to the older workers leaving the labour force.

The change in employed people's education profile has contributed to productivity growth in the past ten years.¹⁰⁴ The contribution to productivity from changes in the composition of the labour force has been somewhat higher in Sweden than in the United States and higher than in the EU 15 between 1995 and 2005 (figure 4.4).

In manufacturing, the increase in those with a post-secondary education has made a small, positive contribution in all industries. The electronics and optical equipment industries have experienced the largest contributions from changes in the education profile in the manufacturing sector. The changes in composition have made a positive contribution to productivity growth in all service industries, but they have clearly been most important in the

¹⁰² Appendix 6 to the Long-Term Survey 2008 (SOU 2008:14), Jorgenson D., Ho, M. & Stiroh, K. [2007], van Ark, B., O'Mahoney, M. & Ypma, G. [2007].

¹⁰³ Appendix 6 to the Long-Term Survey 2008 (SOU 2008:14).

¹⁰⁴ Appendix 6 to the Long-Term Survey 2008 (SOU 2008:14).

financial industry (figure 4.5). In business services, there are large differences from one service to another. A rough division according to education level shows that in business services employing a larger percentage of workers with a post-secondary education, the number of hours worked is about double that of business services having more employees with little education.¹⁰⁵ But in the last decade, the number of hours worked increased substantially more in business services with a relatively large percentage of workers with little education.

Higher education will continue to contribute in the future

If the percentage of people completing a post-secondary education continues to increase, the changes in labour force composition towards a larger proportion of labour with higher productivity will accelerate. In addition, as a result of the generation shift, the proportion of workers with a higher education will increase even if the percentage of young people graduating from university is unchanged from the current level.

How much a continued increase in the proportion of university educated workers will affect productivity is unknown and also difficult to estimate based on historical developments. Studies made of the effect of a university education on productivity are based on situations in which many fewer individuals had a university education. In a situation where an increasing number of people are pursuing a university education, the quality of the graduates (or the level of education) may possibly change. A rising proportion of university graduates will push up the productivity *level*, but at the same time it may mean that the contribution to productivity *growth* will decline when the percentage of university graduates increases.

In order for a higher percentage of university graduates to have an effect on productivity, the increase in the supply of graduates must also correspond to an increase in the demand for this very category. Research studies indicate that technological developments and internationalisation mean that the demand for graduates will increase in the future.¹⁰⁶

¹⁰⁵ Under the Swedish Standard Industrial Classification, this applies to industries (SNI) 72, 73, 741–744.

¹⁰⁶ Hansson. P. and others [2007].

All in all, it is difficult to draw definite conclusions about how much the education level affects the productivity level and productivity growth in the long term.¹⁰⁷ The productivity gain from more people taking a university education must also be weighed against the cost of the education and the cost in the form of a lower labour supply during the study time. How education affects labour market entry is discussed in detail in chapter 3.

A good basic education is important for everyone

For various reasons, a substantial proportion of the population will also lack a university education in the future. How the human capital in this group is developed will also be important for productivity growth. Even though the average productivity of this group is lower than that of university graduates, an increase in the group's human capital means an increase in productivity in the economy. The human capital of those lacking a university education depends both on what education they have and on the skills they have acquired in the workplace.

It is essential that compulsory school and upper secondary school provide the knowledge and skills necessary for establishment in the labour market. As chapter 3 made clear, the percentage of young people who do not finish upper secondary school continues to be high at the same time that this group has difficulty finding work. Insufficient education, combined with a delayed labour market entry, means that the human capital accumulated declines and the value of what education one actually has declines. This effect evidently persists for several years. Long periods of youth unemployment can therefore have long-term effects on productivity growth in the economy.

A decline in the number of young people who, for various reasons, do not complete compulsory or upper secondary school would be positive for both the labour supply and productivity growth in the long term. Likewise, measures that contribute to reducing long-term unemployment are important for human capital development and thus for productivity.

¹⁰⁷ Appendix 6 to the Long-Term Survey 2008 (SOU 2008:14).

Staff training contributes to productivity, but to what extent is unclear

The aim of staff training, which to a considerable extent is company- or – task-specific, is to improve labour's skills and it can thus help increase productivity.

Staff training results in a continual and extensive upgrading of labour force skills. In 2003 employers' staff training costs in Sweden came to over SEK 64 billion, of which the training itself cost over SEK 27 billion.¹⁰⁸ In the same year, the comparable cost at a university or college came to just under SEK 44 billion.¹⁰⁹ About half of those employed participate annually in some form of training paid for by their employer, compared with about 15 per cent of the labour force in the United States who are given this opportunity.¹¹⁰

Staff training most commonly focuses on business administration, health care and IT.¹¹¹ The focus of at least a part of the staff training indicates that the investment in training is complementary to other investments, particularly IT investments. More staff training has been shown to increase the positive effects of IT investments on productivity growth.¹¹²

Staff training is not included in measures of education level that are often used for estimating the significance of education for productivity. Instead staff training's contribution to productivity is included in the total factor productivity measure.

4.3.3 Total factor productivity has many underlying factors

In Sweden total factor productivity has accounted for not quite half of the increase in labour productivity in the last 25 years. Total factor productivity growth was considerably higher in Sweden after 1995 than it was in the 1980s (figure 4.7).

Total factor productivity growth has increased in both Sweden and the United States since the 1980s. The opposite has occurred in EU countries, with total factor productivity growth falling.

¹⁰⁸ Statistics Sweden [g], (www.scb.se/templates/Product_8989.asp). Other costs were labour, travel, accommodation and food.

¹⁰⁹ National Agency for Higher Education [2004].

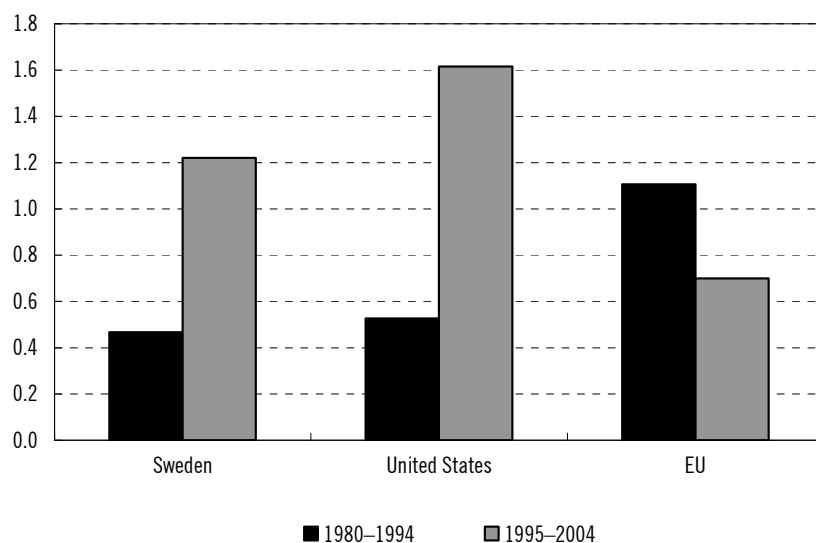
¹¹⁰ Ericson, T. [2004].

¹¹¹ Statistics Sweden [2006a].

¹¹² Gunnarsson, G., Mellander, E. & Savvidou, E. [2004].

Figure 4.7 Total factor productivity in the business sector, annual change in Sweden, the United States and the EU 1980–2004

Per cent



Source: Timmer, M. and others. [2003], Ministry of Finance calculations.

Research points to a number of different factors that may help to explain total factor productivity growth:¹¹³

- the emergence and growth of information technology
- innovative capacity
- research and development
- entrepreneurship
- level of internationalisation and technology transfer
- competition and deregulation of product markets
- human capital formation
- structural change and organisational changes.

¹¹³ See for example, Jorgenson, D., Ho, M. & Stiroh, K. [2007], SOU 1991:82, Appendix 6 to the Long-Term Survey 2008 (SOU 1991:14), and the National Institute of Economic Research [2005].

The large differences in total factor productivity between different industries indicate that industry specific characteristics may affect total factor productivity growth.

As total factor productivity in the statistics is calculated as a residual item, there are also other explanatory factors in addition to the above. One example already mentioned is that staff training is not captured by the measure of labour force composition.

Research and innovations increase total factor productivity

Innovations that improve products or lead to new products or to new, more efficient methods of production contribute to the growth of total factor productivity by reducing the cost of using the inputs and capital.

It is unclear exactly what determines a country's innovative capacity, but the OECD and the EU use various indicators to try to capture countries' innovation capacity. The most common indicator is companies' investment in research and development (R&D). Results from various studies show that Sweden invests more in knowledge and R&D as a percentage of GDP than does any other country. In 2005 companies in Sweden invested the equivalent of more than 3 per cent of GDP in R&D, the highest investment intensity of any OECD country. Sweden is also in the forefront with respect to return on investment in the form of patents, etc., but is ranked somewhat lower in high technology exports.¹¹⁴ It is also important to point out that in international rankings, Sweden has had a high return in the form of high growth in total factor productivity in the last ten years.

Even though manufacturing companies are responsible for a substantial part of R&D investment, knowledge intensive service industries, not least business services, may play an important role in the spread of innovation in the economy. First, the business services industry itself is a source of innovations, second, it contributes to the spread of information and third, it helps companies – particularly smaller ones – get access to the skilled workers they themselves are unable to employ since they only need a few working hours to acquire the needed skills.

¹¹⁴ OECD [2007e], page 216, "During 1996–2005, growth in exports of high-technology goods outstripped that of total manufacturing in all OECD countries except Japan and Sweden".

Internationalisation contributes to the transfer of knowledge and technology

Even though Sweden invests a relatively large amount in research, the investment makes up only about 1 per cent of world investment. By far the largest part of new knowledge is thus generated outside Sweden and has to be 'imported' in order to help increase productivity here. For many countries, technology transfer is the main source of productivity growth and small countries are more dependent on foreign technology than big countries.¹¹⁵

Trade and direct investment affect the transfer of knowledge between countries. Companies that export are bigger and more productive than non-exporting companies. Exporters are also more capital intensive and pay higher wages. Exporting companies were already more productive before they began exporting, but there are also indications that exports lead to higher productivity in companies.¹¹⁶ Exporting companies get access to new technology and new production methods from competitors through trade. In the same way, more import competition can contribute to higher productivity, but the import of inputs will also contribute to a potential increase in the inflow of knowledge.¹¹⁷

Like trade, direct investment is important for technology transfer between countries. Direct investment makes the transfer of group-specific knowledge possible between different companies in the same group. Productivity in multinational companies is higher than in companies with production in only one country.

Internationalisation also means that new rapidly growing industrial countries such as China and India have been integrated into the world economy. The new industrial countries' competitive advantages are primarily in production that uses a relatively large amount of low-skilled labour. The expansion of production in these countries has contributed to greater demand for more highly skilled labour in Sweden.¹¹⁸ This, in turn, has contributed to greater productivity.

¹¹⁵ Keller, W. [2004].

¹¹⁶ Girma, S., Greenaway, D. & Kneller, R. [2004].

¹¹⁷ Hansson, P. and others [2007].

¹¹⁸ Hansson, P. [2005].

Entrepreneurs exploit new business opportunities

Entrepreneurship is a broad concept used to explain how new business opportunities are exploited. A basic tenet of economic theory is that established companies do not want to abandon well-tried technology and products and are disinclined to take the risks associated with the introduction of new ones. Therefore, entrepreneurs and new companies are important for productivity growth.

It is not only the increase in input factors or their greater availability that propels growth, but also the entrepreneur's ability to combine input factors in a way that generates more value. This may be new combinations of machines for producing new products or new markets in which to sell the products. If this is so, entrepreneurship should be made an independent factor of production in the growth function.¹¹⁹

The definition of entrepreneurship varies from study to study and entrepreneurship is thus often used as a collective concept, for example, for new companies and small companies. According to a research review, entrepreneurs are better at innovating and have a small, but significant, effect on both labour productivity and total factor productivity.¹²⁰ Studies of Swedish companies also show that entrepreneurs make a positive contribution to productivity growth, particularly total factor productivity and particularly over a longer period.¹²¹

Positive correlation between competition and productivity

According to most studies, competition has a positive effect on innovation and thus on technological development and productivity. Greater competition leads to greater productivity primarily through three channels:

- Allocation efficiency – competition means that the most productive companies survive and thus contribute to a more efficient distribution of the economy's production resources.

¹¹⁹ See Henrekson, M. & Stenkula, M. (2007) for a discussion of the role of the entrepreneur.

¹²⁰ Van Praag, M. & Versloot, P. [2007].

¹²¹ Henrekson, M. & Stenkula, M. [2007] and Karlsson, C. & Nyström, K. [2007].

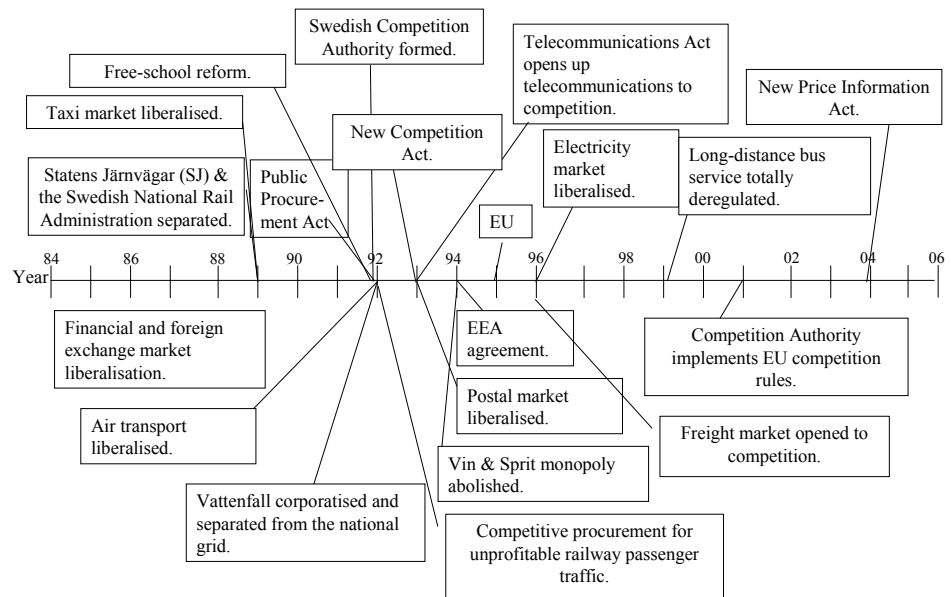
- Production efficiency – competition requires companies to use the most effective production technology in order to survive. X-inefficiency thus decreases.
- Dynamic efficiency – competition provides companies with the incentive to innovate in order to maintain their competitiveness.

Empirical studies have found a correlation between the degree of competition and productivity.¹²² According to most studies, competition has a positive effect on innovation, even though some results point to a hump-shaped correlation between competition and innovation.¹²³

In the 1990s a major liberalisation and reform of the regulatory framework were carried out in Sweden in order to increase competition in various parts of the economy; see chart 4.1. Not least, changes were made to the regulatory regimes for transport, postal and telecommunications services, and electricity production. The changes probably contributed to the rapid productivity growth that has taken place in these industries since the beginning of the 1990s. In addition to the regulatory reform, the Competition Act was strengthened and the Public Procurement Act was introduced, which, like EU membership, fostered competition in all industries. But in the 2000s, the pace of reform has moderated and since 2001, only two major reforms have been implemented.

¹²² EU [2007].

¹²³ OECD [2003], Aghion, P. & Howitt, P. [2005].

Chart 4.1 2006 Major reforms up to 2006

Note: In several markets the regulations have been changed several times and this figure shows the year when the liberalisation was initiated. LOU is the Public Procurement Act

Source: See, for example, SOU 2005:4.

In many service industries, competition, not least international competition, has been and still is limited. To some extent, the very nature of the service may explain this; for example, some services must be consumed at the same time that they are produced. However, technological development, particularly in IT, has made increased competition in the service industries possible. International deregulation and agreements also promote more competition. International competition in the form of trade and direct investment in the service sector has also increased sharply in recent decades. However, substantial disparities among service industries remain.

There is some empirical support indicating that reducing entry barriers in the service sector increases productivity, but the increase originates in manufacturing rather than in the service sector.¹²⁴ Lower entry barriers in post and telecommunications

¹²⁴ Nicoletti, G. & Scarpetta, S. [2003].

have had a positive affect on the growth of total factor productivity in the industry, but there is no evidence that the same would also be true for other service industries.¹²⁵

More international competition in service industries may have an effect on productivity growth. There is some evidence supporting the view that companies in Sweden importing a higher proportion of the total services they use have higher productivity than other companies have.¹²⁶ However, the effect is modest. In the United States, off-shoring and outsourcing service production to other countries with lower costs has helped increase productivity growth in the United States.¹²⁷

The result indicates that measures that promote greater international competition in the service sector have a positive effect on productivity growth in the economy. The EU Services Directive and judgments in the Court of Justice will probably contribute to more international competition in several service industries in the future. This could, in turn, have positive effects on productivity growth.

4.4 Conclusion

Productivity growth in the Swedish business sector has been good since the beginning of the 1990s from both a domestic and an international perspective. There are many indications that structural factors such as the growth in information technology (IT), internationalisation, innovation and deregulation may account for the positive growth. An exceptionally robust increase in total factor productivity in the telecommunications products industry accounts for a substantial part of the productivity growth in the economy as a whole during this period.

Productivity growth is determined by investment, labour force skills and technological developments. These in turn are influenced by such factors as the range and orientation of education and training; general conditions for companies and entrepreneurs; availability of risk capital for research and development, and competition.

¹²⁵ Inklaar, R., Timmer, M.P. & van Ark, B. [2008].

¹²⁶ Hagsten, E., Svanberg, S. & Karpaty, P. [2006].

¹²⁷ Amiti, M. & Wei, S.-H. [2006].

In addition, macroeconomic stability is of importance as it affects pressure to restructure and uncertainty. In many cases various factors may interact and strengthen each other's effects. It has proved difficult to assess how much one individual factor affects productivity growth so a policy to promote good productivity growth should take a broad approach and have as a general aim greater competition and free trade.¹²⁸

The policy should aim at creating good conditions and a level playing field for companies and entrepreneurs. Facilitating research and innovation, not least by good access to labour with a post-graduate education, is also important. In addition, measures to increase competition, both nationally and internationally, are important, not least in the service sector.

The approach should not only be broad, but also general, rather than focused on individual industries. The sectoral differences in productivity are substantial and they also vary over time. There is nothing to indicate that the public sector can foresee any better than the market which industries have the best productivity outlook in the long term. On the contrary, a policy aimed at favouring particular industries instead risks locking resources into industries that afterwards turn out to have weak growth.

The increasing demand for services has led to a shift in employment to the service sector, a sector that has historically had a lower productivity growth than manufacturing. But owing to the growing role of services as an input in other production, the effect of this structural change on productivity in the economy as a whole is uncertain. Clearly, with a growing service sector, productivity growth there will be increasingly important for the economy.

There is little international competition in several service industries compared to manufacturing and international specialisation is less advanced. The nature of services accounts for this to some extent; for example, some services must be consumed in connection with production. However, with the development of information technology, an increasing share of services can be purchased internationally.

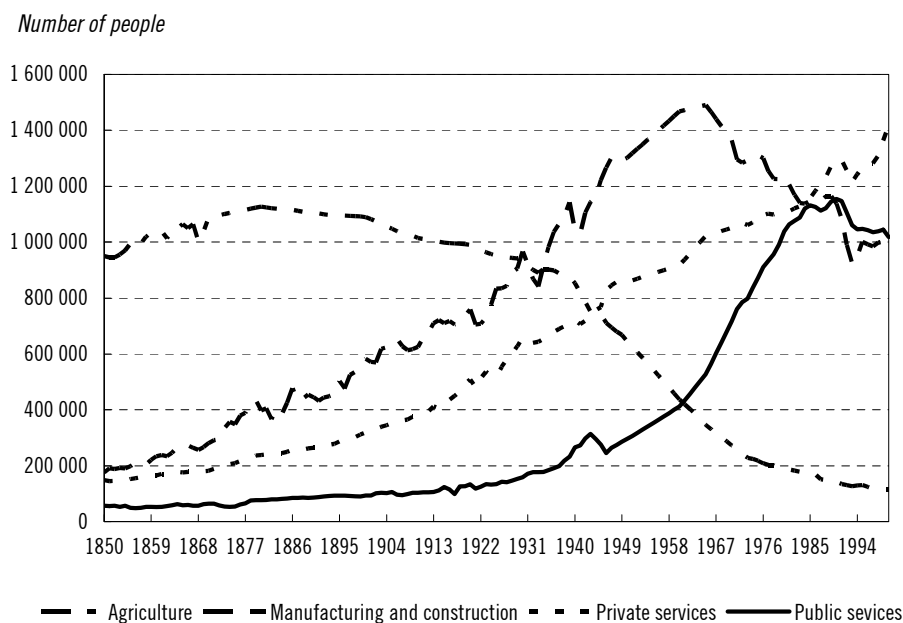
Chapter 7 discusses the possibilities of increasing productivity in government services. Competition there has been low in the past but by opening these services to competition, new actors can contribute to the growth of the activity, both public and private.

¹²⁸A newly published review by Ulltveit-Moe, K. [2008] argues that the most important lesson from European industrial policy is that free trade and competition rather than market intervention contribute to productivity growth.

5 Economic Change and Adaptability

The Swedish economy has changed considerably in the past 150 years. In those days approximately 75 per cent of those employed worked in agriculture whereas today only about 3 per cent do (figure 5.1).

Figure 5.1 Employment in various sectors 1850–2000



Source: Krantz, O. & Schön, L. [2007].

Economic change contributes to better productivity growth, but at the same time it may involve costs. Each transfer of production resources requires adaptability so that production resources are not idle. Low mobility causes unemployment and idle capital. The better the economy can adjust, the higher the pace of change can be in the economy.

Therefore discussing adaptability is much more relevant than discussing whether or not the pace of change has quickened. Nevertheless, the issue of the pace of change often comes up in debates, not least in the context of increasing internationalisation. Developments in recent decades do not provide an entirely clear picture of whether the pace of economic change has increased. The result depends on the measure used as well as the periods compared.

5.1 Alternative definitions of change.

The Long-Term Survey 2008 uses the concept of change in a general sense. In order to analyse changes both between and within industries, we use two additional concepts (see fact box 5.1).

1. *Structural change* – production resources are moved between industries.
2. *Employment dynamic* – the number of jobs that are created or disappear at the enterprise or workplace level.

In section 5.2.3, an additional concept is used for change that originates at the enterprise level, the business dynamic, which specifies new and closed down companies as percentages of the total enterprise stock.

Fact Box 5.1 Definition of change

Structural change can be defined by starting with the concept of structure. According to the National Encyclopaedia, structure is defined as the arrangement of and the relationships between the parts of a whole. Structural change may thus concern different levels in the whole, from the workplace to the economy divided into two sectors.

Hence, the definition of structural change is a matter of the level that is the starting point. The two extremes can be said to be either measuring only the change-over between the manufacturing, service and agriculture sectors or measuring all the changes down to when a factor of production changes its task in the individual workplace. In order to analyse both shifts between and within industries, the Long-Term Survey 2008 will use two concepts:

1. *Structural change* – Production resources are moved between industries measured at the two digit level in accordance with the Swedish Standard Industrial Classification (SNI).² The reason for choosing the two digit level is that it is the lowest level at which the majority of the statistics used are available.
2. *Employment dynamic* – the number of jobs that are created or disappear at the company or workplace level. What is being measured is whether the workplace or the company is increasing or reducing its work force, not if an individual leaves a job and is replaced by someone else.

¹ Hjalmarsson, L. [1973].

² SNI means the Swedish Standard Industrial Classification and is based on the EU standard NACE. Units of production such as companies and workplaces are classified under the activity conducted.

The demographic trend, internationalisation and the increased demand for services all affect structural change and the employment dynamic. The demographic trend means that demand is shifted to particular industries. Internationalisation increases competition and may lead to both more rapid and slower change. Increased demand for services leads to a rise in the service sector's share of the economy.

As a rule, change leads to further change in an ongoing process. The previous change may bring companies both new opportunities and difficulties. Regardless of the reasons for the change, the effects will seem different in the long and the short term. The costs of the change will likely appear primarily in the short term, for example, in the form of unemployment, while the benefits will primarily occur in the long term, for example, in the form of lower prices and more innovation.

5.2 The pace of change is unclear

The dramatic change in the employment structure in Sweden in the last 150 years is evidence that economic change is not a new process. But the question is whether change is more rapid now than before. This section describes the pace of structural change based partly on earlier studies and partly on new estimates. The description of the employment dynamic is based primarily on the results in one of the Survey's appendices

Based on Swedish experience, it is impossible to reach any clear-cut conclusion on whether the pace of change has altered. Most of the studies used indicate that the pace of structural change increased in connection with the crisis in the 1990s, particularly when compared with the 1980s, but also with the 1970s. The pace of structural change is thought not to increase continuously but it has changed. The time series for the employment dynamic are shorter but they show considerable stability during the period, if the 1990s crisis is disregarded.

5.2.1 The pace of structural change has varied

Earlier Swedish studies have found that the pace of structural change has been relatively stable from 1960 to the mid-1990s.¹²⁹ Our results for 1970 to 2005 indicate a higher pace of structural change during the 1990s and 2000s compared with the two preceding decades (table 5.1 in fact box 5.2). There appears to have been an upward shift in the pace of structural change but there is not a steady increase.

Regardless of the measure used, it is clear that the pace of change was lower in the 1980s than it was in the 1970s and in the years 1990-2005. However, whether the pace of structural change was lower or higher in the 1970s compared with the years after 1990 is not as clear-cut.

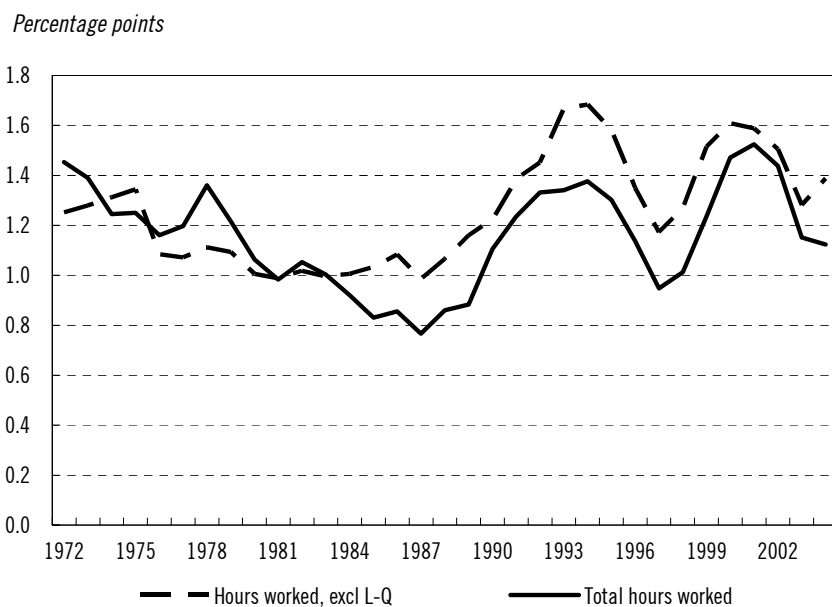
Figure 5.2 shows the results using one of the measures. It shows the percentage of hours worked and the value added that were shifted between sectors between 1972 and 2004. For example, the value 1.1 for the total hours worked in 2004 shows that in that

¹²⁹ Appendix 7 to the Long-Term Survey 2008 (SOU 2008:21).

¹³⁰ Lindmark, M. & Vikström, P. [2002] and Andersson, L., Gustafsson, O. & Lundberg, L. [2000].

year, the industries that grew relatively did so by 1.1 percentage points at the cost of the contracting industries.

Figure 5.2 Structural change measured as the percentage shifts, three year moving average, 1972–2004



Note: The values show the percentage of hours worked and the value added that were shifted between sectors between 1972 and 2004. Education, health and medical care and other social services are included in the industries L-Q under the Swedish Standard Industrial Classification (SNI).

Source: EU KLEMS and Ministry of Finance calculations.

Fact box 5.2 Measures of the pace of structural change

Since both labour and capital are used in production, it would be interesting to study the changes that have occurred in the production structure due to each of these factors of production. However, the lack of data on capital stocks makes it difficult to analyse the change in the use of capital in various industries. This section therefore reports both data for hours worked and data for value added.¹ Together they also provide a picture of the capital structure, since business services along with labour inputs and total factor productivity create value added.

In the 1970s, there was a major expansion in the Swedish public sector. It affected the proportion of labour in various industries. Therefore, the series that follow are reported both with and without the industries in which the public sector is a leading actor (industries L-Q according to the Swedish Standard Industrial Classification).²

The most common method of measuring the pace of structural change is with the help of measures based on industries' share of total output. A number of measures of structural change are available, and there is no common view of which one is best.

The pace of structural change measured by the shift share in absolute terms increased in the 1990s compared with the 1980s (table 5.1).³ The level of the pace of structural change after 1990 compared with the 1970s depends on whether the industries L-Q are included.

The pace of structural change in the period after 1990 compared with the 1980s, measured with Lilien's sigma, has also increased. This is valid whether or not the industries L-Q are included.⁴ The pace in the last 15 years compared with the 1970s is higher if the industries L-Q are excluded, but approximately the same if they are included. If instead the value added is measured using Lilien's sigma, the pattern is largely the same but with smaller differences between the 1980s and 1970s and greater differences between the period after 1990 and the preceding decades. The long period with a rapid pace of change during the second half of the 1990s is explained by the sharp increase in the value added in the telecommunications products industry during these years.

Estimated based on Moore's method, the result is somewhat different compared with the estimates based on the shift share and Lilien's methods.⁵ The most obvious difference is that the pattern differs markedly for the value added. The more rapid pace of change after 1990 compared with the 1980s holds true both with and without the industries L-Q. However, the pace of structural change after 1990 compared with the 1970s differs, depending on whether the industries L-Q are included.

Cont. Fact box 5.2 Measures of the pace...**Table 5.1 Composition of the measures of structural change***Index 1971–1979=100, average*

	1971–1979	1980–1989	1990–1999	2000–2005
<i>Shift shares</i>				
Hours worked, total	100	67	88	98
Hours worked, not L-Q	100	83	114	120
Value added, not L-Q	100	71	121	105
<i>Lilien's sigma</i>				
Hours worked, total	100	72	101	109
Hours worked, not L-Q	100	76	112	119
Value added, not L-Q	100	78	170	199
<i>Moore</i>				
Hours worked, total	100	56	75	83
Hours worked, not L-Q	100	85	117	115
Value added, not L-Q	100	64	115	85

Note: Education, health and medical care and other social services are included in the industries L-Q (SNI).

Source: EU KLEMS and Ministry of Finance calculations.

¹ Data from EU KLEMS has been used in the analysis. EU KLEMS is a project financed by the EU to produce comparable time series for national accounts from 1970 onwards. The EU KLEMS has data for 47 industries. More information on the data series is available on the project's website: <http://www.euklems.net/>.

² Education, health and medical care and other social services are included in these industries. Structural change for the value added in the entire economy is not reported since the value added for public services has thus far been measured by an indirect method where the value has been set at the cost of wages.

³ The sum of absolute changes in shares. This method is used by Andersson, L., Gustafsson, O. & Lundberg, L. [2000], Lundberg, L. [1997] and Kongsrud, P.M. & Wanner, I. [2005].

⁴ The deviation in the change in employment for sub-sectors compared with the total, weighted for industry shares. This method is used by the OECD [2007a].

⁵ Measures the difference in degrees between the vector for the base year and the reference year. Industry shares. This method is used by Lindmark, M. & Vikström, P. [2002].

Substantial differences in the pace of structural change between countries

An international comparison shows that there does not appear to be any common trend in the pace of structural change for the countries compared (table 5.2). The differences between countries are large, particularly with respect to the pace but also the level. Sweden differed from the others in the 1980s with a considerably lower pace of structural change while the level from 2000 to 2005 is

relatively high. France and the United States had a divergent, low pace of structural change during the early 2000s, which is interesting in light of the intensive debate on the impact of internationalisation in these countries.

Table 5.2 Structural change measured as the annual change in the share of hours worked, 1971–2005

	1971–1979	1980–1989	1990–1999	2000–2005
Sweden	1.24	1.03	1.41	1.49
Denmark	1.41	1.47	1.34	1.49
Finland	1.74	1.52	2.04	1.29
UK	1.28	1.73	1.82	1.68
USA	1.55	1.49	1.06	1.02
France	1.10	1.15	1.09	1.03

Note: The table shows how large the shift in the labour force between industries has been each period, calculated as the absolute annual change divided by two. The figure 1.24 for Sweden from 1971–1979 shows that between these years, the average annual employment structure changed by 1.24 percentage points, i.e. the relatively growing industries became that much bigger at the cost of the contracting industries. Industries L–Q are not included in order to make it easier to compare countries.

Source: EU KLEMS and Ministry of Finance calculations.

5.2.2 Stable employment dynamic

The employment dynamic measures how many jobs are created in the economy and how many are lost every year. As mentioned previously, it is a broader concept than structural change in that it also covers change within industries. A number of studies of different countries have in the last 15 years looked at the gross flows underlying net changes in employment.¹³¹

In the early 2000s, the annual employment dynamic, i.e. jobs created and jobs lost in relation to the total number of jobs, came to about 25 per cent.¹³² According to studies, the employment dynamic in Sweden has been relatively stable from the 1970s to the beginning of the 2000s, even though the composition of lost and

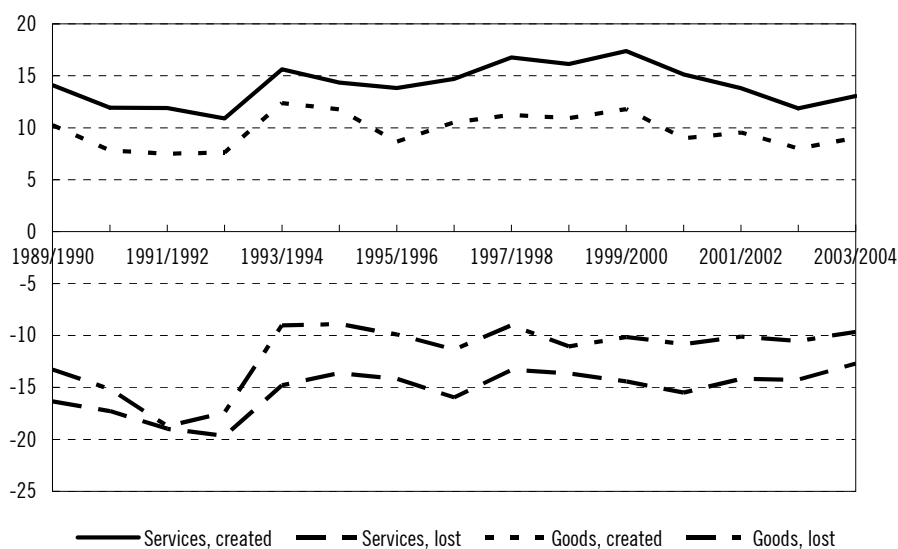
¹³¹ Davis, S., Haltiwanger, J. & Shuh, S. [1996] have been in the forefront.

¹³² Appendix 7 to the Long-Term Survey 2008 (SOU 2008:21).

created jobs has varied over time.¹³³ One important conclusion from these analyses is that jobs are also created during economic slowdowns and lost during booms. During the early 1990s, employment declined by almost 10 per cent a year, but new jobs equivalent to about 10 per cent of the stock were also created during these years.

Job turnover is higher in the service sector than in the manufacturing sector (figure 5.3). The reason for this is that workplaces are smaller in the service sector and smaller workplaces generally have a higher job turnover.

Figure 5.3 Jobs created and lost in manufacturing and in the service sector, percentage of jobs, 1989–2004



Source: Appendix 7 to the Long-Term Survey 2008 (SOU 2008:21).

An analysis of the employment dynamic from 1986 to 2002 for various groups by education shows that employment in these groups developed differently.¹³⁴ The percentage of those employed

¹³³ Antelius, J. & Lundberg, L. [2003], Andersson, L., Gustafsson, O. & Lundberg, L. [2000], Andersson, F. [1999], Israelsson, T., Strannefors, T. & Tydén, H. [2003], Appendix 7 to the Long-Term Survey 2008 (SOU 2008:21) and Gartell, M., Jans, A-C. & Persson, H. [2007].

¹³⁴ Gartell, M., Jans, A-C. & Persson, H. [2007].

with only a pre-upper secondary education declined, both because there were not as many new jobs created as there were in other groups and because this group lost more jobs. All the education groups have experienced stable job flows during the period, apart from the crisis of the 1990s, even those with only a pre-upper secondary education. Thus there was no increase in the pace at which jobs for the low-skilled were eliminated, even though every year jobs for these people disappeared.

People with fixed-term contracts represent a large part of the job turnover in the labour market. In 2006 over 1.3 million people were newly hired; of these, almost 1 million were fixed-term appointments.¹³⁵ Another analysis shows that fixed-term employees in the 1990s constituted about half of the flow in the labour market, while they made up about 10 per cent of the employed.¹³⁶

High employment dynamic in Sweden from an international perspective

The number of jobs created and lost varies from country to country (figure 5.4). At the end of the 1990s, Sweden had the third highest job flow of a number of EU countries, measured using a sample of enterprises.¹³⁷ The dynamic was higher in Italy and Spain, while Germany and Austria had the lowest employment dynamic measured.

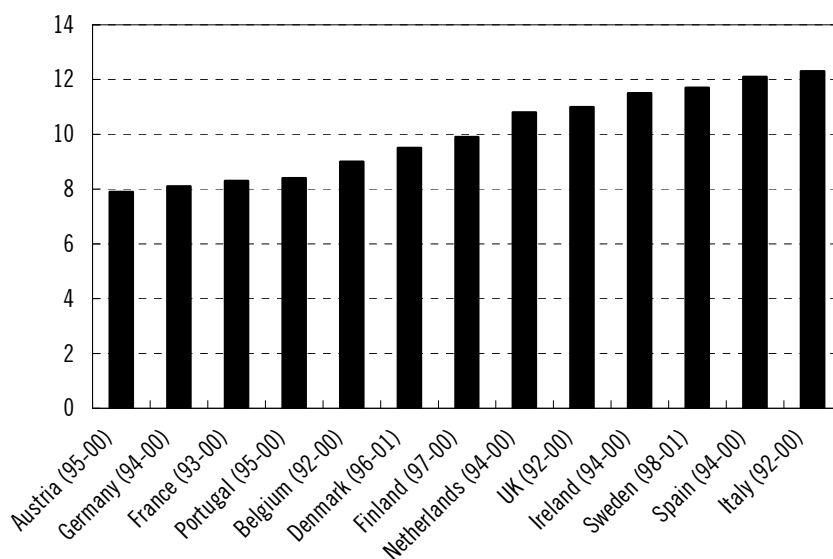
¹³⁵ National Labour Market Board [2007].

¹³⁶ Arai, M. & Heyman, F. [2002].

¹³⁷ Gomez-Salvador, R., Messina, J. & Vallanti, G. [2004]. All companies that had at least 10 employees or revenues of at least € 1 million and had been in business for at least two years were included in the analysis. For Sweden, approximately 30 000 companies, with about 30 per cent of the total employed, were included in the study. The use of data for enterprises of a specified size accounts for the lower employment dynamic for Sweden in this analysis compared with other analyses.

Figure 5.4 Average annual employment dynamic in companies, in the business sector in general

Per cent



Source: Gomez-Salvador, R., Messina, J. & Vallanti, G. [2004].

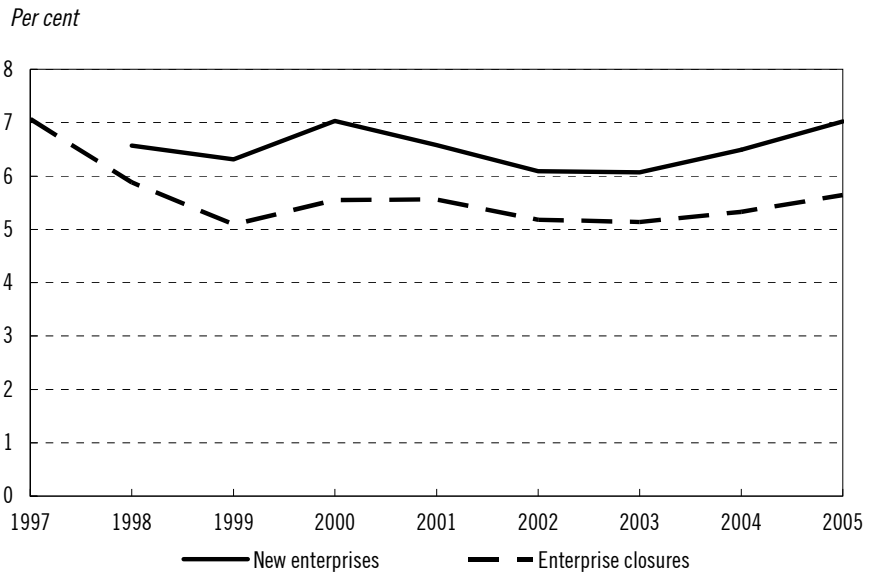
5.2.3 Stable business dynamic

Thus far, change has been discussed from the perspective of the employed. Alternatively, the enterprise can be the starting point for the analysis.¹³⁸

Since 1998, more new companies have been started than have failed (figure 5.5). After 1999, the pace has been relatively stable. But it is likely that a longer time series would show more variation since the substantial elimination of companies during the crisis of the 1990s is not included in the reporting. The largest addition of companies took place in the data processing industry and the largest net loss in the land transport sector.

¹³⁸ An enterprise is not always a proper unit of measure since organisational changes may have a large impact on the statistics. Therefore, many studies instead focus on the workplace.

Figure 5.5 Enterprise startups and closures' share of the total enterprise stock, excluding primary industries and public administration, 1997–2005



Source: Eurostat [2008].

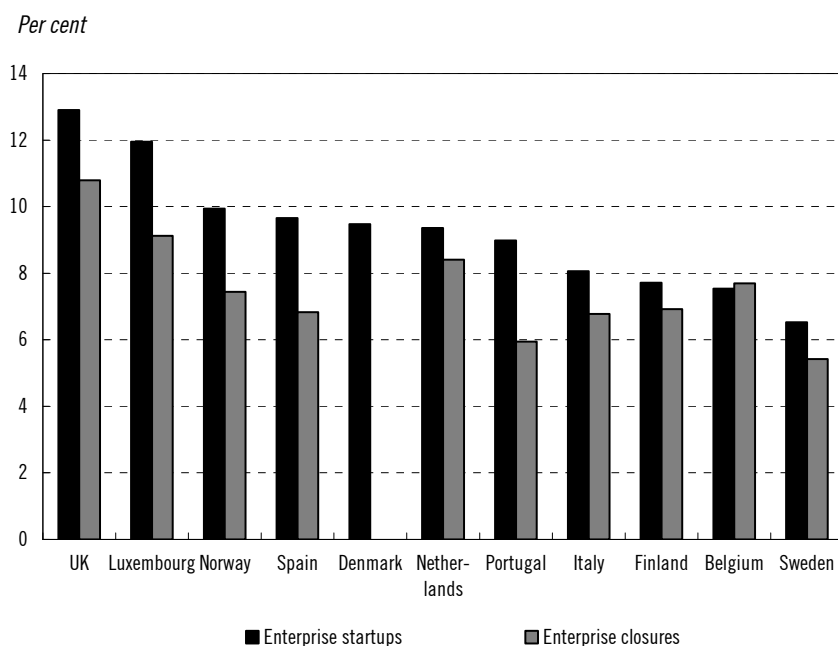
Low enterprise turnover in Sweden

Sweden has the lowest share of startups and the lowest share of closures compared with the EU 15 according to the available data (figure 5.6). Enterprise turnover is half that of the United Kingdom. Meanwhile, Sweden has the highest survival rate of all the countries studied. One explanation for Sweden's lower number of startups is that the enterprise stock is larger than in other countries.¹³⁹ The barriers to entrepreneurship are another explanation put forward for the relatively low business dynamic in Sweden.¹⁴⁰

¹³⁹ Swedish Institute for Growth Policy Studies (ITPS) [2006].

¹⁴⁰ Henrekson, M. & Stenkula, M. [2007].

Figure 5.6 Enterprise startups and closures' share of the total enterprise stock, excluding primary industries and public administration, 1998–2005



Note: For most countries data for certain years are lacking. Denmark has no data at all for enterprise closures.

Source: Eurostat [2008].

5.3 Technological development and internationalisation affect future change

The base scenario in the Long-Term Survey assumes that the pace of structural change until 2030 will continue to be about the same as it was from 1980 to 2005. However, there are grounds for discussing whether internationalisation and the service sector's increased share of production can lead to a faster pace of change in the future.

The adjustment of production in recent decades has not meant that Sweden has changed its areas of specialisation.¹⁴¹ The question is whether this will hold true in the future. Indications that this will

¹⁴¹ Ekholm, K. and others [2007].

continue to be the case are that Sweden will still have the natural resources and the relatively well educated labour on which current comparative advantages are based. However, the development of goods and services that can be traded will be of great importance. If in the future there are more products that can be traded, not least various services, it is more difficult to predict the effects of change on the Swedish economy in the long term.

To assess the potential effects of internationalisation, it is important to assume not the current but rather the future scale of trade with low cost countries and others.¹⁴² This trade may be considerably larger than what was previously the case, owing to technological developments. Today it is possible to move several parts of production to low cost countries, owing to the ability to separate operations in the production process in a way that was not previously possible.

In the past, a large part of the labour market has not been exposed to international competition. Instead, wages have been set in the local labour market.¹⁴³ The effects of exposure to international competition would thus be considerably lower wages for these tasks.

Studies show that internationalisation has very little effect on the employment dynamic.¹⁴⁴ According to estimates, more internationalisation leads to less risk that a workplace will downsize. However, the effect is small.

Job turnover is currently higher in the service sector than in the manufacturing sector. If the percentage of people employed in the service sector increases, it may lead to higher job turnover. In addition the method for adjusting between industries varies. Some prominent features in the production of services indicate that the increased share of production in the service sector will mean changes in the adjustment mechanisms used. Generally, the production of services uses less capital per employee, which means that the company does not need to take into account the effects of changes in employment on invested capital to the same extent. This also means that it may be easier for potential competitors to enter the market and challenge the companies already there.

¹⁴² Blinder, A. [2005].

¹⁴³ Baldwin, R. [2006].

¹⁴⁴ Appendix 7 to the Long-Term Survey 2008 (SOU 2008:21).

5.4 Considerable individual effects of change

The most relevant issue is whether the level of change is adequate, not whether or not it has increased. Change means both income and expenses and the right pace is determined by the net effect of these two. If change makes a positive contribution to productivity growth, it will result in income, while unused production resources lead to costs both for the public and for individuals.

Chapter 4 discusses the effect of structural change on productivity. It shows that in the last decade, employment has grown in those service sectors with relatively low productivity growth. This development is expected to continue. However, it does not mean that productivity growth would be higher if attempts were made to slow down economic change. The growing business services involve more specialisation, which may mean greater efficiency in producing these services. Hence, productivity may also increase in those sectors that use business services as inputs. Productivity growth as a whole may thus be higher than it would be if there was no change in the economy, even if it is lower than before.

It may be difficult for those who have lost their jobs to find a new job with at least the same terms of employment. The sooner those dismissed get a new job with the same or better terms, the better the job turnover functions.

Studies of other countries show that the impact on wages of losing a job and then obtaining a new one was relatively small for those who had been employed a short time, while older workers who had been employed for a long time had a larger wage loss.¹⁴⁵ It was more difficult for older workers with little education to find a new job after losing their old one. Large wage losses occurred primarily in countries with a relatively large wage spread and low unemployment compensation levels such as Canada, the United States and the United Kingdom. More people found a new job within six months in the Anglo-Saxon countries and Denmark than in the continental European countries.

A Swedish study shows that those who lost their jobs as a result of company closures in 1987 and 1988 ran a greater risk of both

¹⁴⁵ Kuhn, P. [2002]. Data for the late 1980s and the early 1990s have been used in this analysis. An OECD study shows similar results. A review of the studies discussing the United States can be found in appendix 7 to the Long-Term Survey 2008 (SOU 2008:21).

unemployment and not being employed.¹⁴⁶ There was a heightened risk both in the first years after the closures and after the crisis of the 1990s, but not in the intervening period. This implies that an increased risk of unemployment reappeared when unemployment declined. The dismissals had a negative effect on wages and the negative effect was more lasting over the period examined than was the effect on employment.¹⁴⁷ A study of the effect on individuals over a one-year period has found a considerably higher unemployment among those who worked in workplaces that downsized.¹⁴⁸

It is difficult to draw any long-term conclusions on the effect of the change on individuals as there are only a few studies. However, the studies that do exist indicate considerable effects on employment and wages for those who lost their jobs.

In the discussion of the individual effects of change, it is also important to take into account not only the effects on those who lose their jobs, but also on those who get jobs after being unemployed or a student. However, it is impossible to judge the importance of this effect, since there is a lack of studies on the effect of change on those who are not in the labour force.

5.5 Ways of adjustment for companies and employees

Even though it is very difficult to define the desired pace of change precisely, it should be as high as possible provided that resource utilisation ends up at a reasonable level. The better the adjustment works in the economy, the higher the pace of change can be. Obtaining the largest possible social benefit from the change requires that both companies and employees can handle it.

¹⁴⁶ Eliason, M. & Storrie, D. [2006]. Ohlsson, H. & Storrie, D. [2007] have examined closures at LKAB and in the shipbuilding industry in the early 1980s and found that the effects on employment and wages were relatively small. Government measures at the time of the closures were quite substantial, however, and may account for the result.

¹⁴⁷ It should be noted that it was the annual wage that was studied. This means that the wage may be lower as a result of a lower number of hours worked.

¹⁴⁸ Appendix 7 to the Long-Term Survey 2008 (SOU 2008:21). The impact in 2005 of downsizing and closures in the preceding year has been studied.

5.5.1 Companies have different adjustment strategies

It may be difficult to distinguish between the causes of a change and the reaction to a change. Far-sighted companies may act in a way that exposes less far-sighted companies to pressure to restructure. Companies may use several strategies simultaneously and the strategies for a given change may differ. Some examples of strategies are:

- innovations in production processes or products to increase productivity
- mergers or takeovers to increase productivity through economies of scale or acquisition of products that are in another phase of development
- change of industry
- streamlining, for example, by moving production abroad
- reduced labour costs for the same number of hours worked
- reduced production.

Irrespective of the alternative a company chooses, there are often large demands testing a company's adaptability. Entrepreneurship in terms of being able to detect and exploit new economic opportunities under uncertainty is crucial in this connection.¹⁴⁹

Entrepreneurship in new and existing companies

Entrepreneurship is often equated with the creation of new businesses. However, it is important to point out that entrepreneurship does not occur exclusively in new businesses nor are all new businesses a manifestation of entrepreneurship. A well-functioning change requires not only entrepreneurship by those entering a market, but at least as important, by the companies already in the market. New companies have, however, an important function in the economy since they challenge existing companies and ideas.

One feature of every production structure is that a certain size distribution of the enterprise stock is most efficient.¹⁵⁰ If the underlying conditions for production change, the optimal stock of

¹⁴⁹ For a discussion of the importance of entrepreneurship, see Henrekson, M. & Stenkula, M. [2007].

¹⁵⁰ Audretsch, D. and others [2002].

companies also changes. Until the 1970s, technological development meant that companies in many industries kept getting bigger. Thereafter, the optimal enterprise stock has probably shifted to an increasing percentage of smaller companies, primarily owing to technological developments.

Factors that hinder adjustment of the enterprise stock should be removed to the extent possible. A research review notes that policies for entrepreneurship do not mean updating the policy in order to support small and medium-sized companies.¹⁵¹ Instead a policy for entrepreneurship should take a much broader approach and cover a broad spectrum of institutions and government agencies. Changes should concern changing existing institutions rather than creating new specific measures.

A policy that specifies particular conditions for particular types of companies, based, for example, on business form, industry, size, or activity, risks leading to lock-in effects and barriers. As a result, production takes place in subsidised companies instead of where it is most rational. Hence, the risk with this type of measure is that it will make the economy less adaptable.

5.5.2 The individual moves or changes occupation or employer

Individual adjustment to changed conditions basically concerns changing work tasks or employer. If individuals are well able to adapt, they can easily find a new job. As shown in chapter 3, efficiency is a problem in the Swedish education system. This means that there is a risk that there will be less adaptability. Broader groups need to become more adaptable since technological developments and internationalisation lead to the exposure of new industries and occupations to competition. This should apply regardless of whether or not the pace of change in the economy as a whole increases. Following the work-first principle is therefore desirable in order that individual adjustment will be based on long-term dependence on the public transfer system to a lesser extent than it was in the last 15 years. From an economic perspective, letting individual adjustment occur via long-term absence from the

¹⁵¹ Audretsch, D. and others [2007].

labour market with compensation from the public insurance systems is not sustainable.

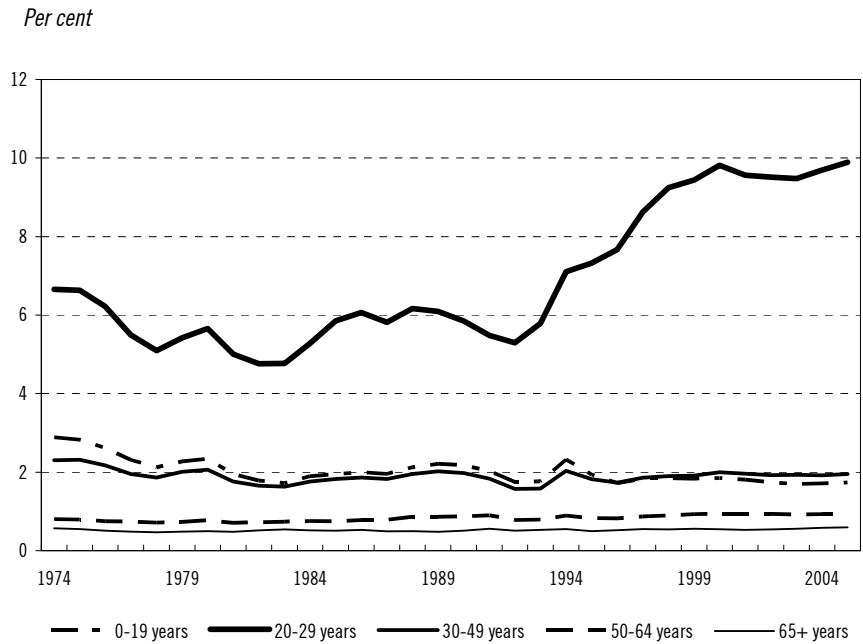
Mobility chiefly in connection with studies

Migration and commuting make labour geographically mobile. Commuting has increased more than migration since the beginning of the 1990s.¹⁵² The increase in migration takes place almost exclusively between the ages of 20 and 29 (figure 5.7). Here the increased percentage studying at university has been of crucial importance. Men and women move to about the same extent while commuting is considerably more common among men. Mobility is about the same among those born abroad as it is among those born in Sweden.

Migrating generally increases earned income, particularly for well educated men. For married or cohabiting women or people without a post-secondary education, the increase in gross income is very small. These differences could account for the relatively small spread in incomes among those without a post-secondary education. Commuting has greater positive effects on income for women than for men.

¹⁵² Appendix 3 to the Long-Term Survey 2008 (SOU 2007:35).

Figure 5.7 Migration intensity between employment catchment areas for various age groups 1974–2005



Note: Migration intensity is estimated as the number of migrants in relation to the population in respective age groups. Employment catchment areas are areas considered to be independent or self-supporting as to job and labour availability.

Source: Appendix 3 to the Long-Term Survey 2008 (SOU 2007:35).

The education capacity and the vacancy ratio were the most important factors in the extent of the migration to and from different employment catchment areas.¹⁵³ The importance of unemployment levels for migration patterns increased between the periods 1986 to 1990 and 1998 to 2004 while the importance of education capacity and vacancies decreased. High unemployment thus means a high net outward migration from a region.

For the period 1990 to 2005, there was a significantly higher probability of migration by both unemployed single men and women only during the years 1990 to 1992. Particularly for

¹⁵³ Appendix 3 to the Long-Term Survey 2008 (SOU 2007:35).

women, but also for men, unemployed people's relative probability of migration appears to have decreased during this period.

Unemployment thus appears to be more important in explaining migration between regions while the relative probability of migration by unemployed people has decreased over time. The explanation may be that groups other than the unemployed, particularly students, are primarily responsible for the migration.

As to commuting, there was a significant and rising probability of single unemployed persons commuting to and from employment catchment areas from 1990 to 2004. Unemployed men are about twice as likely as unemployed women to commute.

More geographic mobility is desirable but may be difficult to achieve. According to Labour Force Surveys, approximately 60 per cent state that they would not migrate in the event of unemployment, even if they could immediately get an equivalent job elsewhere, if the alternative was to wait a year for a job in their current place of residence.¹⁵⁴ Reasons for unwillingness to migrate may range from inadequate financial incentives to the social situation.

Changing occupations or employers is the usual way of adapting

The individual can adapt to new conditions by changing employer or occupation. Mobility between employers seems to be more important than geographic mobility in the adjustment process.

A survey of the percentage of the employed who changed employers from 1972 to 2002 found a relatively high degree of stability when cyclical fluctuations were taken into account (figure 5.8).¹⁵⁵ During economic booms, about 10–12 per cent of employees changed employers and during slowdowns about 6–8 per cent did. The majority of those changing employers stayed in the same industry.¹⁵⁶

The period of employment with the current employer increased between 1968 and 1991, after which it declined somewhat and by 2000, it was at the same level as in 1980.¹⁵⁷ The increase was greater among women than among men. This is probably because the

¹⁵⁴ Furåker, B. [2004]. There are Surveys for 1991, 1993 and 2001.

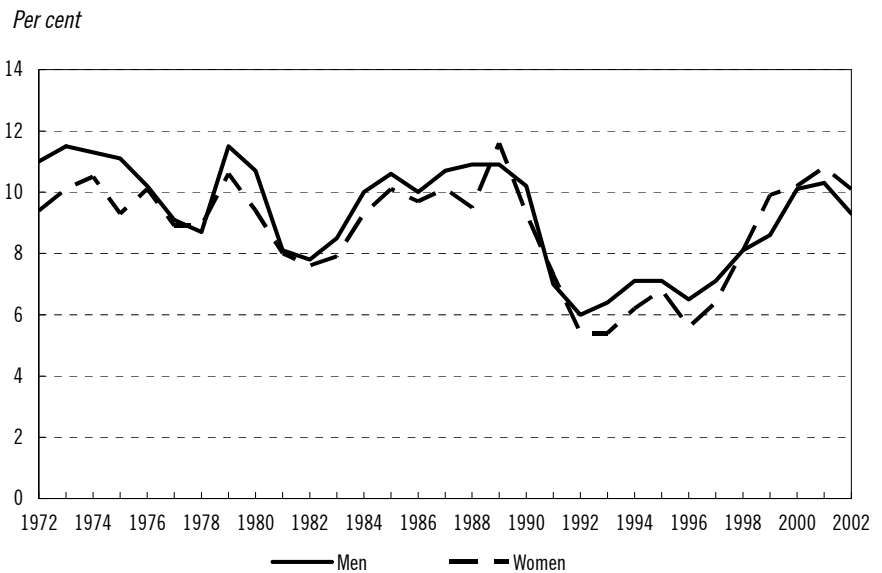
¹⁵⁵ Israelsson, T., Strannefors, T. & Tydén, H. [2003].

¹⁵⁶ Appendix 7 to the Long-Term Survey 2008 (SOU 2008:21), Swedish Business Development Agency (Nutek) [2000] and Nutek [2006].

¹⁵⁷ le Grand, C., Szulkin, R. & Tählin, M. [2001].

women who entered the public sector in the 1970s and 1980s stayed with the same employer. The percentage of those employed longer than 10 years increased throughout the period. There has thus been a polarisation between those with relatively short periods of employment and those with relatively long periods.

Figure 5.8 Change of employer related to the number of employees, 1972–2002



Source: Israelsson, T., Strannefors, T. & Tydén, H. [2003].

5.5.3 The policy must take a broad approach to facilitate adjustment

The role of the public sector is to support the ability of both individuals and companies to deal with change. It draws up the overall regulatory framework in a great many areas that individuals and companies must take into consideration. On one hand the public sector attempts to steer people *away from* some behaviour, for example, the Employment Protection Act (LAS) makes it more difficult to dismiss those who have been employed for a long time, generally older employees. On the other hand, the public sector

tries to steer people *towards* certain behaviour, for example, deductions for work-related travel encourage geographic mobility. Different parts of public sector regulations may have divergent effects. This is due in part to the risk of various kinds of failures in all public regulations. This is often due to the wish to achieve several goals simultaneously.

For economic change to succeed, individuals need to be adaptable. Since technological developments and internationalisation mean that new industries and occupations are exposed to competition, broader groups need to be more adaptable. This should apply regardless of whether or not the pace of change seen in the economy as a whole increases.

A well-functioning policy for adjustment must take a broad approach and cover most policy areas. A number of factors affect Sweden's adaptability, which the public sector can influence.¹⁵⁸

- unemployment insurance and other transfer systems
- job protection
- wage formation
- the level of education and the education system
- geographic mobility
- the tax system
- research
- the capacity for entrepreneurship and innovation
- the housing market
- the infrastructure.

New business starts are an important part of the ability to adjust to change in the economy. New business starts are an important, but not the only factor in achieving an innovative economy. A strategy for entrepreneurship must include both existing and new enterprises. Policies for entrepreneurship do not concern support for small and medium-sized companies. Rather they deal with creating a dynamic economy in which small and medium-sized companies play an important part.¹⁵⁹

Measures to improve the business climate should be general. A general enterprise policy means that different types of companies are treated similarly, i.e. the framework conditions for entrepreneurship are in principle to be identical regardless of the type of

¹⁵⁸ See among others Kongsrud, P.M. & Wanner, I. [2005].

¹⁵⁹ Hoffman, A. [2007].

enterprise. Entrepreneurship and production can then take place under the forms that are the most rational and efficient. Different types of enterprise may be appropriate for different types of production. Structural change causes the composition of the optimal enterprise stock to vary over time.

5.6 Conclusion

The concept of change has no clear-cut definition. It is relevant to study the change both *between* industries and *within* industries. The pace of change depends on how this pace is defined. There are many indications that the pace of structural change was higher, but not increasing, during the 1990s and 2000s compared with the 1980s. However, different measures yield entirely different results when the period after 1990 is compared with the 1970s.

Change has two components: jobs lost and jobs created. At the same time, the debate often focuses on the jobs lost instead of on the jobs created. The policy for change should not be aimed at preventing jobs from disappearing, but on creating the conditions for new job opportunities and a well-functioning adjustment to them. The negative effects from the low pressure to restructure on productivity growth in the 1980s show that aiming for a lower pace of change is not a good solution.

At the same time, it is difficult to try to specify precisely how high the pace of economic change should be, nor is it desirable. More interesting is how change is handled at the individual and the enterprise levels. The lower percentage of people having jobs long after the crisis of the 1990s may be interpreted to mean that there have been problems in the way that change has been handled.

Given that job turnover is higher in the service sector than in manufacturing, a continued expansion of the service sector may mean a higher general job turnover in the economy. This in turn requires more adaptability in the economy, both at the enterprise and the individual level.

A policy to increase adaptability in the economy must take a broad approach and cover several policy areas: the labour market, housing, research, infrastructure, taxes, education, etc. To increase individuals' adaptability, there should be both more geographic mobility and more mobility between employers. Mobility between

employers will very likely continue be of greater importance in the years ahead.

For change to succeed at the individual level, both incentives and adaptability are called for. For the individual, the work-first principle includes both requirements and opportunities. Given relatively high benefit levels in the income insurance schemes, there must be strict requirements to take available jobs. At the same time, individuals must have the skills needed to perform the available tasks. Chapter 3 discussed inefficiencies in the Swedish education system. To enable everyone to improve their ability to adapt to new situations, more people must complete upper secondary school and the pursuit of university studies need to be more efficient.

6 Energy, Climate and Economic Growth

A well-functioning energy supply is crucial to long-term economic growth. At the same time, energy consumption often has a negative impact on the environment. Carbon dioxide emissions from burning fossil fuel that add to the greenhouse gas effect are one obvious example. The national and international aim is therefore to limit emissions of carbon dioxide and other gases affecting the climate and indirectly limit the use of fossil fuels.

Reducing carbon dioxide emissions using policy instruments aimed at changing the energy supply has repercussions in the economy as it affects energy prices. Since energy is used in so many parts of society, changes in energy prices probably have a greater impact on the prospects for economic growth than changes in the price of any other product. In recent years, international fossil fuel prices have risen, partly as a result of rapid economic growth in some developing countries. Forecasts also indicate that global energy consumption will continue its rapid growth.¹⁶¹

Rising prices on fossil fuels and the threat of global warming due to greenhouse gas emissions have increased the focus on the energy issue. The need for a secure and environmentally friendly energy supply is increasingly attracting attention. The close connection between energy consumption and economic development on the one hand and energy consumption and greenhouse gas emissions on the other hand means that climate policy commitments will affect the prospects for economic growth. The climate issue has a long-term perspective and thus the design of the policy may be important for economic growth for a long time to come.

The Kyoto Protocol created an international framework to manage the climate problem. It emphasised cost efficiency with

¹⁶¹ IEA [2007].

international emissions trading as one key element. At the same time, a large number of goals and policy instruments linked to the climate problem have been introduced at the regional, national and local levels that partly risk counteracting international cost efficiency. This may lead to the implementation of measures with substantially higher costs than are necessary as the estimates in the Long-Term Survey 2008 also illustrate. The estimates also indicate that a well-designed policy may bring about substantial reductions in global emissions at a relatively low cost.

6.1 An integrated climate and energy policy

The Earth's climate has become warmer. The average global temperature has increased by over 0.7 degrees in the last 150 years and is currently rising at close to 0.2 degrees every decade. The concentration of greenhouse gases in the atmosphere has meanwhile increased by more than 50 per cent. There is overwhelming agreement that the rise in mean temperature is directly linked to the increased concentrations of greenhouse gases, above all carbon dioxide, which result from burning fossil fuels.¹⁶² In addition to a warmer climate, the consequences of the intensified greenhouse gas effect are expected to include an increase in sea levels, shrinking glaciers, more extreme weather events, greater risk of flooding, reduced food production and access to fresh drinking water in some areas, and losses in biological diversity. The cost of doing nothing about the growing emissions has been estimated to amount to between 5 and 20 per cent of global GDP.¹⁶³ These costs are not evenly distributed throughout the world. Instead they are expected to have a greater impact on the poorest countries.¹⁶⁴

¹⁶² IPCC [2007a]. The United Nations Intergovernmental Panel on Climate Change (IPCC) was established in 1988 with the task of thoroughly investigating human interference with the global climate systems. Since its first report in 1990, the Panel has continued to provide information corroborating and reinforcing the image that global warming is mostly caused by greenhouse gas emissions.

¹⁶³ Stern, N. [2007].

¹⁶⁴ The direct effects of climate change on the Swedish economy are expected to be twofold with equally large items generally on both the income and cost side until 2100. The costs are first of all associated with an increased risk of serious flooding affecting buildings and infrastructure, coast erosion and damages linked to landslides and avalanches. The income side includes more hydroelectric power potential and longer growing seasons (SOU 2007:60).

6.1.1 The international framework is now in place

An important step in limiting climate change was taken in 1992 when the UN Framework Convention on Climate Change was signed in Rio de Janeiro. The Convention established a number of overall principles for international climate work, but it did not contain any quantitative or time-limited measures for the signatories. At the meeting in Kyoto in 1997, the Kyoto Protocol specified the size of the reduction in greenhouse gases to be implemented by a number of industrial countries during the first commitment period, 2008–2012. The target for the Protocol's first commitment period is an average reduction of industrial countries' total emissions of carbon dioxide and five other greenhouse gases by at least 5.2 per cent from the 1990 level.¹⁶⁵ The agreement also defines how the credits for the absorption of greenhouse gases in forests and other vegetation (sinks) can be counted for the period. The Kyoto Protocol came into force in 2005 and thus became binding on the parties that had ratified it.¹⁶⁶

Total commitments under the Kyoto Protocol have been divided between the parties in the form of emissions quotas. The parties can in various ways trade these quotas by using the flexible mechanisms; see fact box 6.1. The Kyoto Protocol's commitments do not, in principle, say how large individual parties' greenhouse gas emissions may be. Instead, they express how large a reduction in global emissions each signatory must contribute to. The Kyoto Protocol can therefore be likened to an international emissions trading scheme in which the target established is for *total* emissions.¹⁶⁷

The EU 15 together is a party to the Kyoto Protocol and has been given an annual emissions quota for 2008–2012 equivalent to 92 per cent of 1990 levels. Based on this commitment, the burden-sharing agreed in the EU means that Sweden has got an annual quota equivalent to 104 per cent of 1990 levels.¹⁶⁸ Work is currently under way in the UN Climate Convention to achieve a climate agreement to take over when the first commitment period within the Kyoto Protocol framework expires.

¹⁶⁵ The Annex B countries. The United States, which is one of these countries, has, however, chosen not to carry out the agreement.

¹⁶⁶ UN [1998].

¹⁶⁷ See, for example, Carlén, B. [2007].

¹⁶⁸ European Commission [2002].

Fact Box 6.1 The Kyoto Protocol's three flexible mechanisms

The Kyoto Protocol specifies a ceiling for participating industrial countries' total emissions. These emission allowances have been divided between the parties via the allocation of emissions quotas, the 'Assigned Amounts'. To meet these commitments in a cost-effective manner, flexible mechanisms have been created by which the parties to the Protocol can transfer emissions allowances among themselves. The mechanisms provide a geographic flexibility as to where the emissions reductions may be implemented without this trade affecting total emissions.

International emissions trading (IET)

International emissions trading makes it possible for parties with emissions quotas to buy and sell these among themselves.

The mechanism for joint implementation (JI)

Joint Implementation makes it possible for one country with quantitative commitments on emissions limitations to acquire emission reduction units (ERU) by investing in projects reducing emissions in another country with similar commitments. Joint implementation in practice entails a redistribution of emissions allowances between two countries with emission limitation commitments.

The Clean Development Mechanism (CDM)

The Clean Development Mechanism makes it possible for countries with quantitative commitments limiting emissions to invest in emissions reducing projects in other countries that do not have such commitments and get credit for part of the estimated emissions reductions, Certified Emissions Reductions (CER). This provides incentives to reduce emissions even in countries without any emissions targets.

6.1.2 Many regional and national targets and policy instruments

In addition to the international framework provided by the UN Climate Convention, there are a large number of targets specified that aim at limiting greenhouse gas emissions at the national and regional level. The EU has established a target of reducing EU greenhouse gas emissions by at least 20 per cent by 2020 compared with the 1990 level. The EU is to achieve this climate target regardless of how global climate negotiations unfold. If other

industrialised countries (and some advanced developing countries) make comparable commitments, the EU goal will instead be to reduce greenhouse gas emissions by 30 per cent by 2020.¹⁶⁹

In addition to this climate target, the EU has also established targets for energy consumption. The EU has stipulated that the percentage of renewable energy is to be at least 20 per cent of final energy consumption by 2020 and that energy is to be used at least 20 per cent more efficiently. Furthermore, renewable energy in the transport sector is to come to a minimum of 10 per cent in all Member States by 2020, given that certain criteria have been met.

In 2002 Sweden established its own national target for greenhouse gas emissions.¹⁷⁰ Under this target, average annual emissions for 2008-2012 are not to exceed 96 per cent of the 1990 level. The possibilities of increasing emissions (relative to 1990), which resulted from the negotiations within the EU, will thus not be used. The target is formulated so that it is the actual emissions in Sweden that are to decrease, and therefore the use of flexible mechanisms cannot be included. Work is currently progressing to draw up a new Swedish climate target with 2020 in view. There is not, however, any target for 2030, which is the outer year for the scenarios in the Long-Term Survey 2008.¹⁷¹

In addition to the climate policy objectives, Sweden also has energy policy objectives. The long- and short-term energy policy objectives are to secure a reliable supply of electricity and other forms of energy at internationally competitive prices. In 2003 an electricity certificate system was introduced with the aim of raising the amount of renewable electricity to a specified level by 2010. The system was later extended to 2030 and given a more ambitious aim.¹⁷² In addition, there are targets for the expansion of wind power and the percentage of biofuels in relation to the amount of gasoline and diesel used.

In many instances meeting energy policy objectives may push carbon dioxide emissions in the right direction, so that climate targets are achieved and vice versa. But in some instances the

¹⁶⁹ European Council [2007].

¹⁷⁰ Government Bill 2001/02:55.

¹⁷¹ However, the Climate Committee proposed that one *aim* should be a reduction in greenhouse gas emissions for Sweden of at least 75-90 per cent by 2050 compared with the 1990 level (SOU 2008:24).

¹⁷² The target is to increase the amount of renewable energy by 10 TWh by 2010 compared with the 2002 level, and by 17 TWh by 2016. See Government Bills 2001/02:143 and 2005/06:154.

reverse may hold true. Measures such as the expansion of nuclear power and the capture and storage of carbon dioxide can help achieve the climate target, but do not help achieve energy policy targets.

6.2 Economic growth has increased more than energy consumption and carbon dioxide emissions

The relationship between economic growth and energy consumption has been much discussed and analysed since the energy crises of the 1970s and 1980s. More recently, the discussion has once more come to the forefront in connection with the design of climate policy measures. The target for reduced energy consumption is usually justified by the need to curtail carbon dioxide emissions. If emissions and energy consumption are closely linked, these targets coincide, as is the case when the energy supply is based on fossil fuels. If in contrast, the energy supply comes, for example, from renewable fuels, the difference between these targets is greater. The connection between energy use and carbon dioxide emissions should therefore be carefully considered in connection with the formulation of an economically effective climate policy.

6.2.1 The composition of energy consumption is of crucial importance to carbon dioxide emissions

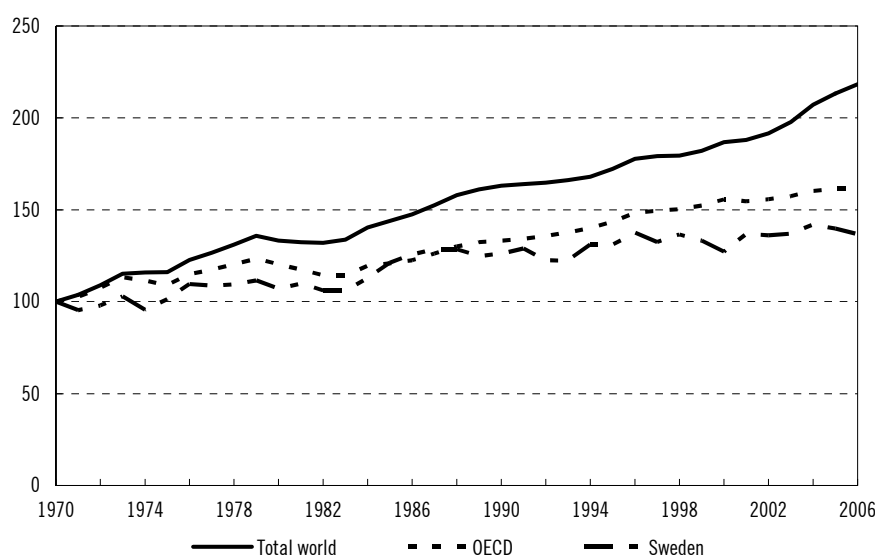
As with the consumption of most goods and services, energy consumption usually grows when the economy grows. At the same time, consumption is affected by the technological developments and the structural change that are constantly taking place in the economy (see chapters 4 and 5). Technological developments and structural change are in turn dependent on the cost of energy consumption, i.e. the price of energy raw materials, energy taxes, etc. The growth in carbon dioxide emissions is closely linked to energy consumption, but it also depends on the composition of that consumption since different energy carriers have different carbon contents.

Energy consumption has increased but energy intensity has decreased...

In recent decades, global energy consumption has grown at a clearly lower rate than economic growth. Between 1970 and 2006, global energy consumption increased by almost 120 per cent, an annual average growth rate of 2.2 per cent (figure 6.1). The increase has been almost continuous except in connection with the oil price shocks of 1973 and 1979, which led to reduced consumption for a few years. Since 1970 Swedish energy consumption has grown considerably more slowly than global consumption has and a little more slowly than consumption in the OECD countries as a whole.

Figure 6.1 Primary energy consumption, 1970–2006

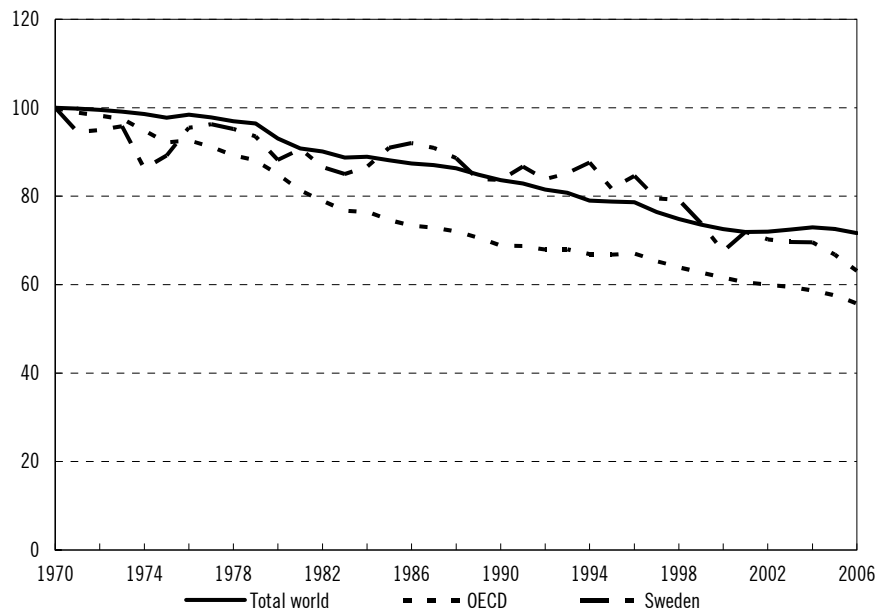
Index 1970=100



Note: OECD and world total include only oil, coal, gas, nuclear power and hydroelectric power.

Source: Budget Bill [2007] and the Swedish Energy Agency [2007].

During the same period, global real GDP growth exceeded 200 per cent. Hence, average global energy intensity (energy consumption per unit of GDP) has declined by close to 1 per cent a year (figure 6.2).

Figure 6.2 Energy consumption per unit of GDP 1970–2006*Index 1970=100*

Note: Primary energy per GDP (adjusted for purchasing power parity).

Source: Budget Bill [2007], the Swedish Energy Agency [2007], the World Bank [2007] and the OECD [2007d].

Energy intensity growth in Sweden has been in line with global growth during the period studied, i.e. an annual decline of over 1 per cent. Compared with the OECD as a whole, energy intensity has declined somewhat more slowly in Sweden. In the last decade, the reverse holds true.

...and carbon dioxide emissions show the same pattern

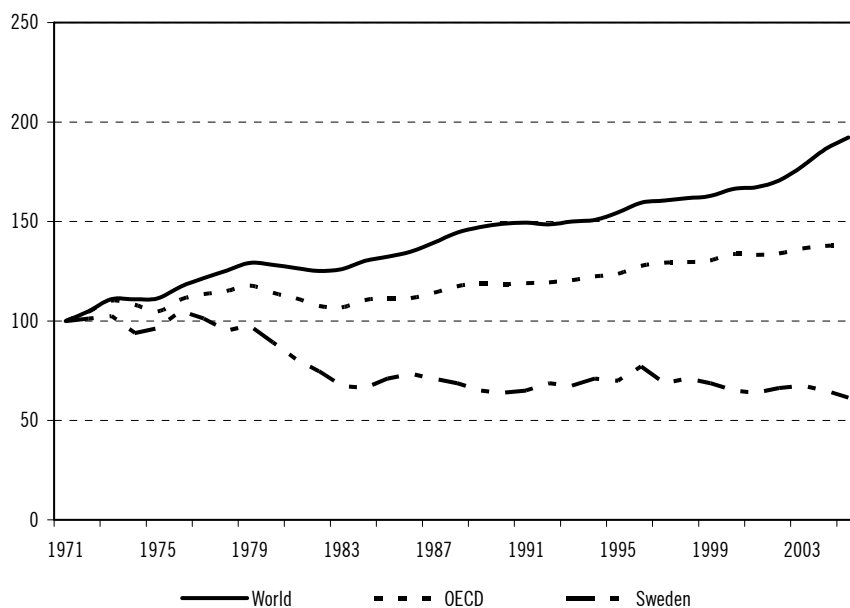
Globally some changes in the composition of energy consumption have taken place in the last three decades. In particular, there has been a shift from oil to less carbon dioxide intensive energy sources such as gas and nuclear power. However, this shift has not been enough to result in a decline in global carbon dioxide emissions. Instead it has generally followed the same path as energy consumption. Carbon dioxide emissions per unit of energy in

OECD countries have decreased by 9 per cent since 1980, which is somewhat more than the global decline. OECD countries' carbon dioxide emissions have still risen by about 0.8 per cent a year (figure 6.3).

Swedish emissions of carbon dioxide increased sharply between the Second World War and the first oil crisis in the 1970s. Since then, emissions have been almost halved. If all six greenhouse gases regulated by the Kyoto Protocol are counted, Swedish emissions were equivalent to about 0.2 per cent of global emissions in 2005.

Figure 6.3 Emissions of carbon dioxide 1971–2004

Index 1971=100



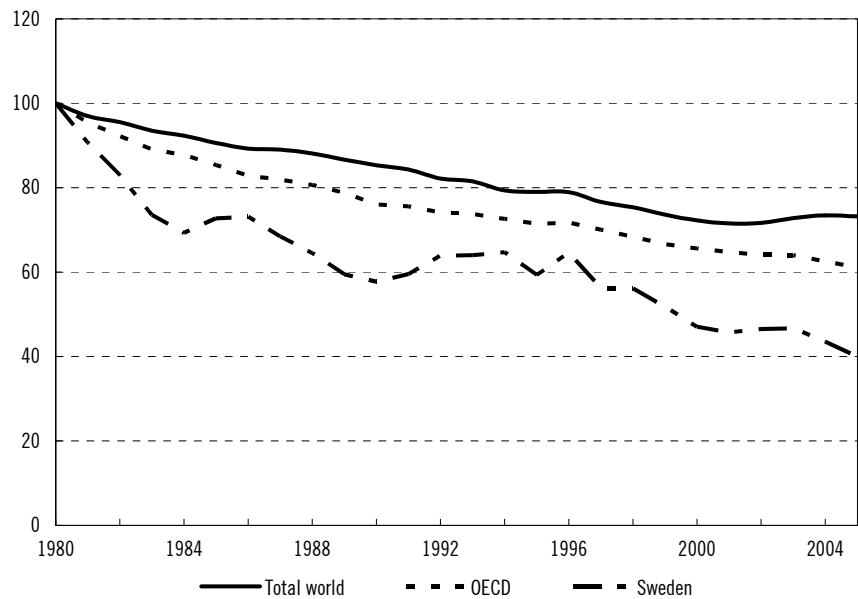
Source: OECD [2008c].

Since 1980, carbon dioxide intensity (carbon dioxide emissions per unit of GDP) has declined much more rapidly in Sweden than in the rest of the world (figure 6.4). A large part of this reduction happened before 1984 when the expansion of nuclear power stations in Sweden was completed. The supply of energy from

renewable sources in Sweden has increased steadily since the 1980s, but the rate of increase has been relatively slow. Since 1990, carbon dioxide intensity in Sweden has only declined marginally more rapidly than in the OECD countries as a whole.¹⁷³ While Swedish industry is energy intensive, total greenhouse gas emissions per GDP are very low in international terms.¹⁷⁴

**Figure 6.4 Carbon dioxide emissions per unit of GDP
1980–2005**

Index 1970=100



Note: Carbon dioxide emissions from the burning of fossil fuels.

Source: OECD [2007f, 2008c] and the World Bank [2007].

¹⁷³ The reference here is to carbon dioxide emissions and more specifically, energy-related emissions. Swedish emissions intensity for all greenhouse gases regulated by the Kyoto Protocol decreased by over 8 per cent between 1990 and 2006. Swedish Environmental Protection Agency [2007].

¹⁷⁴ Emissions intensity in the Swedish economy was about half that of the average emissions intensity in the EU 27 in 2005 and also the lowest of all countries. EEA [2007].

6.2.2 Increasing importance of structural change in changing energy consumption

A large number of studies have analysed the determinants of energy and carbon dioxide intensity growth. Lower energy intensity at the macro level is a result of, *inter alia*, improved efficiency and structural changes, which are in turn the result of energy price developments and energy policy instruments and to some extent, an underlying development that is independent of price changes and the policy pursued.¹⁷⁵ Carbon dioxide intensity growth depends, as noted earlier, on changes in the fuel mix in the economy.

High energy prices have previously led to reduced energy consumption...

To assess the importance of the various components of energy consumption trends, the energy and emissions developments observed can be broken down into different components. The IEA (International Energy Agency) has analysed the extent to which different factors have contributed to trends in energy consumption and carbon dioxide emissions for an aggregate of industrial countries between 1973 and 1998.¹⁷⁶ The result indicates that energy intensity in a number of industrial countries did indeed decrease but the rate of decrease moderated in the 1990s, despite their efforts to reduce the emission of greenhouse gases. This trend can be explained by the large energy efficiencies after the energy price shocks of the 1970s and the long period of low energy prices.

The trend in energy consumption can be broken down into two components, a *structural effect*, i.e. the growth that occurs when the composition of industries in the economy changes, and an *intensity effect*, i.e. developments resulting from reduced energy intensity within industries.¹⁷⁷ The intensity effect was most important in the 1970s and 1980s, i.e. the technological developments *within* indust-

¹⁷⁵ The reduction in energy intensity that is independent of policy and price may be due to such factors as technological improvements that result from accumulated knowledge or a structural change independent of price. Another explanation pointed out by IEA [2006] is the warmer temperature, which has reduced the need for heating in recent decades.

¹⁷⁶ IEA [2004].

¹⁷⁷ See IEA [2004] for a description of the method used for this breakdown.

ries were most important for the decrease in energy intensity.¹⁷⁸ However, after 1990 structural effects are most important. One explanation for the developments is that the high energy prices in the 1970s and 1980s affected both structural change and industry specific improvements. The stable or reduced energy prices of the 1990s had less effect on energy efficiency in specific industries at the same time that rapidly growing economic welfare shifted consumption to products with higher income elasticity, such as the consumption of services.¹⁷⁹ The high energy prices in recent years may possibly increase the importance of reductions in energy intensity within industries, particularly if prices are expected to remain high.

... but the shift to less energy intensive industries is what matters most now

In Sweden there are large differences in energy intensity among industries. There has been a sharp reduction in energy intensity in some industries such as the machine and telecommunication products industry while in others such as construction, energy consumption has increased more than production volume. At an aggregated level, energy intensity may decline even though some industries develop in a different way. A breakdown of trends in Swedish energy consumption since 1993 using the same method as IEA uses yields a result in accordance with the conclusions for industrial countries. Figure 6.5 shows the Swedish business sector's energy consumption from 1993 to 2005. The figure shows actual energy consumption, hypothetical energy consumption with no change in energy intensity (i.e. 1993 energy intensity levels) and hypothetical energy consumption with no change in either the industry structure or energy intensity. The analysis shows that during this period, structural change in the business sector was of

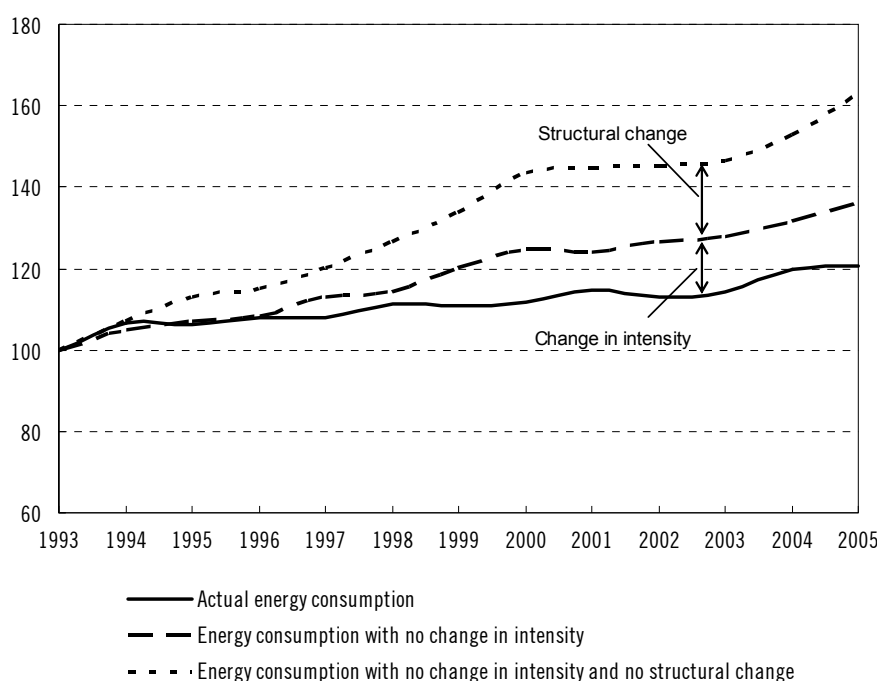
¹⁷⁸ Sue Wing, I. & Eckaus, R.S. [2007] break down US energy consumption over a longer period, between 1959 and 1995, with partially similar results. Before the 1970s oil price shocks, the effect of structural changes was predominant, but afterwards it was mostly intensity improvements within industries that took place.

¹⁷⁹ Lower energy prices after a period of high prices does not necessarily need to mean that energy consumption will increase again if energy efficiencies have been implemented. There may be some measure of irreversibility. For example, Dargay, J. & Gately, D. [1997] show that this effect likely was important in energy consumption in road transport after the oil price shocks of the 1970s.

major importance in reducing total energy intensity while developments at the industry level have been less important. This is due to the rapid growth of less energy intensive industries such as telecommunications products, pharmaceuticals and the service industry. The relatively low energy prices during the period should have contributed to the relatively modest intensity improvement at the industry level.

Figure 6.5 Energy consumption in the business sector, by changes in structure and in intensity 1993–2005

Index 1993=100



Note: The business sector includes industries SNI 1-39, 41-93.

Source: Statistics Sweden [f] and Ministry of Finance calculations.

A similar breakdown of the business sector's *carbon dioxide emissions* during the same period, i.e. classing changes in emissions by structural effect and intensity effect, shows that structural change in the business sector has also been the most important

factor in carbon dioxide emissions trends. The contribution made by the reduction in carbon dioxide intensity in this sector has been considerably smaller, despite the relatively large element of fuel conversion in some industries. Moreover, structural change has a greater impact on carbon dioxide emissions than on energy consumption, indicating that the energy efficiency improvements taking place in industry do not necessarily have a similar effect on carbon dioxide emissions.

6.2.3 A global increase in energy consumption and carbon dioxide emissions is expected

Most analysts are agreed that global energy consumption will increase in the long term. However, the rate of increase and the leading sources of energy in the years ahead are difficult to predict. They depend not only on economic growth and the price of fuel, but also on the measures taken to limit greenhouse gas emissions and possible technological advances.

Fossil fuels will continue to dominate

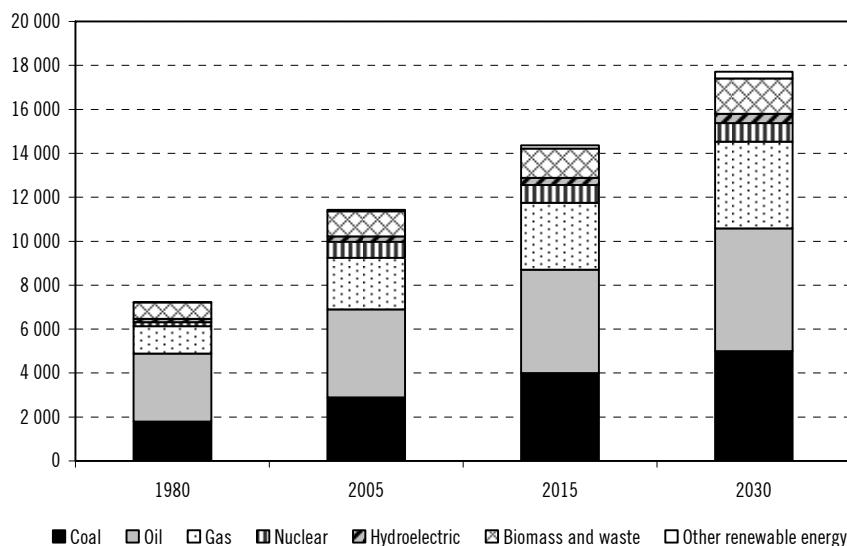
IEA predicts that the increased global demand for energy will primarily be met by fossil fuels, particularly coal and natural gas (figure 6.6). At the same time, hydroelectric and other renewable energy sources will increase in importance, with renewable energy sources generally expected to maintain their share of the supply up to 2030. The IEA anticipates that developing countries will represent over 70 per cent of the increasing demand for energy, which means that their share of global consumption will increase from about 40 to 50 per cent between 2004 and 2030. World energy intensity is simultaneously estimated to decline by 1.8 per cent a year, with the most rapid decline in non-OECD countries.¹⁸⁰ The growth in energy prices, which is very difficult to predict, is an important factor in these estimates. The IEA predicts a crude oil price by 2030 of USD 62 a barrel in 2005 prices, which is substantially higher than the price level in the 1990s. Other analysts such as the EU Commission and the Energy Information

¹⁸⁰ IEA [2007].

Administration (EIA) have made similar estimates for prices up to 2030.¹⁸¹

Figure 6.6. Global energy demand 1980 and 2005 and the forecast for 2015 and 2030

Mill. tonnes oil equivalents per year



Source: IEA [2007].

According to the Swedish Energy Agency's long-term forecast, Swedish energy consumption will increase by 15 per cent between 2004 and 2025.¹⁸² The increase primarily depends on increased demand in industry and the transport sector. Energy consumption in industry is expected to increase by about 25 per cent while industrial production is expected to continue to grow at a good pace. All in all, this means that *energy intensity* in the business sector will fall by 2.6 per cent annually during the forecast period.

¹⁸¹ EIA [2008] and the European Commission [2008a].

¹⁸² Swedish Energy Agency and Swedish Environmental Protection Agency [2007b].

Global carbon dioxide emissions will increase

According to international analysts, global carbon dioxide emissions from energy consumption will increase substantially in the years ahead. In estimates with no climate policy measures or limited use of them, emissions will increase by more than 40 per cent by 2030.¹⁸³

Swedish carbon dioxide emissions are expected to increase by more than 13 per cent by 2020 compared with the 2005 level. Emissions from the transport sector and industry in particular account for this increase. The basis for the estimates is that only the policy instruments decided by 2006 will be used during the period.¹⁸⁴

In the base scenario in the Long-Term Survey, Swedish carbon dioxide emissions increase by about 13 per cent between 2005 and 2030. In these estimates, transport-related emissions in particular increase. Included in the assessments, however, are assumptions about future climate policy design that ensure that the increase in Swedish emissions will be offset by considerably larger reductions in other countries (see section 6.3.2).

6.3 Climate policy affects economic development

There are many goals and sub-goals within the climate policy framework and a number of policy instruments have been introduced and proposed aimed at meeting these goals. This has helped make it difficult sometimes to analyse and evaluate the policy. It is also difficult to isolate the effect of policy instruments from other factors such as relative energy prices, structural changes and fluctuations in the business cycle. At the same time, it is of great importance to design policy instruments in such a way that economic growth is not curbed more than necessary when climate

¹⁸³ The OECD estimates that global carbon dioxide emissions will increase by 54 per cent between 2000 and 2030. The IPCC's assessment for the same period is an increase of 40–110 per cent. The IEA anticipates an increase of energy related carbon dioxide emissions equivalent to 57 per cent between 2005 and 2030. The OECD [2008a], IPCC [2007b] and IEA [2007].

¹⁸⁴ Total Swedish emissions of all greenhouse gases covered by the Kyoto Protocol are estimated to be about 6 per cent higher by 2020 relative to 2005. Swedish Energy Agency and Swedish Environmental Protection Agency [2007b].

policy targets are to be met, particularly if the climate targets need to be made more ambitious in the years ahead.

6.3.1 The costs of limiting carbon dioxide emissions need not be high

A great many studies have analysed the long-term economic consequences of limiting greenhouse gas emissions. At the global level, the estimates of the British economist Nicolas Stern have had a major impact on the debate.¹⁸⁵ Analysts with the OECD, International Monetary Fund (IMF) and the United Nations Intergovernmental Panel on Climate Change (IPCC) have also presented cost estimates of global climate policy.¹⁸⁶ There have also been a number of assessments of the economic effects of Swedish climate policy, *inter alia*, in previous Long-Term Surveys.¹⁸⁷ The large variations in the cost estimates indicate uncertainty in the estimates.¹⁸⁸ A large number of assumptions, each of which can be debated, must be made, which means that the results of the estimates must always be interpreted with caution. At the same time, the estimates perform an important function in making clear how the policy should be designed in order to be highly cost-effective.

Global climate targets can be met at limited costs

Many estimates have indicated that ambitious global emissions targets can be achieved without too large an impact on the world economy.

It was the opinion of the Stern report that with well-targeted and effective measures, emissions can be limited so that the risk of serious human impact on the climate system can be markedly

¹⁸⁵ Stern, N. [2007].

¹⁸⁶ OECD [2008a], IMF [2008] and IPCC [2007b].

¹⁸⁷ See, for example, the National Institute of Economic Research [1999], Östblom, G. [2003], Hill, M. & Krström, B. [2005] and Carlén, B. [2007].

¹⁸⁸ Nevertheless, it is probably easier to estimate the economic consequences of climate policy measures than to estimate the economic effects of increased greenhouse gas emissions.

reduced.¹⁸⁹ This could be achieved at an annual cost in 2050 equivalent to about 3 per cent of global GDP. The IPCC has estimated that the cost of stabilising the percentage of greenhouse gases in the atmosphere at about the same level will result in a 5.5 per cent lower global GDP in 2050 relative to its own base scenario.¹⁹⁰

The OECD has in turn estimated that the measures required to achieve the stabilisation target may result in a 2.5 per cent reduction in global GDP in 2050. The IMF expects that the cost of achieving a somewhat less ambitious stabilisation target will come to just under 4 per cent of GDP in 2050.

To sum up, these estimates indicate a total cost of less than 5.5 per cent of global GDP in 2050. In terms of growth, this is equivalent to an average reduction in the rate of growth of less than 0.15 percentage points a year.

A well-designed policy is a prerequisite for these results

What these studies have in common is an effective policy base in the sense that there is international coordination ensuring that the cost of emitting a kilo of carbon dioxide (or any other greenhouse gas) is harmonised between sectors and participating countries. In this way, the limited scope for emissions is allocated where it does the most good. One way of achieving this is to use market-based instruments such as flexible mechanisms in the Kyoto Protocol or some other type of international emissions trading, or alternatively, an internationally harmonised tax on emissions. The estimates show that the more countries and industries that participate, the lower the total cost of achieving the targets will be. Higher ambitions for emissions reductions increase the need for international flexibility.

To achieve the targets for stabilising greenhouse gas emissions at an acceptable level, it is estimated that the marginal cost of carbon dioxide emissions, for example, via a carbon dioxide tax or an emissions allowance price, needs to be between USD 50 and 160

¹⁸⁹ That is to say, in order to meet the target of a maximum two degree temperature increase that, according to analysts, corresponds to emissions reductions consistent with a stabilisation of greenhouse gas concentrations of 450–500 ppm CO₂e.

¹⁹⁰ IPCC [2007b].

per ton of carbon dioxide equivalents in 2050.¹⁹¹ The estimated price is largely dependent on the assumptions made about technological development and the time at which the measures become effective. Good progress in technological development reduces the price on carbon dioxide and a long delay in implementing the measures means a risk of a price increase in the future.

The cost for various regions/countries may, however, vary. In order to put in place an agreement, some type of burden-sharing between regions or countries will therefore be necessary. One way of achieving this is in an international emissions trading scheme with an initial allocation of transferable emissions rights that brings about a desirable distribution of costs.¹⁹² Countries and activities with low allowances but a high capacity to pay and relatively high costs to reduce their own emissions can thus pay the other actors in order to be allowed to increase their share of emissions. In this way it may be possible to come to an agreement acceptable to many parties without undermining cost-effectiveness.¹⁹³

The OECD has made estimates in which the effect of a uniform carbon dioxide tax in all countries is compared with a global emissions trading scheme in which the emission allowances are used to harmonise the costs between countries.¹⁹⁴ The simulations show that a uniform tax gives rise to clearly lower relative costs for OECD countries than for developing countries. With an emissions trading scheme, emission allowances can be used to influence the distribution of costs. By giving OECD countries a relatively lower emission allowance, the reverse cost picture is possible while achieving the same target in a cost-effective manner (figure 6.7).

¹⁹¹ OECD [2008a] estimates that a global emissions tax would need to be raised to almost USD 160 (2001 prices) per ton of carbon dioxide equivalents by 2050 in order to limit the temperature increase to 2 degrees. See also IPCC [2007a] and IMF [2008].

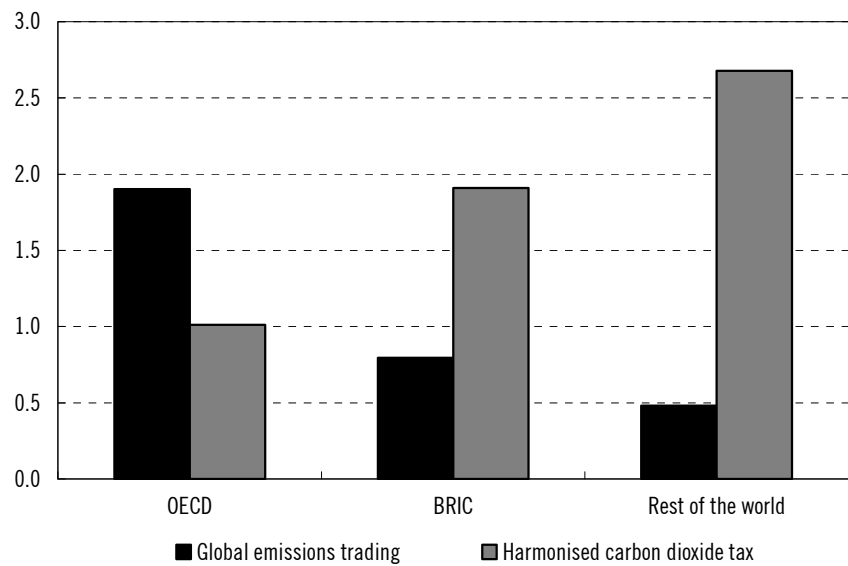
¹⁹² See fact box 6.2 on how this is accomplished at the EU level in the EU emissions trading scheme.

¹⁹³ See, for example, Bohm, P. & Carlén, B. [2002] and OECD [2008a].

¹⁹⁴ OECD [2008a].

Figure 6.7 Examples of regional costs with emissions trading and with a carbon dioxide tax 2050

Per cent of GDP, 2050



Note: Estimated cost of emissions reductions to achieve a stabilisation of greenhouse gas concentrations of 450 ppm of carbon dioxide equivalents by 2050. Brazil, Russia, India and China are included in BRIC.

Source: OECD [2008a].

Fact Box 6.3 EU Emissions Trading Scheme

The EU Emissions Trading Scheme (EU ETS) was introduced in 2005 and currently covers about half of the greenhouse gas emissions in the EU. The trading scheme constitutes a key tool in the Community's efforts to live up to its international commitments under the Kyoto Protocol. The scheme defines the maximum permissible emissions from various sources such as public incinerators, refineries, the mineral industry, the iron and steel industry and the pulp and paper industry for a specified period. Under this ceiling, emissions can be reallocated freely among the polluters by each company handing over emissions rights corresponding to the emissions that they have given rise to. By establishing the quantity of emission rights available in advance of each new trading period, it is possible to ensure a specific reduction in emissions overall.

Companies with emissions reduction costs that are less than the price of emissions rights have an incentive to further reduce emissions instead of burning an additional part of the limited quantity of emissions rights in the scheme. Given a well-functioning trading scheme, the price of emissions rights is determined by the total quantity of emissions rights and companies' marginal costs of emissions reductions. Freely distributed emissions rights are worth as much on the market as the emissions rights sold at auction and the price is the same in every member country. This type of scheme (*cap-and-trade*) improves the predictability of future emissions levels compared with such instruments as a carbon dioxide tax.

The scheme does not include such emissions as transport, agriculture and individual heating. Expanding the scheme in various ways, has, however, been discussed. Beginning in 2012, emissions from air traffic will be included in the scheme.

6.3.2 An effective Swedish climate policy

To successfully implement the large emissions reductions that the IPCC and other analysts think are necessary globally, it is absolutely essential for the policy designed to be cost-effective. As discussed previously, the cost of reducing emissions may be modest, provided that there is some type of internationally coordinated policy with mechanisms that facilitate harmonising the reduction costs between both industries and countries. Such a policy is in turn of importance to Sweden in designing a climate policy that contributes to a cost-effective reduction of global emissions.

The base scenario has its roots in an internationally coordinated policy

In the base scenario of the Long-Term Survey 2008 described in chapter 2, estimates are based on there being an international emissions trade in place by 2030 that includes all Swedish carbon dioxide emissions. All actors in Sweden are thus charged the same (international) price on their emissions equivalent to the price that a number of international analysts consider necessary in order to achieve the target of a stable climate at an acceptable level. The assumption stems both from the findings of the studies presented earlier indicating substantial efficiency gains from international agreements and from Sweden's aim of a cost-effective reduction of global emissions.¹⁹⁵

The starting point for the estimates is that Sweden's contribution to the global reduction in carbon dioxide emissions in 2030 is a reduction in emissions to a level equivalent to 70 per cent of Sweden's emissions in 2005.¹⁹⁶ In the scenarios, Sweden is thus permitted to issue emission rights in accordance with this level. Participants can then buy and sell emission rights both domestically and internationally without restrictions at the prevailing international price, which from Sweden's perspective is given.

The results of the estimates indicate that the impact on economic growth would be relatively low. The economic effect of this policy compared with a continuation of current policy instruments and no further reduction in emissions would be equivalent to a decrease in Sweden's GDP of more than 0.2 per cent by 2030. This result is well in line with the relatively low costs presented in OECD and other analyses, where international flexibility is emphasised as crucial to achieving the result. The base scenario does not indicate any substantial structural change as a result of pursuing a climate policy with international emissions trading.

¹⁹⁵ The taxation of fossil fuels (including the carbon dioxide tax) on vehicle fuels is, however, retained for fiscal reasons in the base scenario. As a result, the price on the emissions from these fuels is the current carbon dioxide tax added to the international carbon dioxide price. See appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

¹⁹⁶ This reduction in emissions is largely in line with the emissions reduction required of OECD countries to achieve the target of 450 ppm based on OECD estimates. According to these estimates, greenhouse gas emissions need to decline to 77 per cent of 2002 emissions by 2030 and continue downwards to 45 per cent by 2050. OECD [2008a].

An inefficient policy will have greater economic consequences

The relatively low cost of the climate policy calculated in the base scenario of the 2008 Long-Term Survey is highly dependent on the assumption that the policy that is in place is efficient. The ability to trade emissions rights both nationally and internationally with no trade barriers is a prerequisite in order for the scheme to be efficient. It is worth pointing out that this scheme differs from many of the proposals put forward in the Swedish and European debate, such as trade restrictions, sector specific emissions trading schemes and emissions ceilings as well as differentiated carbon dioxide taxes, as parts of a future climate policy.

An alternative scenario analyses the economic effect of a policy largely lacking international coordination at the same time that the EU and Sweden continue to pursue a climate policy focusing on emissions reductions in the EU and in Sweden. In the alternative scenario, the EU Emissions Trading Scheme looks about the same in 2030 as it does today; see fact box 6.2. This means a two-pronged approach to climate policy: one policy for establishments and industries in the EU emissions trading scheme governed by EU decisions and another for the rest of the economy with Sweden responsible for reducing emissions. The industries included in the Trading Scheme are free to buy and sell emissions rights at the prevailing price in the EU emissions market while other industries and consumers are regulated by the domestic carbon dioxide tax and other instruments. The policy's target is that the total of the number of emission rights allocated plus actual emissions from the industries not included in emissions trading are not to exceed the emissions allowances allocated to Sweden in the base scenario. Thus Sweden's actions in both scenarios should result largely in the same climate effect.

The estimated cost of this policy alternative is considerably higher than that for an efficient policy. Compared with the *base scenario*, GDP declines by over 3.1 per cent by 2030. This may be viewed as a high cost for a single policy decision. The additional cost of the carbon dioxide tax on transport and private households will be considerably higher in this case (about SEK 8 per kilogram of carbon dioxide) which, in accordance with the target, results in large domestic emissions reductions, particularly emissions from

road transport and households.¹⁹⁷ In the base scenario, transport and households bear the cost of the current carbon dioxide tax (which is retained) and the cost of emissions rights, which together are equivalent to almost SEK 1.50 per kilogram of carbon dioxide.

It may be argued that a reduction in GDP of over 3 per cent by 2030 is a low price to pay if it leads to less risk of climate change. At the same time, it is important to point out that the cost is not negligible, particularly when one takes into consideration that the contribution to the improvement in the climate for this sum is no larger than that achieved with an efficient policy. In addition, it should be pointed out that the aggregated cost, here measured in terms of a contraction of GDP, does not reveal much about the cost of structural change and the distribution effects associated with the policy. The estimates indicate that the structural change with an efficient policy is small compared with the alternative. If households have to bear a large part of the costs directly in the form of higher carbon dioxide taxes as in the alternative policy, there is a significant risk that the distribution effects may be substantial. Studies show that the taxation of fossil fuels hits low income households harder.¹⁹⁸ If the calculations also include these effects, it is likely that the real costs to society will be greater than the GDP figures show. A high cost or a skewed distribution of the costs also risks reducing the acceptance of the climate policy, which is unfortunate when there are high ambitions for the policy.

6.4 Conclusion

The threat of radical climate change is one of the gravest problems facing humanity. In addition to the Kyoto Protocol, the broad international agreement which includes quantitative targets, a large number of other targets have been established that are aimed at helping reduce the risk of excessive global warming. Estimates of the cost of reducing emissions globally enough to halt climate change at an acceptable level indicate that there is much to be gained from international cooperation. If emissions reductions are made where they cost the least, ambitious climate targets can be

¹⁹⁷ This corresponds to over SEK 18 per litre of petrol in carbon dioxide tax (excluding VAT).

¹⁹⁸ See, for example, SOU 2003:2, Serret, Y. & Johnstone, N. [2006] and Fullerton, D. [2008].

met at a relatively low cost. Climate policy should therefore aim to cover as many countries as possible and allow for international flexibility in emissions reductions. An international emissions trading scheme that enables economic burden sharing among countries is one way of accomplishing this.

A number of studies have shown that a policy that deals with emissions from different industries and sectors risks substantially raising the cost of meeting a specific emissions target. Just as international cost sharing possibilities are key in holding down global costs, the aim at the national level should be to treat emissions from different sources similarly. Estimates in the Survey's alternative scenario illustrate some of the costs that arise if limits are put on flexibility nationally and internationally. In addition to these costs, there will be costs resulting from structural change and distribution effects. The conclusion reached from the scenarios in the Long-Term Survey is that a large part of national emissions should be included in international emissions trading.

Energy consumption is necessary for economic growth as economic history makes clear. Energy consumption has progressively become ever more efficient over time as reflected by the decline in energy intensity, i.e. energy consumption in relation to GDP. This increase in energy efficiency has partly happened of its own accord in connection with new technological developments and structural changes in the economy. However, energy price trends are of great importance both for technological development and the pace of structural change.

Carbon dioxide emissions trends have historically followed trends in energy consumption. However, the link to energy consumption, is not direct. For instance, large reductions in emissions have previously been achieved in connection with a change of energy carriers without a major impact on energy intensity. Examples are the replacement of fossil fuels with nuclear power and biofuels.

Trends in energy consumption and energy intensity in Sweden mostly follow trends in other industrial countries. During those periods when carbon dioxide emissions in relation to GDP have fallen more rapidly in Sweden than in other countries, the reduction has largely been due to changes in the composition of the energy supply rather than reduced energy intensity. In the last decade, structural change has also been of great importance, particularly for emissions reductions.

Given that it is possible to measure and control greenhouse gas emissions, policy should focus on pricing these emissions directly. From a climate perspective it is difficult to justify a policy focusing on reducing consumption of a particular good if it is only partly linked to emissions. Targets for energy consumption risk leading to measures that are more costly than what can be achieved with general policy instruments directly aimed at greenhouse gas emissions.

7 Renewing the Welfare Systems

The previous chapter addressed the prospects for economic growth. Growth provides a higher standard of living, some of which we receive via the publicly funded welfare systems.²⁰¹ The welfare systems face a number of challenges in the long term. One such challenge is that those of working age must in future be able to finance health care, social services and other public activities for a growing number of elderly people. The new and future demands that accompany increases in household incomes present another challenge. As material standards increase in society, people expect more from welfare services, i.e. health care, social services and education. Thus the difference between what the tax-financed systems are capable of providing and what the public would like to have gradually increases. A third challenge is the rise in the relative price of several of these services on account of weak productivity growth.

These challenges have been discussed in considerable detail in the two preceding Long-Term Surveys,²⁰² but they are still urgent since solutions for meeting them have not yet been devised.

In addition, the ongoing internationalisation affects welfare systems' prospects. It is more difficult to tax mobile tax bases, thus limiting the funding possibilities for the welfare systems. Greater cross-border mobility and trade in services also makes it increasingly difficult to consider welfare services as an exclusively national concern.

²⁰¹ Here the term 'welfare system' refers to tax-financed public systems that are used to spread risks among inhabitants and redistribute parts of welfare provision – primarily social insurances, transfers and large parts of public consumption – both among individuals and over time. Welfare itself is a broad concept that includes both material and non-material consumption (for example, leisure time).

²⁰² See the main report to the Long-Term Survey 1999/2000 (SOU 2000:7) and the Long-Term Survey 2003/04 (SOU 2004:19).

In order for it to be possible to further develop welfare services in the long term, this chapter notes that the form of financing for some of the welfare systems needs to be changed. Increasing the number of hours worked in the economy could contribute to their financing in the short term. However, since in future there will also be a wish to take out some of this welfare increase in the form of leisure time, more hours worked is not a realistic long-term solution. The Long-Term Survey 2008 therefore recommends establishing a parliamentary inquiry to further explore how to change the form of financing for some of the tax-financed activities.

7.1 Limited possibilities for tax financing the growth of welfare services

The preceding Long-Term Survey noted that it will be difficult to finance ambitious improvements in welfare services with taxes. Here welfare services are defined as health care, social services and education. These services represent a substantial part of public consumption, i.e. tax-financed goods and services. Welfare services are produced either publicly – mostly at the local government level – or privately. Welfare services are to a lesser extent financed by fees.

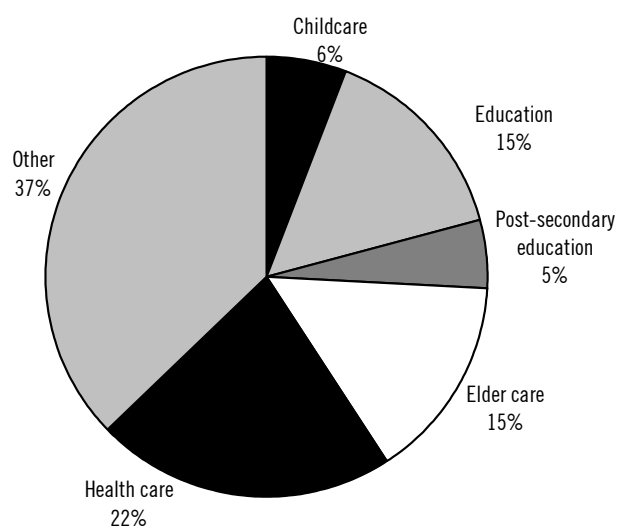
Public consumption amounted to more than 26 per cent of GDP and accounted for 50 per cent of public expenditure in 2007. Figure 7.1 shows the distribution of public consumption according to purpose.

The other large expenditure item in the public sector is transfers, which make up about 40 per cent of public expenditure.²⁰³ The transfers include social insurances and various forms of benefits that are also important parts of the welfare system. The social insurances are constructed quite differently than the welfare services. Revenues and costs in social insurance systems can be expected to follow each other more closely. The task of the social insurances is to ensure against loss of income, and premium payments are linked to the size of the wage. If the risk of a loss of income increases or decreases, there may be changes in the

²⁰³ The remainder of public expenditure consists of interest payments and investment, primarily in infrastructure. See also chapter 2.

premiums and/or the benefit terms. The pension system, which is another important part of the welfare system, is considered stable. In this chapter, the focus is therefore on the welfare services and the possibilities of improving them when the standard of living rises.²⁰⁴

Figure 7.1 **Distribution of public consumption by various activities 2007**



Note: 'Other' includes, *inter alia*, general administration, judicial systems and defence.

Source: Statistics Sweden [e].

7.1.1 Unchanged tax rates mean an unchanged standard

Chapter 2 describes long-term trends in public finances according to the base scenario. The scenario is based on no changes to policy,

²⁰⁴ Increased demand for other publicly financed services such as culture, recreational services, and environmental improvements also cannot be ruled out when living standards rise. In the event, it would exacerbate the problem discussed in this chapter.

which also means that tax rates would remain the same.²⁰⁵ At current tax rates, public resources are estimated to just cover the increased demand ensuing from the growing number of elderly people. Public consumption is estimated to grow by an average of 0.7 per cent a year between 2005 and 2030. Table 7.1 shows that expenditure increases are primarily for elder care and medical treatment.

Table 7.1 Demographically warranted trends in public consumption 2005–2030

Index 2005=100

	2007	2020	2025	2030
<i>Total public consumption</i>	<i>103</i>	<i>109</i>	<i>115</i>	<i>119</i>
Childcare	106	120	122	119
Compulsory (primary and secondary) school	99	104	107	109
Upper secondary school	110	92	100	102
Municipal adult education	107	111	110	112
Post-secondary education	100	99	101	99
Medical care	103	116	120	124
Elder care	105	124	142	161

Source: Statistics Sweden [e] and Ministry of Finance calculations.

The trends described assume that resources can be redistributed in a flexible way from those activities that need to be reduced to those activity areas that are increasing, for example from schools to elder care. In practice, it is likely that such an adjustment will involve some costs, but it is unclear how large they will be.

²⁰⁵ The assumption in the estimates is that tax rates are constant in relation to the tax bases, which will reflect unchanged tax regulations. This in principle results in an unchanged tax ratio. See also chapter 2 and appendix 1 to the Survey (SOU 2008:108).

Sweden is well positioned from an international perspective...

According to the estimates in the base scenario, it would be possible to meet future expenditure pressure from an increased percentage of elderly in the population with no change in tax rates. Sweden is relatively well positioned in this respect compared with other industrial countries with similar demographic trends. According to the OECD, the reforms that followed the financial crisis in the early 1990s have helped put Sweden in this relatively good position.²⁰⁶ Sweden implemented a number of structural reforms at that time: a stricter fiscal policy framework was implemented, some parts of the public sector were downsized and markets such as electricity and telecommunications were deregulated. The pension reform at the end of the 1990s is another reason why Sweden is relatively well equipped to cope with the demographic challenge.²⁰⁷

Despite this more positive picture, it may be more difficult for Sweden than for other countries to further strengthen public finances by increasing employment. Unlike many other industrialised countries, Sweden has no large unused labour force potential in the form of women who are not yet in the labour force.

... but the financing problem will increase in the long term

Despite Sweden's good position from an international perspective, there is good reason to delve more deeply into the future financing of the welfare systems. The estimate in the Survey's base scenario implies that coverage will remain unchanged – in terms of quantity and quality – of welfare services per person. There is thus no room for growth in the welfare services. Growth in public consumption averages 0.7 per cent a year compared with an estimated growth in private consumption of 3.1 per cent a year until 2030.

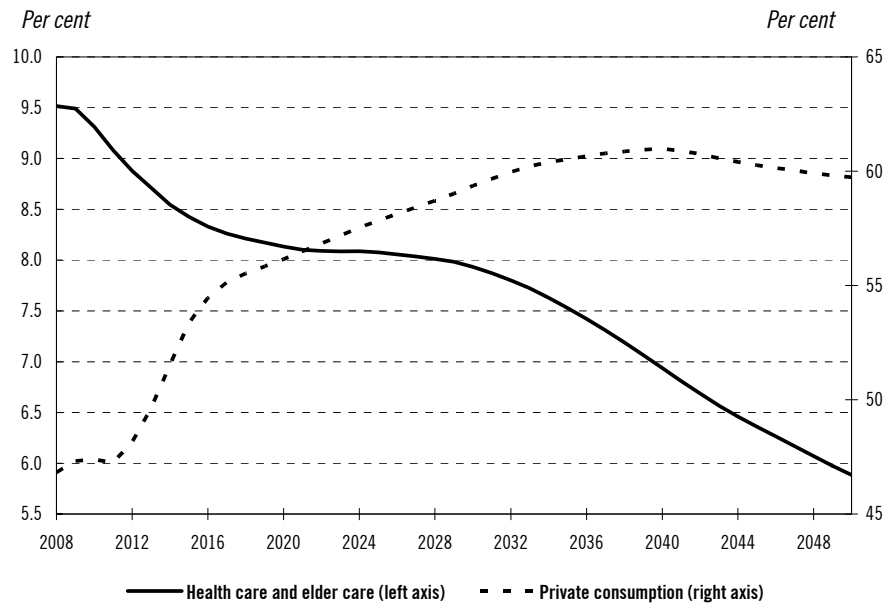
Figure 7.2 shows how this growing gap develops until 2050 under the base scenario. More specifically it shows the cost of caring for the sick and elderly in relation to private consumption, assuming that the former grows at the pace warranted on demographic grounds. If tax rates are unchanged, tax-financed consumption of health and elderly care will decline somewhat as a per-

²⁰⁶ OECD [2007g].

²⁰⁷ NBER [2006].

centage of GDP. At the same time, economic growth makes possible a substantial increase in private consumption as a percentage of GDP. The higher standard of living in the years ahead will probably create tension between the desired coverage and quality of the welfare services and what is possible to provide without any change in the tax rates.

Figure 7.2 Public and private consumption of health and elder care as a percentage of GDP



Note: Consumption is shown in volume terms (fixed prices), a measure that better illustrates how standards develop in public consumption. Current prices include increases in wage costs which to varying degrees are matched by higher productivity in public and private production. See also section 7.2.2. However, current prices are relevant in reflecting the development of total actual costs in the public sector.

Source: Appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

7.1.2 Tax financing limits additional resources

Historically, an increase in the tax ratio has been able to some extent to meet an increase in the demand for welfare services. In the 1960s and 1970s, when the large expansion of the welfare systems occurred, the tax ratio increased sharply from just under 30 per cent to over 50 per cent of GDP. The tax ratio thereafter has

remained at about 50 per cent. In 2007 the tax ratio fell to 47.9 per cent of GDP, owing to such measures as the introduction of the in-work tax credit, the abolition of the wealth tax and tax relief in the form of a reduction in the tax take from the property tax.²⁰⁸

An increase in demand is not normally seen as a problem in a market, but tax financing involves special conditions. It means that there is a limit on how high the tax can be without the tax take leading to excessive inefficiencies. Taxes may give rise to tax wedges whereby resources are not used in an efficient manner. International mobility of tax bases is also an obstacle to tax increases. However, it is difficult to specify exactly at what level the tax ratio gives rise to problems with falling tax revenues and excessive inefficiencies in the economy.

Distribution and efficiency are the underlying reasons for tax financing

Welfare services are financed by taxes and supplied free of cost – or for a low fee – partly for reasons of distribution. The aim is that all who need these services will be guaranteed them regardless of their ability to pay. Also part of this principle is that all citizens are to have equal access to welfare services of equal quality.

There are also efficiency arguments that justify tax financing since there are external effects linked to some welfare services. This applies, for example, to education, which is expected to have a favourable impact on economic development in various ways.²⁰⁹ There are also external effects from health care since a healthy citizenry is positive for society in general. It leads to less spread of infections and a larger labour supply. There are also insurance arguments for financing health care and social services with taxes. Some people are sick more often and more seriously than others. State subsidies distribute the costs more evenly.

There are therefore good, and from an economic perspective reasonable, reasons for financing a large part of these services with taxes. The downside is that this form of financing makes it more difficult to expand the supply of services at the same pace as the increase in demand. In the preceding Long-Term Survey, the possibilities of gradually raising the tax take in order to increase

²⁰⁸ Government communication 2007/08:101.

²⁰⁹ For a review of this research, see Björklund, A. & Lindahl, M. [2005].

public sector resources were discussed.²¹⁰ The opinion expressed in the Survey was that a steady rise in the tax take could not finance the growth of the welfare services in the long term since it would have negative effects on the labour supply. The Long-Term Survey 2008 does not see any reason for taking any other position.²¹¹

7.2 Costs will probably increase more than in the base scenario

The base scenario is not a forecast of the demand for welfare services in the years ahead but rather only an expression of what unchanged tax rates are capable of financing. Under the base scenario, revenues will be sufficient to finance a growth in demand in line with population trends. However, indications are that the cost of welfare services may be expected to increase more than in the base scenario.

- In the last two decades, the cost of the welfare services has risen substantially *more* than warranted by demographic trends.
- Many welfare services are labour intensive activities, which make it difficult to limit cost increases by increasing productivity. In addition, there is a risk that personnel shortages in the public sector may help drive up wage costs in the years ahead.
- It is difficult to judge how health trends among the elderly will affect the cost of health care and social services. The elderly certainly appear to be healthier, but the cost of medical treatment will also increase as new methods of treatment become available.

²¹⁰ The Long-Term Survey 2003/04 (SOU 2004:19).

²¹¹ Estimates by the Swedish Association of Local Authorities[2002] have shown that it would require annual increases in the local government tax of 0.35–0.4 percentage points to enable local government consumption to increase as rapidly as private consumption. The calculations are simplified and do not include the impact of higher taxes on the labour supply.

7.2.1 Weak historical link between the cost of welfare service and demography

The demand for tax-financed services is often limited to certain age groups. There are also clear gender patterns. In the estimates in the scenarios, total consumption expenditure and the volume of various activities are therefore based on the number of people in different age groups. However, cost trends have historically looked different.

Costs have increased more than the population growth warrants

Looking back, it is worth noting that the link between the growth in costs and the purely demographically warranted welfare service requirements has been weak. To some extent the increased expenditure on social services, health care and medical treatment reflects a deliberate policy aimed at raising the level of ambition in these areas. That was particularly true in the 1960s and 1970s. However, even since the 1980s the cost of publicly financed welfare has risen considerably more than population changes can account for.

The cost of welfare services for children and the elderly, financed by municipalities and county councils, increased by 42 per cent in fixed prices between 1980 and 2005.²¹² This is more than the population growth in these groups. The additional activities, which cannot be explained by changes in demography, have averaged 1 per cent a year or 27 per cent over the entire period.²¹³ But the volume of the additional activities has varied over time (figure 7.3). During the 1980s, the volume of additional activities was relatively large, close to 2 per cent a year, and during the 1990s, it was largely non-existent. Between 2000 and 2005, the local government sector's costs have increased 0.9 per cent more than warranted by demographic demands.

Moreover, developments have differed considerably from one activity to another. In some cases, the number of services provided has increased, while in other cases the number has remained

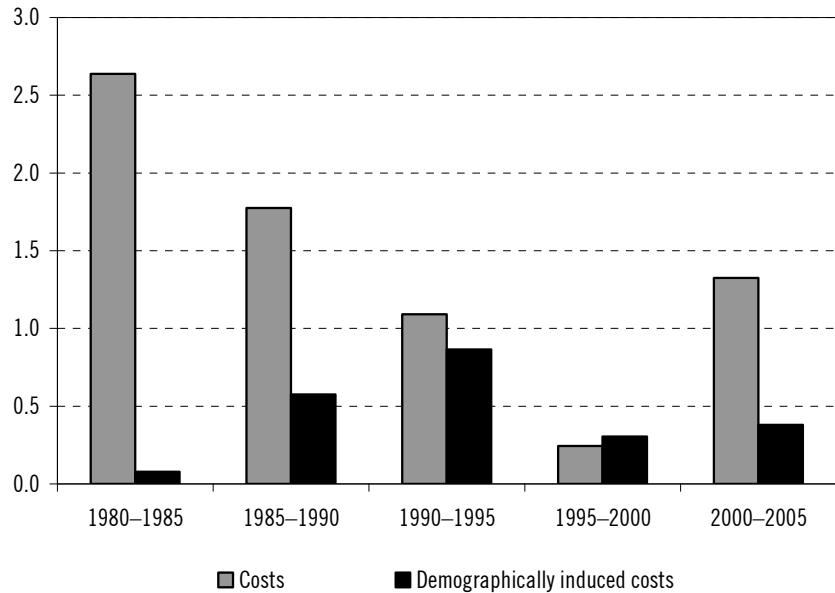
²¹² Swedish Association of Local Authorities and Regions [2008b].

²¹³ The effect of wage changes has been eliminated, meaning that the cost increase cannot be attributed to increases in wage costs.

constant, but the cost of providing them has risen. The quality of the services has also changed to an unknown extent.

Figure 7.3 Total local government sector costs and costs attributable to population trends 1980–2005

Average annual percentage change



Note: The bar showing demographically determined costs illustrates how the costs would have looked for the local government sector if they had followed the population trends for various age groups and the various age groups' need of local government services.

Source: Swedish Association of Local Authorities and Regions [2008b].

In the local government sector, welfare services have had priority over other activities, not least during the tough economic times of the 1990s. It is clear from table 7.2 that tax-financed activities such as culture, leisure activities, streets and roads have had to take a back seat.

Table 7.2 Local government sector costs 1980–2005*Average annual percentage change*

	1980–1990	1990–2000	2000–2005	1980–2005
Welfare services	2.3	1.1	1.4	1.6
Other activities	1.9	-2.0	0.4	0.0
<i>Total</i>	<i>2.2</i>	<i>0.7</i>	<i>1.3</i>	<i>1.4</i>

Note: In constant prices.

Source: Swedish Association of Local Authorities and Regions [2008b].

All in all, resources for the production of welfare services by the local government sector have thus progressed at about the same pace as private consumption in the last quarter of a century. The estimates presented in the base scenario, based on an unchanged level of ambition for the welfare services, are therefore quite modest in historical terms.

The demand for welfare services increases with higher standards of living

Trends since the 1980s indicate that there will probably be an unsatisfied demand for welfare services in the developments described in the base scenario. Given that the services are supplied free of cost or for a low fee, health care and social services will probably never have access to resources large enough to be able to pursue all the activities that are in demand. In other words, there will always be a need to set priorities. The issue is whether it will be plausible to maintain current standards between now and 2030. The volume and quality of welfare services expected will probably increase when the general standard of living rises.

Experience also shows that richer countries devote a larger share of resources to health care and social services. For example, there is a relatively strong connection between health care costs as a percentage of GDP and GDP per inhabitant in various countries.²¹⁴

One of the big challenges looming in the future is how to develop the welfare services in order to meet the increased

²¹⁴ OECD [2008c].

demand.²¹⁵ There are already indications now that the demand for welfare services exceeds the publicly financed supply. This is reflected, for example, in unpaid work by relatives that supplements publicly financed care. However, the extent of the excess demand is difficult to assess. According to figures from the National Board of Health and Welfare, relatives look after close to two thirds of elder care and this percentage has also increased.²¹⁶ More work of this type may in turn have a negative impact on the labour supply, at least in those cases in which the relatives who provide the care are still of working age.

Markets that in various ways supplement the public supply have sprung up outside the public welfare systems. One example is the growth of private health care insurance that offers customers more rapid access to health care than the public systems can offer. Health care insurance is growing more rapidly than any other type of insurance. About 300 000 people currently have private health care insurance.²¹⁷

In future, the increased demand for welfare services will also try to find possible avenues within the prevailing public system or outside it. Depending on the path taken, there may be different distribution effects and there is also a risk that the trust and legitimacy given the public systems will be affected in the long term.

7.2.2 Little opportunity for productivity improvements

The increasing cost of some public activities in the long term *compared with* the cost of other goods and services is usually attributed to the Baumol effect.²¹⁸ The cost increases are due to the difficulty increasing productivity in activities that are labour intensive. More and better welfare services – like many other services – most often require more staff. In other activities, production can generally grow without needing to increase the number of staff to the same extent. If public employees' wages

²¹⁵ See also Government Bill 2008/09:1, chapter 8 for an illustration of the scenario in which the volume of public consumption grows more than the rate of growth warranted by demographic trends.

²¹⁶ The National Board of Health and Welfare [2004].

²¹⁷ Health care insurance reimburses costs for medical care and other treatment, surgery and hospital care, after care, health advice, etc. This differs from sickness insurance which provides compensation for loss of income.

²¹⁸ The effect is named after the economist who first described it; see Baumol, W. J. [1967].

grow at the same pace as those of employees in the private sector, the cost of the public activity will rise relatively more.

Even though there is likely some possibility of improving productivity in public activities, it is difficult to ignore that in many cases, welfare services are labour intensive and direct contact between the recipient and the service provider is essential. This applies particularly to childcare and elder care. The number of hours worked in welfare services has also increased somewhat in recent decades. This includes hours worked by both those employed in the public sector and those employed in the private sector, where the latter constitute a growing share.²¹⁹

The base scenario in the Long-Term Survey is based on zero industry specific productivity growth in the public sector. Fact box 7.1 describes the background to this assumption in more detail.

Fact box 7.1 Measuring productivity growth in the public sector

The assumption that productivity growth in the public sector is zero may be regarded as an oversimplification. The assumption is based on the method that was used until recently in the National Accounts for estimating production in the public sector. As production by public authorities is to a large extent supplied to users without cost or at much reduced prices, production cannot be valued in terms of market price as is the case in the rest of the economy. The principle applied previously was that the total value of production is equal to the sum of the costs of production, mostly wage costs (the cost method). Since labour productivity is estimated with the help of the ratio of the value added and the number of hours worked, this method of calculation results in unchanged productivity.¹

In the National Accounts, work is under way to improve measurement methods for some of the individually consumed and publicly produced services. Underlying this work is the effort in the EU to harmonise the calculations in the system of integrated economic accounts in order to achieve more comparable GDP measures. Production in fixed prices of health and medical care, education, childcare and elder care is now calculated based on performance instead of cost (the volume measurement method). This means in principle that labour productivity can also be calculated. The new method has only been used in the past few years.²

Statistics Sweden shows in a report how the introduction of the volume measurement affected volume growth and thus labour productivity growth.³ The changes compared with the cost method are shown in Table 7.3. The effect on GDP growth of using the volume method instead of the cost method is marginal. The estimates are still uncertain. However, applying the method opens up the possibility in future of capturing productivity growth in public activities in a better way.

²¹⁹ Swedish Association of Local Authorities and Regions [2008b].

Cont. Fact box 7.1 Measuring...**Table 7.3 Public sector productivity 2002–2006***Percentage change*

	2002	2003	2004	2005	2006
Volume measurement method	2.2	0.4	−0.2	0.4	1.5
Cost method	2.0	0.7	0.3	0.1	2.4
GDP effect (in percentage points)	0.0	−0.1	−0.1	0.1	−0.2
Productivity, using the volume measurement method	0.2	−0.1	−0.5	0.6	−1.4

Source: Statistics Sweden [2008a].

¹ See Brorström, B., and others [2006] for a detailed discussion of productivity and efficiency in local government activities.

² For health and medical care, the start year is 2003 and for other activities, 2002.

Statistics Sweden [2008a].

Important to grasp the opportunities to improve productivity

Even though major productivity improvements are limited owing to the often labour intensive nature of welfare services, Sweden should nevertheless take advantage of what opportunities there are to improve productivity. More welfare can then be achieved with the same resources. Substantial cost differences between municipalities and county councils indicate that more efficient production is possible.²²⁰ The differences persist even after differences in the population structure, etc. have been taken into account.

One study with the task of assessing the potential for efficiency improvements in the activities of county councils gives a rough estimate of this potential of at least SEK 30 billion over 10 years.²²¹ The Swedish Association of Local Authorities and Regions²²² also points out in a report that health care results have increased more than costs in the last three years, which means that productivity

²²⁰ Swedish Association of Local Authorities and Regions [2007].

²²¹ Ministry Publication Series Ds 2005:7.

²²² Swedish Association of Local Authorities and Regions [2008a].

has increased. At the same time, the picture is fragmented. In the health care area, the trend has been more towards increased costs as more illnesses have become treatable. While technological developments in other sectors often save costs, in health care they have been aimed more at improving quality, which, in turn, has meant cost increases.²²³ This has resulted in the need for stricter priorities as to what there is room for in the provision of tax-financed medical care.

More competition and changes in the forms of governance and organisation are some factors that may increase productivity in the public sector. The Long-Term Survey 2003/04,²²⁴ summarised a number of studies that looked at the effects of private production and exposure to competition in different areas of the welfare services. The costs of the activities seem to have been cut somewhat without seeming to have lowered the quality. In contrast, there is a risk that exposure to competition may increase general administrative costs and lead to oversupply, which in turn increases costs. One conclusion is that competition in itself leads to higher productivity and the possibility of lower prices rather than whether the activity is performed by public or private actors.

There are deficiencies in the current system of market opening that urgently need to be remedied, particularly given that market opening will probably increase in a number of areas.²²⁵ In order for the greater freedom of choice and market opening to lead to better quality, those consuming the service need to have a good basis for their choice. The freedom of choice model (or client choice model)²²⁶ poses important requirements on access to good information on the various providers and their services.²²⁷ It also requires good oversight. Various forms of open comparisons have been available

²²³ Lundin, D. [2002].

²²⁴ SOU 2004:19.

²²⁵ In the *Frittvalutredningen* (Freedom of Choice Inquiry) (SOU 2008:15), the conditions for increasing the opportunities for freedom of choice systems in both elder care and care for the disabled in health care have been examined.

²²⁶ The model is applicable when opening up markets for services aimed at individuals, such as child care, education, medical treatment and elder care. An alternative model for opening up markets for publicly financed activities is the contract model in which activities run by public actors are purchased under the provisions in the Public Procurement Act (SFS 2007:1091).

²²⁷ A report by the Swedish Agency for Public Management looks at what actors should be responsible for various types of information and in what forms the information should be provided. Among its proposals is a comprehensive effort to improve the information on the quality of various activities. Swedish Agency for Public Management [2007].

for schools for several years now²²⁸ and some have also been started for elder care.²²⁹ In health and medical care, much of the information that already exists needs to be made available to those using the services.

Work still remains to be done before there are readily available and clear inter-comparisons that make it easier for the public to make an informed choice. A well-functioning competition presupposes inter-comparisons.²³⁰

Productivity improvements probably do not lead primarily to cost reductions but to more, and possibly also better, services that can be offered for a given amount of resources. It is difficult to estimate how large the possible productivity improvements are, but it is important to use what possibilities there are.

Increased recruitment needs may push up wages and costs

Future recruitment needs in the public sector may make productivity increases difficult and push up costs at the same time. Table 7.4 shows that employment needs to increase substantially in the public sector compared with the private sector from now until 2030 for an expansion matching the population trend to be possible. Since the average age of the staff in many activities is currently relatively high, recruitment needs will be greater than the increase in employment. If recruitment needs are met with inexperienced people, productivity is more likely to decline, at least in the transitional period.

The cost trend in the base scenario is based on personnel costs (public sector wages) that increase at the same pace as wages in the private sector. Recruitment needs may cause wages to rise more than the average wage trend and thus costs would increase more than in the base scenario.

²²⁸ The Swedish National Agency for Education's online information system on results and quality (SIRIS) contains student, staff and cost statistics, marks and test results.

²²⁹ On the National Board of Health and Welfare's web site there is the "Äldreguiden" (Guide for the Elderly) which compares the quality of health care and social services for the elderly at www.socialstyrelsen.se.

²³⁰ See also Pettersson, K-H. [2008] for an analysis of what parts of medical care may lend themselves to market opening.

Table 7.4 **Employment increase in the private and the public sectors 2005–2030 under the base scenario**

Index 2005=100

	2007	2020	2025	2030
<i>Total employed</i>	<i>104</i>	<i>107</i>	<i>106</i>	<i>106</i>
Private sector	106	107	104	101
Public sector	101	106	112	116

Source: Ministry of Finance calculations.

The regional outlook may be very different. In many regions, particularly those that are sparsely populated, recruitment will probably be much more difficult. The estimates in this Survey do not take into account regional imbalances of this kind. In an appendix to the preceding Long-Term Survey, there was an analysis of future regional development.²³¹ The Survey at that time noted that the shortage of people with a higher education in health care and pedagogy may be substantial in small and peripherally located labour market regions.

7.2.3 The health of the population affects cost trends

Cost trends in the public sector are also dependent on the health of the population, particularly the effect of ageing on the need for health care and social services. However, what changes can be expected in people's health in the years ahead is an open question. There are several hypotheses of the affect of a higher average life expectancy on the length of time the elderly will need medical treatment. According to the hypothesis on *postponed illness*, the health care needs come later when average life expectancy increases since it is mostly in the final stage of life that people have the greatest need of health care. According to this hypothesis, higher average life expectancy does not lead to increased need of health care. The hypothesis of *compromised illness* means a shorter period of poor health, which means that the number of years of good health increase more than average life expectancy increases. A third hypothesis assumes that *poor health increases* concurrently with the

²³¹ Appendix 3 to the Long-Term Survey 2003/04 (SOU 2004:34).

increase in average life expectancy. This is due to more and more older people surviving illnesses, after which they are weaker and more susceptible to new illnesses. Health care needs would thus increase relatively more.²³²

Depending on which hypothesis proves to be correct, the medical care and social services needs, and thus the costs, will develop in a different way in the coming years. Within the framework of Statistic Sweden's Survey of Living Conditions (ULF), a number of indicators of the health of the population are estimated based on interviews.²³³ It is clear from the Statistics Sweden survey that ill health is rising with increased life expectancy, but at the same time the trend among the oldest has been to better health over a longer period. More elderly report, however, that they suffer from long-term illnesses and severe health problems. All in all, health in the 1990s, according to current indicators, has improved more for older than for younger people, particularly people aged 20 to 30.²³⁴

What the long-term consequences will be for health care needs and for work capacity when these younger people reach an advanced age is difficult to judge. In a study, the consumption of medical care has been simulated going forward to 2040 based on the assumption that the future elderly will be in worse health than the elderly today.²³⁵ If the cost per hospital day increases in line with the historical pattern, the cost of medical care is expected to increase by as much as 270 per cent according to these estimates.

To sum up, the discussion in this section shows that there are reasons to believe that the cost of welfare services will increase substantially in the years ahead, even though it is difficult to judge by how much.

7.3 Internationalisation affects the welfare sector

Up to this point, the Survey has discussed the welfare sector as though changes in the world around it did not affect it, but internationalisation can in various ways affect the welfare sector

²³² Statistics Sweden [2006b].

²³³ Even though the interview data in ULF surveys are based on named illnesses, there is some scope for subjective assessments.

²³⁴ Statistics Sweden [2006b].

²³⁵ Klevmarken, A. & Lindgren, B.[2008].

and its scale. On the one hand, internationalisation makes certain tax bases more mobile, thus affecting the possibilities of financing public welfare. On the other hand, the international exchange of welfare services may lead to lower prices, just as it does for goods, which could moderate public sector financing problems.

This section shows that internationalisation thus far does not seem to have reduced the scale of the welfare sector. It also shows that both Swedish foreign trade and the scale of direct investment (i.e. the establishment of companies in other countries) in welfare services are small. An appendix to the Survey notes that there should be considerable opportunity for direct investments in the area of welfare services, but these are difficult to bring to fruition within the framework of the current system where the activity is often publicly provided.²³⁶

7.3.1 The enduring basis of the welfare sector

The issue of tax bases' mobility has been analysed in detail in previous Long-Term Surveys. They have noted that internationalisation limits the chances of raising the tax ratio to finance the increase in demand for welfare services. A question that immediately suggests itself is whether internationalisation threatens the Swedish tax base.

The remiss of the Tax Base Inquiry²³⁷ was to investigate whether some taxes would need to be cut as a consequence of internationalisation. The Inquiry concluded that it was in principle possible to maintain the current tax level but that some changes would also need to be made.

More recently, a report to the Globalisation Council has studied the effects of increased internationalisation on the scale of the welfare state and the impact on tax revenue and structure.²³⁸ One of the conclusions in the report is that the increased institutional competition, which, under the definition in the report, includes tax regulations, does not appear to have reduced the welfare state (table 7.5). Tax rates have been cut in several areas but tax revenues have not fallen in these countries.

²³⁶ Appendix 4 to the Long-Term Survey 2008 (SOU 2007:95).

²³⁷ SOU 2002:47

²³⁸ Karlsson, N. (ed.) [2008].

Table 7.5 Expenditure on welfare as a percentage of GDP 1960–2003

Per cent

	1960	1980	1998	2003
Sweden	10.8	28.6	30.5	31.3
Scandinavia	9.5	22.2	26.3	26.6
OECD	10.1	17.4	19.6	20.9

Note: The OECD's database contains data for social purposes, which include payments from the social insurance systems, some public consumption and also tax relief when it has a social aim.

Source: Karlsson, N. (ed.) [2008].

There does not appear to have been any tax race to the bottom between the Member States in the EU as a result of the economic integration.²³⁹ However, there are examples of the convergence of individual taxes, for example, corporate taxes both for the EU 15 and the EU 25.²⁴⁰

One reason why the welfare state's financing still appears to be relatively secure is that the tax on labour, the largest tax base in Sweden, is a tax on a relatively immobile factor. The percentage of the population that emigrates has certainly increased in recent decades, but emigration has been considerably higher in earlier times. This does not mean, however, that it would be simple to raise the tax on labour to finance welfare. A higher tax on labour results in reduced incentives to work.²⁴¹ And as already mentioned, efforts instead should be directed at trying to raise the number of hours worked in the economy.

7.3.2 New opportunities for increasing international exchange

More travel and more international trade in services in general have increased the opportunities for Swedish people to study and seek health care in other countries.

This section provides a picture of the extent of Sweden's exchanges with the rest of the world in the area of welfare services

²³⁹ Hansson, Å. & Olofsdotter, K. [2004].

²⁴⁰ Ekholm, K. and others [2007].

²⁴¹ See *inter alia* Björklund, A. and others [2006] for a review of how the labour supply is affected by economic incentives.

and the potential for increased exchange. There is still very little international exchange in elder care and therefore it is not discussed in this section.

There is little trade in health care services...

There are major shortcomings in the statistics on direct trade in health care services. One of the appendices to the Survey brings more clarity to how extensive this type of trade is.²⁴² Part of the exchange in the health care area is reflected in the number of reimbursements allowed for planned treatment in the EU/EEA (table 7.6 and also fact box 7.2). It should be noted that these reimbursements are few but they have grown very rapidly. There is, however, no data on the number of patients who have come to Sweden for planned treatment.

Table 7.6 Reimbursements authorised for planned treatment for Swedish patients in the EU/EEA 2002–2006

Year	Number of prior authorisations approved	Number of reimbursements authorised ex post
2002	94	X*
2003	84	X*
2004	88	147
2005	116	954
2006	87	1 868

* The possibility of demanding cross-border health care with the support of Articles 49 and 50 in the EC Treaty did not exist before January 2004.

Source: Appendix 4 to the Long-Term Survey 2008 (SOU 2007:95).

The volume of the exchange in monetary terms is also difficult to estimate on account of inadequate statistics. The rough estimate in the appendix indicates exports of more than SEK 300 million a year. Imports are also roughly estimated at about SEK 300 million. Total exports and imports of medical care services are thus equivalent to a modest 3 per cent of total health care expenditure in Sweden of about SEK 200 billion. Exports and imports of health

²⁴² Appendix 4 to the Long-Term Survey 2008 (SOU 2007:95).

care services represent about 1 per cent of the total foreign trade in services. However, the authors state that the estimates are probably too low since the county councils' direct exports appear to be higher than the amount reported and that purely privately financed health care is not included in the amount. However, there still appears to be very little direct trade in health care services.

Fact box 7.2 Free movement of health care services in the EU

Even though cooperation in the EU does not expressly concern welfare services, national welfare policy is affected by EU regulations and economic policy. Increased mobility has brought to the fore the question of EU citizens' right to seek medical treatment in other countries and who then is to be responsible for the cost.

In the latter half of the 1990s, a number of much publicised disputes that concerned medical treatment were referred to the Court of Justice of the European Communities. All the cases concerned patients who went to another EU country to get treatment (in one case, to buy medical products) and after their return home, claimed compensation for their costs from the public health schemes in their home country but were refused it. The Court chose to look at these cases in what was for medical treatment a new light, namely as a question of the free movement of services in the EU. In principle, medical care services are considered like any other service and should therefore not be exempted from the requirement that producers are to be allowed to compete freely in the region without being hindered by national borders.¹

The Court in its judgments primarily regarded having the right to get care in the event of illness only in one's own country as a restraint on competition for producers of health care services. However, EC law in some parts is still relatively unclear. There is also a difference in how care in a hospital and other health care is handled.² In matters of medical or dental care not supplied by a hospital, patients may in principle choose whether they want the care to be performed in the home country or in another EU or EEA country. A prerequisite is that it concerns care that is provided by the public health care service in the home country.

As to hospital care, the Court of Justice has ruled that patients may travel abroad for care only after getting permission from the authorities in their home country. In a proposed directive, however, the EU Commission has established that advance notification will not, in principle, be required, if the outflow of patients does not threaten to undermine the national health care system. Sweden currently has no system requiring prior authorisation for hospital treatment. This means that Swedish patients can seek medical and dental care unhindered in other EU/EEA countries and claim reimbursement of the costs afterwards. The Swedish Social Insurance Administration reimburses the costs, less a deduction for patient fees, on condition that the health care concerned an illness or health condition that in Sweden is treated by the national health care system and the method of treatment is identical or corresponds in several respects to that used in Sweden for a similar condition.

¹ Blomqvist, P. [2004].

² Edwardsson, E. [2007].

³ European Commission [2008b].

...but somewhat greater direct investment in health care and social services

Since travel costs limit the direct trade in services, not least welfare services, the establishment of companies in other countries through direct investment is a natural alternative. Direct investment means that foreign companies enter the domestic market. In many instances their entry may help lower costs and increase variety. Swedish companies invest heavily abroad both in companies producing goods and those producing services. However, there is little direct investment in welfare services in Sweden. In health care and social services, about 3 500 people are currently employed in foreign companies in Sweden, while about 7 500 work in Swedish companies in foreign countries.²⁴³

Little trade in the area of education

During the academic year 2006/07, almost 28 000 foreign students were pursuing a higher education at the first or second level in Sweden. The number of students coming to Sweden has tripled since the academic year 1997/98 and today there are more students coming to Sweden than there are Swedish students travelling abroad to study. In 2006/07, there were 25 600 Swedish students travelling abroad to study.²⁴⁴ One factor contributing to the increased number of foreign students is probably that many colleges and universities have expanded their programmes offered in English, particularly at the graduate level. Another explanation may be the introduction of tuition fees by several other countries such as the United Kingdom and Germany in recent years.²⁴⁵

It is difficult to estimate how large a part of the trade in services consists of trade in education services. Since education is usually free for students, it is not reported in trade statistics. In an appendix, there is an estimate of Swedish exports and imports of education services for the academic year 2004/05.²⁴⁶ In the estimates, the assumption is made that if incoming and outgoing students at colleges and universities paid school expenses

²⁴³ Appendix 4 to the Long-Term Survey 2008 (SOU 2007:95).

²⁴⁴ National Agency for Higher Education [2008b].

²⁴⁵ Appendix 4 to the Long-Term Survey 2008 (SOU 2007:95).

²⁴⁶ Appendix 4 to the Long-Term Survey 2008 (SOU 2007:95).

equivalent to the cost of the education (about SEK 70 000 per student per year) and also paid living expenses (about SEK 80 000 a year), education imports (including living expenses) would amount to SEK 4 billion and constitute 1.5 per cent of Swedish imports of services. Similarly, Swedish exports in higher education would amount to SEK 3.5 billion and constitute 1 per cent of exports of services. These are thus very modest figures, particularly when compared with those for Australia, the leading exporter of education services, (table 7.7).

Table 7.7 International trade in education services, percentage of total trade in services 2005

<i>Per cent</i>		
	Exports	Imports
Australia	24.2	2.0
United States	3.9	1.4
Sweden	1.0	1.5

Note: The figures for Sweden are based on estimates (see the text), while the figures for Australia and the United States are drawn from trade statistics.

Source: Appendix 4 to the Long-Term Survey 2008 (SOU 2007:95).

The appendix also notes that there is little direct investment in education in Sweden. Swedish investment abroad in education companies in pre-school, compulsory school, upper secondary school and post-secondary education is almost non-existent. However, there are a number of Swedish education companies specialising in staff training and education services that have some form of activity outside Sweden.

Modest potential for more international exchanges under current conditions

Increased international competition in welfare services may lead to lower costs and provide a variety that does not exist nationally. More understanding of the routines, control systems and organisation of welfare services in other countries may lead to changes that are also positive in Sweden. What the scale of the opportunities for the international exchange of services in health care and education

will be in practice is still an open question. Future developments depend on improvements in the quality of the services in their country of origin, as well as on cost differences.

The appendix reaches the conclusion that there should be considerable opportunity for direct investment in the area of welfare services, judging from the extensive direct investment in other areas.²⁴⁷ The authors point to the existence of successful Swedish service providers that have grown into big international companies. At the same time, they note that it is difficult to imagine such a development for activities in the public sector if certain basic principles are not changed. A trend to a more international exchange of welfare services is therefore more likely if private enterprise takes over at least some of the production and companies have functioning markets with clear rules governing their operations.

7.4 Further development of welfare services requires change

Increased demand for welfare services can be met in various ways. The current policy aims *inter alia* to increase the labour supply and thereby increase tax revenues. Another aim is to maintain a surplus in public sector finances in order to save and thus be better prepared for weakening budgets in coming years.

7.4.1 An increase in the labour supply may help in the short term

The labour supply has grown modestly in recent decades as shown in chapter 3. The expansion in the welfare services has thus not been due to an increase in the number of hours worked in the economy. For an increased labour supply to be able to provide more resources for public consumption, the first step required is therefore to stop this trend.

Increasing the length of working life, which is also discussed in chapter 3, would make a substantial contribution to financing welfare. Average life expectancy has increased steadily and is expected

²⁴⁷ Appendix 4 to the Long-Term Survey 2008 (SOU 2007:95).

to continue to do so in the years ahead. Given rising life expectancy and indications of improving health for the elderly, it is not inconceivable that leaving working life could take place later. Such has certainly not been the case earlier, but in the last few years exit has been later (table 3.2).

The measure often used to illustrate the seriousness of the demographic situation is the elderly ratio, which is based on an exit from working life at age 65. The elderly ratio is measured as the number of people aged 65 and older as a percentage of the total population. The ratio is forecast to increase from over 17 per cent in 2007 to over 23 per cent in 2050.²⁴⁸ Another measure is the dependency ratio for older people, which is measured as the number of people who are 65 or older in relation to that part of the population of working age, i.e. people aged 20–64. The dependency ratio for older people was about 30 per cent in 2007. To maintain the ratio at 30 per cent between now and 2035, the group designated elderly must be defined as those aged 70 and older. The working age population would then be those aged 20–69.²⁴⁹

The effective exit age is, however, a bit below age 65 and the first step therefore is to raise it. Chapter 3 discussed how economic incentives and norms in society influence the time of retirement. It points out that the welfare systems need to be tightened considerably, various means of exit limited and norms changed. To effect a later exit from working life is therefore not an easy way of solving the long-term financing problem.

7.4.2 Public sector surplus creates a buffer

The current fiscal policy framework is based on the state of central government finances in the early 1990s and the need to consolidate them. In addition to the surplus target, the fiscal policy framework also includes a central government expenditure ceiling.²⁵⁰ The aim of the framework has been to reverse a trend that has meant large deficits in the public sector and a growing central government debt. Public sector deficits have been turned into surpluses and the

²⁴⁸ Statistics Sweden [2007a].

²⁴⁹ Government Bill 2008/09:1.

²⁵⁰ The surplus target means that general government finances are required to show a surplus of 1 per cent of GDP on average over a business cycle.

central government debt has fallen from over 70 per cent of GDP to just over 30 per cent.²⁵¹

The surplus target (or balance target) for general government net lending is a key part of the framework. It is partly motivated by the need to save for future generations when the demographic situation is less favourable.²⁵²

There are some objections to justifying the fiscal policy framework on grounds of needing to save for the future. Lindbeck²⁵³ has argued that this distribution argument is not a valid reason for retaining the surplus target since future generations will be richer than today's generations. In order to improve its ability to meet the demographic challenge, Sweden, unlike many other countries, has also completed a reform of its pensions system, which reduces the need for surpluses.

Another reason for keeping the surplus target is to create a tax equalisation between different generations.²⁵⁴ The aim is to limit the tax distortions by avoiding extreme tax hikes in times of unfavourable demographic developments. Lindbeck also objects to this argument and thinks that future generations should take their own measures to limit the need to raise taxes, for example, by gradually raising the retirement age to correspond with the improved health of older people. Since changes will eventually need to be made to maintain welfare standards, the current design of the fiscal policy framework would thus only postpone needed reforms. At the same time, Lindbeck points out that strict rules for budget policy are important to strengthen budget discipline and thus avoid a sharp rise in public indebtedness.

The Fiscal Policy Council, one of whose tasks is to follow up and assess whether fiscal policy objectives have been met, thinks that one issue that should be discussed more is the extent to which raising the retirement age would warrant lower surpluses now.²⁵⁵ The Council also has some objections to the way in which the surplus target is constructed. The Council sees a risk that the current surplus target will cause current expenditure to displace investment since investment must be tax financed.

²⁵¹ Government Bill 2008/09:1.

²⁵² Government Bill 2007/08:100.

²⁵³ Lindbeck, A. [2008].

²⁵⁴ This is called 'tax smoothing'.

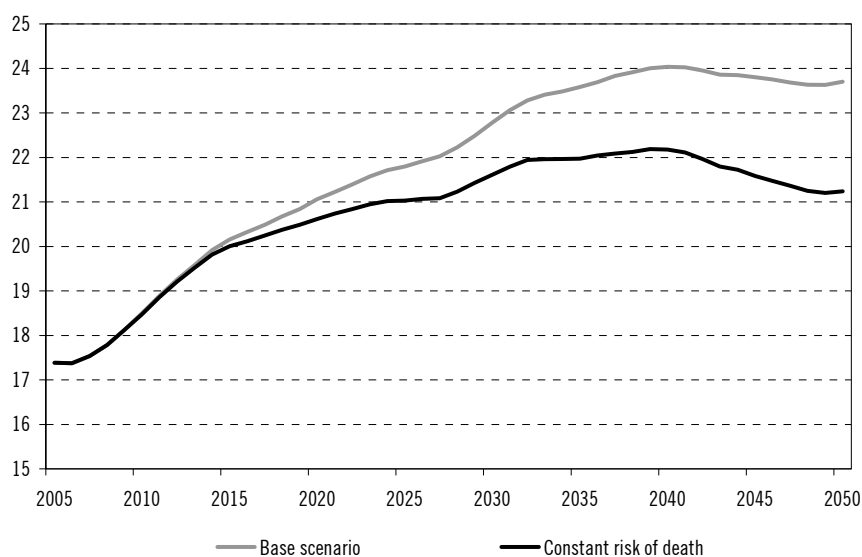
²⁵⁵ Fiscal Policy Council [2008].

The debate reflects the existence of good arguments both for and against the surplus target as a benchmark for fiscal policy. To sum up, there appears to be a consensus supporting the stability motive for the surplus target – but deciding how large the surplus should be in a given situation is more difficult. The generational distribution motive is more controversial.

One question that should be asked is whether the demographic problem is temporary – which would warrant tax smoothing – and to what extent it is about a more permanent change in the composition of the population. Figure 7.4 shows how large a part of the increase in the elderly ratio can be explained by differences in the size of various generations (the cohort effect) and how large a part is due to increased life expectancy in the population as a whole.

A relatively large part of the increase in the elderly ratio is due to generations of different size, which is a temporary effect. At the same time, a substantial, and in the long term increasing, part of the rise in the elderly ratio can be explained by the fact that people are living longer, which is a permanent change. The problem of a single age group that is large and getting older can be managed by surpluses in the public finances when this group is still of working age. But in the very long term, the welfare systems will need to be restructured since the longer life expectancy is a permanent change.

In addition, demand for welfare services can be expected to increase when a society's standard of living rises, as discussed earlier in this chapter and the next section will revisit.

Figure 7.4 Elderly ratio with the cohort effect removed*Percentage of elderly in relation to the total population*

Note: The base scenario states the percentage of people over the age of 65 in relation to the population in accordance with Statistics Sweden's population forecast (Statistics Sweden [2008b]). Constant risk of death means that the risk of death is held constant at the 2008 level in the estimates, and therefore average life expectancy does not increase and the trend in the elderly ratio is only accounted for by differences in the size of generations.

Source: Ministry of Finance calculations.

7.4.3 Long-term financing requires other solutions

A steady increase in additional resources is needed to be able to extend the welfare services more in line with the expected rise in demand. But a steady rise in revenue is difficult to achieve via the measures that have been discussed. However, more extra resources could be found if parts of the services offered are financed in a way other than with taxes.

User fees and changes in priorities should be considered

One way of increasing revenues in the welfare systems is to raise the existing user fees for some of the publicly financed welfare services. Well-designed fees can also lead to more effective

production by steering demand to the service in question. One example of incentive charges is the differentiated patient fees in some counties that make it more expensive to visit an emergency department than a primary health care provider. In this way the system tries to steer patients to the most appropriate type of health care facility and reduce the strain on the more expensive care at a hospital emergency department. Some municipalities also used to have time-related child care charges which gave parents economic incentives to have a short agreed time period for child care.²⁵⁶ However, there are relatively few user fees now and thus raising them can only provide limited additional resources.²⁵⁷ Another possibility is for the activities to be financed by taxes up to a certain level, but for households to supplement these activities by paying for services above this level. Such a construction would allow for some freedom of choice without needing to compromise the basic level.

This type of system already exists today. For example, public pension commitments are limited but those who wish to may supplement their public pension with their own pension savings and in most cases, public pensions are also supplemented by labour market agreements. Likewise it is possible to take out private sickness insurance that provides supplementary benefits in the event of loss of income. The number of people taking out private individual sickness insurance has increased in recent years. Between 1999 and 2004, the number of those with private individual or group insurance providing a one-off payment in the event of illness has about doubled, albeit from a low level.²⁵⁸

Another option is for the public sector to completely pull out of financing an activity, which instead becomes privately financed. But the areas that cost the most such as health care and social services are at the same time the areas where it is difficult to set priorities that lead to such radical solutions. Here again it is rather a matter of setting priorities that eliminate some of the activities.

²⁵⁶ The incidence of various forms of time related charges in childcare has declined after the introduction of maximum childcare charges and now concerns full- or part-time charges.

²⁵⁷ Fees finance about 4 per cent of public expenditure.

²⁵⁸ Sjögren Lindquist, G. & Wadensjö, E. [2007].

Distribution and efficiency considerations should guide the setting of priorities

Several different measures are probably required to reform the welfare systems, both through elimination and different fee-based systems. Since the activities are different, there is no universal solution for them all. Instead the forms of financing in all likelihood need to vary from case to case.

In the introduction to this chapter, it was noted that there are both efficiency and distribution reasons for tax financing. Changing activities' priorities should not change the basis for welfare policy but rather strengthen the distribution effect and increase efficiency. Changes in priorities should also be made in light of rising incomes in Swedish society, more demand for diversity and increased internationalisation. Internationalisation makes it possible for those who have the financial means to go abroad for health care if the waiting times are considered too long or the quality too low. In the long term this may also affect people's willingness to pay for the national system. The increased demand for diversity makes the ambition that the welfare services are to be characterised by equal access and equal value all the more difficult to interpret.

Creating more equality of opportunity as a guiding principle

One possible guiding principle for welfare policy is to give due consideration to individuals' means of exerting an influence over their own situation. That being so, the challenge is to create equal opportunities.²⁵⁹ Economic growth that contributes to higher household disposable income means that people are better able to control and determine their own living conditions through their own efforts. In our base scenario, household disposable income grows an average of 2.9 per cent a year between 2008 and 2030. This increase in disposable income, together with higher levels of education in society, can also be expected to make individuals better able to make well-informed choices.

This Survey only has room for a very general discussion of how the welfare system could be reformed. The specifics need to be

²⁵⁹ A discussion of how to link welfare with the freedom of choice rather than with the result of different choices was conducted as early as the Long-Term Survey 1990 (SOU 1990:14).

determined for individual welfare services. The design of the systems is a delicate task that requires striking a balance between the distribution and efficiency aspects, which may be different for different welfare services. Studying the price and income elasticity for different services is pertinent here.²⁶⁰

With the basis that more equality of opportunity will be created, it seems natural that basic education should be entirely tax financed. Several reports, some of which are included in an appendix to this Survey, show that the social bias in recruitment to higher education decreases if resources are invested early in the education chain.²⁶¹ In light of these circumstances, it should also be possible to introduce charges in higher education without this resulting in undesirable distribution effects. However, at the same time there must be a well-functioning arrangement for financing studies. Most people need to be able to distribute the costs that arise during their studies, when they often lack an income, more evenly over life. Charges in higher education might also encourage students to complete their studies more rapidly, as pointed out in chapter 3.

Elder care is another area where some responsibility can be placed on the individual if the priority is to create equal opportunities. A report from the Swedish Centre for Business and Policy Studies²⁶² points out that many elderly want to take more responsibility and pay for a higher standard of elder care. Of those who sought a tax reduction for household-related services for the second half of 2007, when the option was introduced, almost 30 per cent were over the age of 70.²⁶³

In the area of health care, there has been an open discussion of priorities, including a discussion going on about whether pharmaceutical products should be subsidised. The discussion needs to be deepened so that it also addresses whether in some cases it is possible for individuals to take more responsibility to avoid being contracting illnesses such as certain diseases of affluence. At the same time, supplementary options of insuring against the risk of

²⁶⁰ Price elasticity expresses how the supply or demand for a good or service changes when the price changes. Income elasticity expresses how demand changes when income changes. See also appendix 7 to the Long-Term Survey 2003 (SOU 2003:57) for a detailed description of price and income elasticity of public services.

²⁶¹ Appendix 8 to the Long-Term Survey 2008 (SOU 2008:69).

²⁶² Rollén, B. & Olin Wikman, M. [2008].

²⁶³ According to information from the Tax Authority based on applications received by 5 May 2008, which was the last day to apply.

economic hardship on account of illness are needed, regardless of how they have arisen. A clearer demarcation of just how far public commitments extend provides an opportunity whereby solutions in addition to the public systems are able to develop that are more compatible with distribution and efficiency ambitions.

7.5 Conclusion

The estimates in the scenarios in the Long-Term Survey 2008 are based on current policies and systems. The overall picture shows that in principle it will be possible to maintain the same level of welfare services as there are today for the next 20–25 years without changing tax rates. Even if it is financially possible to maintain welfare services at today's level, there may, however, be problems recruiting staff with the appropriate training to the welfare services sector in all parts of the country.

There is also good reason to believe that the demand for welfare services will exceed what is warranted based on demographic trends. This has historically proved to be the case. When material standards in society increase, the demand for more extensive and better quality services also increases. There is also considerable demand for freedom of choice and individually tailored welfare services. This puts additional demands on supply and on the service providers.

The opportunities that exist for increasing productivity in the production of welfare services should be made use of. However, they are not big enough to help solve the public sector's long-term financing problem.

A larger labour supply can also help mitigate the financing problem, but it hardly solves the long-term problem of wanting to have better health care and social services as living standards increase.

Additional changes are needed to be able to extend the welfare services more in line with the rise in demand. This means revising the priorities set for public commitments or introducing more charges in order to be able to improve the quality. High quality is important to maintain confidence in the welfare systems and their legitimacy.

If the central government puts off or refrains from taking measures that facilitate financing and improving the welfare

systems, this is most likely to lead to continued development of solutions outside the public systems. This may be expressed not only in greater demand for various private alternatives but also in households performing more of the welfare services themselves. In elder care, work by relatives may increase still more. Such an increase in informal labour may in turn take place at the expense of participation in the labour market. There is also a gender aspect since in many cases it is believed to be women who devote more time to caring for relatives.

Refraining from taking measures that may make it easier to satisfy demand therefore also has substantial distribution effects. Households having a good financial position will probably more often choose paths where they pay more with their own money when that is possible. Households with poorer finances will have to choose solutions that include more informal work. In order for there to be a welfare system that fulfils its basic aims of redistribution and efficiency, a reform of the systems is therefore needed.

Since changes take time, a broad inquiry should be launched as soon as possible. The Long-Term Survey 2008 recommends the appointment of a parliamentary inquiry with the remit to examine the forms for financing the welfare services. The Inquiry should try various policy options and weigh the alternatives' advantages against their disadvantages. In this way, an extension of the essentially publicly financed welfare services will be possible, even in the long term. The inquiry should also take into account how to handle the problems that can be expected to occur when one system is replaced by another.

A process of change aimed at changing the design of the welfare systems takes a long time. The work on a new pension system took over ten years. It is therefore important to start this work as soon as possible with a view to reforming the welfare services before the differences between expectations and what can be provided become too large. A more precise specification of what society is to be responsible for and what the individual is to be responsible for may also give an impetus to the development of market solutions. Otherwise change may be difficult to get started or may develop in an undesirable way.

8 A Policy for the Future

Changes in the composition of the population, changes in demand patterns and continued internationalisation are three particularly important trends emphasised in the Long-Term Survey 2008. These trends affect economic development in the long term in various respects. The Survey report covers a broad range of issues, all of which are affected by these trends in various ways and to varying degrees. In this closing chapter, the Survey intends to go back to these trends and highlight its main conclusions.

8.1 Changed conditions

Under the base scenario in the Long-Term Survey 2008, economic growth will be relatively good until 2030, but not as rapid as in the last ten years. At the same time, there are a number of factors that may dampen economic growth. The design of climate policy, labour supply developments, and the greater demand for services and their increased production are examples of factors discussed in the Survey. In addition to the future prospects for growth, another key issue is the ability to meet the rising demand for welfare services within the framework of what is basically a publicly financed system.

8.1.1 The composition of the population affects the labour supply and the demand for welfare services

A growing proportion of elderly and a working-age population with almost no growth will have an impact both on the labour supply, and hence growth, and on the public welfare systems.

The labour supply will grow modestly and the rising level of education will not include everyone

There will be only a modest increase in the number of people of working age in the future and the increase will be mainly in the older age groups and from immigration. Given current employment patterns, this means that the number of hours worked in the economy will increase weakly in the long term and the labour supply's contribution to growth will be very limited.

At the same time, the population will generally speaking become increasingly well educated and thus may have stronger labour market ties in the years ahead. Women in particular appear to strengthen their position in the labour market by improving their level of education. At the same time, the percentage of young people with only a pre-upper secondary education has been constant for a long time and this group has problems getting a foothold in the labour market. This is a worrying trend.

In the last few years, it has also been foreign students (i.e. incoming students) that have kept the number of new university students from declining in Sweden. Many foreign students come without the intention of taking a degree here.

A manageable increase in the demand for welfare services, given the ageing population

With a greater number of older people, the demand for welfare services, particularly health care and elder care, will increase in the future. Under the base scenario in the Long-Term Survey 2008, it is expected to be possible to meet the increased demand for health care, social services and education in the long term, provided that the current quality and quantity per person are perceived to be adequate. However, there will not be scope for meeting increased demand for more and better services as discussed at greater length below.

Problems may arise in recruiting staff to the extent needed without raising relative wages, an action that would in turn drive up costs. Recruitment may pose a particular problem in some parts of the country.

The transitory problem of an age group that is large and getting older can be managed by surpluses in the public finances when this

group is still of working age. But in the long term, the systems need to be adapted to take into account increasing average life expectancy and other changes.

8.1.2 Changes in demand patterns may dampen growth

The demand for goods and services is changing. Rising incomes and changed preferences are one reason. Another is the arrival of new products which find demand. There is increasing demand not only for goods and services but also for leisure time. This, in turn, has an impact on the labour supply.

Increased demand for more and better welfare services

In addition to the increasing demand for welfare services on account of an ageing population, demand will also probably increase with rising incomes. The historical trend shows that the demand for welfare services has increased at a considerably faster rate than that warranted by demographic developments.

Under the base scenario in the Survey, the current level of welfare services can be maintained until 2030. At the same time, it is unlikely that the public will be satisfied with a more or less unchanged standard of welfare services when the consumption of other services and goods grows in quality and quantity. In addition, there has been a trend to a greater desire for more options to choose from. This requires a broad selection of welfare services and also may require some excess capacity.

It is difficult to meet an increasing demand for welfare services partly because they are heavily subsidised and financed almost exclusively by taxes and partly because the possibilities of increasing productivity in such activities are often limited. Consequently a situation is created in which the demand for services is difficult to meet within the framework of current forms of financing.

Demand for other services will also increase

Rising household demand will also focus on services other than welfare services. In the last decade employment has grown in service industries having relatively low productivity growth and

this trend can be expected to continue in the years ahead. Future productivity growth will depend on how the demand for services develops.

The growing business services involve more specialisation, which should mean greater efficiency in producing these services. Hence productivity may also increase in those sectors that use business services as inputs. Productivity growth in the economy as a whole may thus be higher than it would have been without the structural change that occurred.

If instead demand ultimately is concentrated in services where productivity or productivity growth is low, such as personal services, long-term productivity growth in the economy will be more modest.

Leisure time increases with increased prosperity

The average amount of time people work during their lifetime has declined. This can be interpreted as a desire to enjoy some of the increased prosperity in the form of leisure. One aspect of working hours discussed in more detail in the Survey is how large a part of a person's life is spent in gainful employment. An increasing average life expectancy combined with an unchanged entry into working life and a relatively unchanged exit means that the amount of time an individual participates in working life has fallen.

At the individual level, determining a balance between working life and private consumption involves a trade-off: less leisure time and more work normally makes it possible to increase private consumption. However, taxes and transfers sometimes make the connection less distinct.

In contrast, the connection between individual input of labour and the supply of publicly financed welfare is much weaker. If one decides to spend less time in gainful employment in order to have more free time, one still has the same access to welfare services in the Swedish welfare system. But for society as a whole, there is a very close connection between the total labour supply and the ability to provide welfare services. The more hours worked in the economy, the more welfare services or the better their quality the public sector can provide at given tax rates. The design of the public welfare systems thus means that in this case, what is optimal for the individual is not necessarily optimal for society as a whole.

At the same time, it cannot be excluded that reduced working hours, perhaps particularly in the form of part-time work by those of working age, are in some cases an expression of an increase in unpaid work precisely because the welfare systems do not meet existing needs for such services as care for school-age children and elder care.

In the long term, the combination of a reduction in the lifetime percentage of gainful employment and an increase in demand for publicly financed welfare services is unsustainable, at least within the framework of the current welfare system.

8.1.3 Internationalisation requires economic adaptability

Cross-border mobility has increased in various respects. Deregulation, fewer trade barriers and technological development have contributed to this development. There has long been trade in goods, but during the past decade trade in services and direct investment in service companies has increased sharply.²⁶⁴ International competition now exists in some parts of the service sector such as transport, telecommunications and financial services.²⁶⁵

Geographic labour mobility is an important part of the adjustment to changes in economic conditions.²⁶⁶ Migration is still hemmed in by regulations, but the aim and direction of policy is now to make labour immigration easier.²⁶⁷ In the last 30 years, immigration to Sweden has mostly consisted of the immigration of family members and refugees. Immigration has been, and will continue to be, an important factor in preventing a decline in the working age population in Sweden. At the same time, immigrants as a group have had difficulty getting established in the labour market.²⁶⁸

²⁶⁴ Appendix 4 to the Long-Term Survey (SOU 2007:95) discusses the extent of trade and direct investment in the welfare services area and their potential.

²⁶⁵ Appendix 5 to the Long-Term Survey 2008 (SOU 2008:12) describes the role of the financial sector in the economy and its development in Sweden.

²⁶⁶ Appendix 3 to the Long-Term Survey 2008 (SOU 2007:35) analyses relocation and commuting patterns in Sweden

²⁶⁷ In spring 2008 the Government submitted the bill "New rules for labour immigration" (Govt. Bill 2007/08:147) to the Riksdag.

²⁶⁸ Appendix 6 to the Long-Term Survey 2008 (SOU 2008:14) emphasises the economic gains to be had from improving labour market integration.

Internationalisation affects structural change

Trade in goods and services leads to international specialisation of production, which contributes to more prosperity for participating countries. At the same time, internationalisation contributes to a need for continued restructuring of the economy to meet changes in prices and demand.²⁶⁹ More industries and jobs will likely be affected in the future since technological development and regulatory changes – for example, changes ensuing from the implementation of the Services Directive in the EU – mean that more services will be exposed to international competition.

In addition, a continued expansion of the service sector may mean a higher general job turnover in the economy since job turnover is higher in the service sector than in the manufacturing sector. This in turn requires a greater ability to adapt in the economy, both at the individual and the company level.

For structural change to go smoothly, and for the labour force to match demand in the labour market, it is important for the economy to be able to adapt well to new conditions.²⁷⁰ Increased occupational and geographic mobility may improve matching the demand for labour with the supply in the short term. One long-term strategy for achieving good matching in the labour market is for individuals to choose the ‘right’ education.²⁷¹

Greater international specialisation in the service sector

In the long term, internationalisation will probably also lead to greater international specialisation in the production of services, like that which has already taken place in the production of goods. This applies to those services that can be traded across borders and do not require a local presence.

More international competition in more parts of service production, which may also occur when foreign companies acquire a local presence through direct investment, should in the long term

²⁶⁹ Appendix 2 to the Long-Term Survey 2008 (SOU 2007:25) deals with the growth of economic activity in Sweden and regional prospects for economic growth.

²⁷⁰ Appendix 7 to the Long-Term Survey 2008 (SOU 2008:21) analyses structural change and the employment dynamic.

²⁷¹ Appendix 8 to the Long-Term Survey 2008 (SOU 2008:69) analyses the importance of the choice of education level and specialisation for an individual’s labour market situation and lifetime income.

contribute to productivity increases and falling relative prices for these services. In the event, those services used as input in other production will become cheaper.

An increasing international division of labour in the production of certain services would also affect employment and structural change in Sweden. What direction this would take is difficult to predict. It cannot be said for sure that there will be specialisation in the production of services or certain service industries. If, however, there is an increase in demand for services that must be produced locally, for example, cleaning, care and serving food and drink, employment in these industries will increase in Sweden.

A shift towards increased production of services in Sweden also affects Swedish carbon dioxide emissions. The reduction in carbon dioxide intensity in Sweden since 1990 has largely been the result of restructuring of the economy. During this time, the consumption of goods has not decreased. Part of the production thus takes place elsewhere. This gives rise to carbon dioxide emissions there and thus underlines the need to address the climate problem in cooperation with other countries.

The climate issue is a global problem

Climate change is a global problem that has to be handled at an international level. The contribution to climate change is the same, regardless of where it occurs. Reducing greenhouse gas emissions will be demanding in terms of resources and will mean restrictions in the use of some energy and raw materials, which will affect economic development. However, a number of studies have shown that it is possible to achieve relatively large reductions in emissions at a relatively low cost compared with the cost of the damages expected if no measures are taken. This is the conclusion of the Stern Report as well as the OECD's long-term scenarios and the Physical Sciences Basis from the United Nations Intergovernmental Panel on Climate Change (IPCC). A common premise for these estimates is that climate policy is based on cost-effective solutions with measures that are internationally coordinated by such means as an international emissions trading scheme.

The base scenario in the Long-Term Survey also assumes that the climate issue will be handled by means of broad international agreements in which flexibility will be a priority so that emissions

reductions will take place where they cost the least.²⁷² The Survey's estimates indicate relatively modest costs for Sweden to achieve ambitious climate goals based on an effective international climate policy.²⁷³ If the same emissions reductions take place in the form of measures taken in Sweden, the costs will be substantially higher, as shown in an alternative scenario.

8.2 Policy recommendations

Economic development leads to new conditions for the economy and the welfare systems. New conditions in turn create a need for the regulatory framework to be adjusted on an ongoing basis to be able to take the best possible advantage of the opportunities provided and meet the challenges that arise.

This section draws attention to a number of areas that the Survey thinks are particularly urgent for policy to address. This does not mean that there is no need for change in other policy areas.

The Long-Term Survey 2008 recommends that policy should focus on:

- encouraging a longer working life
- working for good adaptability and more competition in the economy
- examining forms of increased private financing of welfare services
- working for a global climate policy based on effective policy instruments.

8.2.1 Encouraging a longer working life

One important element in a policy for continued good growth and for preservation of a welfare system that is basically publicly financed and covers everyone is increasing the proportion of life spent working. The basis for financing the public welfare system is the number of hours worked in the economy. All measures boosting the labour supply among people of working age are of course

²⁷² In the estimates, this is achieved by an international emissions trading scheme without trade restrictions that includes all carbon dioxide emissions in the economy.

²⁷³ Appendix 1 to the Long-Term Survey 2008 (SOU 2008:108).

important. They have been discussed in earlier Long-Term Surveys and elsewhere. The focus of the Long-Term Survey 2008 has been on the possibilities of increasing the labour supply at the beginning and end of working life.

Earlier labour market entry

The age at which young people secure a place in the labour market is steadily rising. This largely reflects the increase in the number of people getting a university education, which is a positive step. But it also reflects inefficiencies in the education system, where in many cases studies take considerably more time than should be needed. There is also a large group of young people who do not complete upper secondary school. Beginning early in their school life, these young people often find school more difficult than other students.

Achieving earlier establishment in the labour market by increasing the efficiency of the education system would yield several positive effects. Education system expenditure would not need to be as high if the need for supplementary studies declined. It would also have a positive effect on the individual concerned in the form of more income.

Various studies have shown that very early support – preferably before school age – directed at underprivileged students is effective in countering failure at school.

Moreover it is important to improve information for people choosing an education about such matters as average income and risk of unemployment after various programmes of education.

It is also worth considering the introduction of economic incentives to shorten the study time leading to a degree. University fees or premiums in the student support system would encourage a more rapid throughput and cause students to choose to major in subjects that were more likely to lead to jobs.

A later labour market exit age

Average life expectancy has steadily increased without any appreciable rise in the labour market exit age. This means a longer time spent in retirement.

The new pension system has strengthened many people's economic incentives to extend their working life. However, there are still economic incentives and, not least, norms that work in the opposite direction. There are also various supplementary pension schemes via collective agreements and private pension savings. Consideration should be given to how the age limits found in the old age pension system can be better adapted to the change in average life expectancy. This in turn could contribute to changing the norms for the length of working life both on the part of the employer and the employee.

Later retirement would require tightening the different available options leading to retirement. At the same time, there is a risk that this will be an indiscriminate instrument, which could hit some individuals relatively hard. The distribution aspects are therefore an important consideration in such changes. As it always is, the practical design of welfare policy is a balancing act between various goals. The systems should both ensure individuals' security and encourage people to take responsibility for their own livelihood.

8.2.2 Work for good adaptability in the economy and more competition

Restructuring in the economy is a natural consequence of change elsewhere and the emergence of new conditions.

General measures to maintain adaptability

One conclusion of the Long-Term Survey 2008 is that the aim of the policy should be to create the conditions for new job opportunities rather than preventing jobs from disappearing. This means that it is important to facilitate enterprise, investment, innovation and entrepreneurs as well as labour mobility. However, it is impossible to identify in advance the industries that will be successful and have a high value-added in the future. A policy focus on particular industries is therefore inappropriate. Instead the policy should aim at general measures.

Promoting competition, particularly in the service sector

Competition should generally be promoted as it contributes to new goods and services, lower prices and higher productivity. Competition, not least international competition, in the service sector is currently limited to a considerable extent by regulatory regimes in Sweden and other countries. Taking measures to promote competition in the service sector is therefore particularly important. Depending on the nature and current state of the activity, competition can be improved in various ways. In some cases, markets need to be opened up to more actors that did not previously exist. In other cases, there are already a number of actors but in practice competition is still ineffective.

Even in the welfare services that are currently publicly produced and financed, more competition should lead to positive change. More domestic and international competition may contribute to expanding welfare services and increasing freedom of choice. A clearer demarcation of the role of the public sector as financier and producer would provide the conditions whereby private companies could get established in markets where there is currently uncertainty about the extent of public sector services.

More competition by more actors also makes it possible to better meet the increase in consumer demand for freedom of choice and greater diversity. For the positive effects of greater diversity to be realised, it is important for the consumer to be able to obtain relevant information and for there to be a continual follow up of the activity. For certain services such as welfare services, where it may be difficult for the consumer to judge the quality of the service offered, it is particularly important to have well-functioning information and control systems.

8.2.3 Exploring possible arrangements for more private financing of welfare services

There are many indications that the demand for welfare services will increase more than what is possible to satisfy within the framework of the public welfare and tax systems as they are now designed. It is desirable and possible to improve productivity in the welfare services but constant productivity improvements in the

labour intensive parts of these services, particularly elderly care, are not easy to achieve.

One of the main conclusions in this and in the preceding Long-Term Survey is that a greater measure of private financing is necessary to meet the increasing demand for welfare services in the long term.

Getting the reform process started now

A change in the financing of the welfare systems is a far-reaching reform that is likely to take a long time to implement. The Long-Term Survey recommends the appointment of a parliamentary inquiry with the remiss to propose forms for more private financing of the welfare services. A broadly based inquiry can ensure the construction of a system that is stable in the long term.

This inquiry should be conducted in light of rising incomes in Swedish society, more demand for freedom of choice in the area of welfare services, and increased internationalisation.

Postponing this issue would lead to uncontrolled development

Proposals for a greater measure of fee-based financing for the public services are often met with the objection that they would lead to substantial distribution effects and are dismissed for this reason. However, there are also consequences if no measures are taken. If nothing is done to meet the increased demand, dissatisfaction with what the public sector services have to offer may increase and the legitimacy of the systems may be undermined. People may thus be less willing to pay taxes. This could, in turn, further undermine the future financing of the public welfare systems.

8.2.4 Working towards a global climate policy based on effective policy instruments

If an international harmonisation of the cost of reducing greenhouse gas emissions is not realised, there is a risk that the cost to Sweden and the rest of the world will be substantial. It may ultimately mean that global emissions reductions will not be as big

as what would otherwise have been possible. Measures should be designed in a cost-effective manner in order to achieve the targets established at the international level, particularly in face of the challenges coming in other areas in the years ahead. The resources freed up by such a climate policy could be used for welfare services, tax reductions, meeting other environmental targets or research and development programmes in the climate area.

Sweden should press for a global policy with effective instruments of control

Sweden is responsible for about 0.2 per cent of global greenhouse gas emissions and has (compared with both the EU and the rest of the world) high marginal costs associated with continuing to achieve large cutbacks in emission levels. By using flexible mechanisms and thereby directly or indirectly taking an active part in reducing emissions globally, Sweden will be able to proceed with ambitious national undertakings while making a greater contribution to global efforts to stop climate change.

The spread of current technology can help limit emissions affecting the climate but new technology also needs to be developed. An international price for carbon dioxide emissions is an effective way of stimulating technological development.

Specific targets for energy consumption and renewable energy must be warranted for reasons other than the climate problem

The targets for reducing energy consumption and increasing the use of renewable energy often support the climate target, but also to some extent cause measures to be taken other than those that are cost-effective if the target is to reduce emissions of gases having an impact on the climate. Special targets for energy consumption therefore risk increasing the cost of reducing emissions, in which case they must be warranted for other reasons. Generally measures taken that also have positive effects in other areas, such as increasing the security of energy supplies, contribute to reduced emissions of local pollutants. However, if fighting climate change is the problem to be tackled, the policy should focus on designing cost-effective policy instruments that as much as possible focus on that particular problem.

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Appendices to the Long-Term Survey 2008

The appendices are not available in English.

No.	Title	Prepared by	Publication
1	Sveriges ekonomi Scenarier på lång sikt	Martin Hill, Philip Löf & Thomas Pettersson, Finansdepartementet	SOU 2008:108
2	Plats för tillväxt?	Joakim Gullstrand, Lunds universitet och SLI & Cecilia Hammarlund, SLI	SOU 2007:25
3	Flyttning och pendling i Sverige	Kent Eliasson, ITPS och Umeå universitet Olle Westerlund & Johanna Åström, Umeå universitet	SOU 2007:35
4	Tjänster utan gränser? Internationalisering av offentliga sektorns tjänster	Statskontoret	SOU 2007:95
5	Finansiella sektorn bär frukt Analys av den finansiella sektorn ur ett svenskt perspektiv	Niclas Alsén, Finansdepartementet	SOU 2008:12
6	Timmar, kapital och teknologi – vad betyder mest? En analys av produktivitetens utvecklingen med hjälp av tillväxtbokföring (Hours, Capital and Technology — What Matters Most?)	Konjunkturinstitutet (Available on the website of National Institute of Economic Research, www.konj.se)	SOU 2008:14
7	Permanent förändring Globalisering, strukturomvandling och sysselsättningsdynamik	Institutet för tillväxtpolitiska studier	SOU 2008:21
8	Välja fritt och välja rätt Drivkrafter för rationella utbildningsval	Nikolay Angelov och Per Johansson, Uppsala universitet och IFAU, Louise Kennerberg, IFAU	SOU 2008:69