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1 Introduction

In the middle of the nineteenth century, Sweden was among the poorest countries in Europe. Approximately 80 per cent of the population was engaged in the agricultural sector. Signs of a take-off in economic growth emerged in the 1850s. In the early 1870s, industrialization based on raw materials, notably iron ore and lumber, provided a base for sustained economic growth, which continued largely uninterrupted for one hundred years. The Swedish economic growth rate was the highest of all industrialized countries during the period 1870–1970 (Maddison, 1990). This exceptional and remarkably smooth growth made Sweden one of the most affluent countries in the world by the late 1960s. Since then economic performance has been weak compared to other industrialized countries, and in terms of GDP per capita Sweden is now no more than average among the OECD countries.

This long-run development makes Sweden an interesting case. How can we explain this pattern of rapid economic growth, sustained for an extraordinarily long period of time, which was interrupted fairly abruptly and followed by the current period of slow growth and relative decline? Much of the industrialized world has experienced a slowdown since the early 1970s, but in Sweden this development has been particularly pronounced.

The purpose of this study is to identify the 'ultimate' causes of Swedish growth performance relative to other OECD countries in the postwar period. We aim to explain the slow economic growth since the early 1970s. The analysis is largely exploratory. We can only roughly, if at all, quantify the relative importance of the various explanations we shall put forward.

Our study is organized as follows. In section 2 we examine Sweden's growth performance from the mid-nineteenth century up to the present, comparing it to that of other OECD countries, with a strong emphasis on the postwar period. The OECD average serves as the main benchmark for comparisons. The purpose is to identify the central issues prompting further exploration. Key features of 'the Swedish model' are identified and discussed in relation to the macroeconomic

record and structural changes of the postwar period. In section 3 we review macroeconomic policies according to the chronological outline determined jointly for the CEPR project, of which this study is a part. Here we trace the development of fiscal and monetary policies since the 1930s.

In section 4 we consider a number of developments that we propose as the 'ultimate' determinants of Swedish growth performance. We assess the validity of several potential explanations of the comparatively slow growth of the Swedish economy in recent decades: the catching-up effect, the role of saving and physical capital formation, the lack of competition, the effects of stabilization and labour market policies, and the role of public sector expansion, of taxation, of human capital formation, of investment in R & D and briefly of sclerosis. In section 5 we summarize our conclusions.

In this study, we attempt to take seriously the distinction made between proximate and ultimate sources of growth in the overview chapter in this collection of essays. The most straightforward fashion in which to study aggregate economic growth – and at present the only reasonably quantifiable one – is to start from a production function: that is, the notion that output is a function of measurable inputs (usually labour and accumulated capital) and the productivity of these factor inputs. At this level of explanation, the analysis of economic growth largely boils down to quantifying how much of the increase in output is due to the increase in each of the inputs, and how much is due to the increase in their productivity.

Following the seminal contributions of Kendrick (1961) and Denison (1962), the 'growth accounting' technique has been gradually improved. In growth accounting, with the help of statistical and economic models, one arrives at measures of the 'proximate' sources of growth. The upshot of such exercises has generally been that most of economic growth can be attributed not to increased amounts of measurable inputs, but rather to increased productivity of the inputs: that is, to growth in total factor productivity (TFP). Growth accountants do not accept this as the whole story; with the help of ancillary assumptions, growth in TFP has been attributed to factors such as the advance of knowledge, growth of human capital, economies of scale and improved resource allocation.

Even if growth accounting could successfully identify and accurately measure the proximate causes of economic growth, we would still be interested in understanding the underlying – 'ultimate' – sources of growth. Abramovitz (1989: 23) has cogently pointed out how far growth accounts can take us, and what their limitations are:

> The aim of the accounts is modest but definite. It is to measure the proximate sources of the rise of output and so tell us where we must look if we are to find its more basic causes. Whatever the underlying causes may be, growth accounting asserts that they act through the sources identified in the accounts with a force that the accounts measure . . . Growth accounting, therefore, holds that the sources it measures act independently of one another so that each makes its own contribution. There are good reasons, however, to question that claim. The growth sources feed from one another.

In this study we will draw on studies of proximate causality made by others, whereas our own contribution will be almost wholly in the realm of ultimate causality. Our

Table 9.1. *Growth in GDP per man-hour in 16 OECD countries, 1870–1970*

	1870–1970	1870–1950	1870–1913	1913–50
Australia	1.36	1.07	0.63	1.59
Austria	2.25	1.34	1.73	0.89
Belgium	1.87	1.32	1.25	1.40
Canada	2.31	2.14	2.03	2.27
Denmark	2.23	1.79	1.93	1.63
Finland	2.70	2.06	2.10	2.01
France	2.49	1.87	1.79	1.97
Germany	2.40	1.49	1.86	1.05
Italy	2.26	1.43	1.15	1.75
Japan	2.84	1.57	1.83	1.27
Netherlands	1.97	1.41	1.19	1.67
Norway	2.51	2.05	1.68	2.48
Sweden	*2.89*	*2.56*	*2.32*	*2.84*
Switzerland	2.08	1.75	1.42	2.14
UK	1.69	1.38	1.22	1.57
USA	2.32	2.28	2.04	2.56
Unweighted average	2.26	1.72	1.64	1.82

Note: For the very long-run growth comparison between Sweden and other OECD countries, we use data from Maddison (1982) instead of Maddison (1991). The reason for this is that the figures for Sweden for 1870–1950 are based on a provisional series not intended for publication. The only full series for Swedish GDP for this period is the one published in Krantz and Nilsson (1975), which is used in Maddison (1982). To date, this is also the series used by all scholars doing analyses on long-run Swedish economic growth. Since the figures for Sweden presented in Maddison (1991) greatly differ from those in Maddison (1982), we find it is inappropriate to use this series until definite data exist.
Source: Maddison (1982: 212).

study of ultimate causality is facilitated by our focus on Sweden's growth performance *relative* to other countries. This makes it suitable to search for circumstances where Sweden *differs* from other industrialized countries in important respects.

2 Aggregate performance

2.1 The growth record

In the middle of the nineteenth century, Sweden was among the poorest countries in Europe.[1] Approximately 80 per cent of the population was engaged in the agricultural sector. A take-off began in the 1850s, and in the early 1870s industrialization based on raw materials, notably iron ore and lumber, provided a base for sustained economic growth which continued largely uninterrupted for one hundred years. As Table 9.1 demonstrates, Swedish productivity growth was exceptional in the period 1870–1950 compared to other rich countries. An analysis of the comparative success

Table 9.2. *Growth in GDP per man-hour in 16 OECD countries, 1950–70*

	1950–70	1950–60	1960–70
Sweden	*4.20*	*3.50*	*4.91*
Unweighted average	4.46	3.89	5.04
Unweighted average excluding Japan and Germany	4.08	3.55	4.62

Source: Maddison (1982: 212).

Table 9.3. *Average annual growth rate of GDP, GDP per person employed and GDP per capita, 1950–70 (%)*

	GDP		GDP per person employed		GDP per capita	
	1950–60	1960–70	1950–60	1960–70	1950–60	1960–70
Sweden	*3.4*	*4.6*	*2.8*	*3.8*	*2.7*	*3.9*
OECD	3.6	5.0	–	3.9	–	3.9
OECD Europe	3.4	4.9	–	4.5	–	3.8

Sources: National Accounts from Statistics Sweden for Sweden; Maddison (1991); OECD, *National Accounts 1950–1968*; OECD, *Historical Statistics*.

of this period is beyond the scope of the present paper, but reasons that have been emphasized include a sizeable initial stock of human capital followed by rapid human capital formation, a resource-based industry that developed into a technologically advanced investment goods industry, partly as a result of sharp exposure to international competition, a liberal policy environment, and the good luck to have avoided participating in wars during the period.

Fully comparable data for the 1950s for all OECD countries are not available. Thus, in order to assess Sweden's relative growth performance in this period, we have to rely on several sources. In Table 9.2, Sweden's growth rates in GDP per man-hour are compared to the averages for Maddison's sixteen countries. The growth in GDP per hour worked was very close to the average for the sixteen countries in 1950–70. But if we exclude the extremely war-torn countries Germany and Japan, which disproportionately benefited from a positive catching-up effect, the Swedish growth rate is above the average for the period 1950–70.

OECD data for the 1950s and 1960s confirm the view that emerges from Maddison's data (Table 9.3). Overall growth rate for Swedish GDP, GDP per employed and GDP per capita is practically on a par with developments in the rest of the OECD during both the 1950s and 1960s. The economy performed well during the 1960s, despite the fact that it was clearly disfavoured from a catching-up perspective by having a very high income level compared to the OECD average.

Sweden's lagging growth did not manifest itself in the data until around 1970, although signs of an underlying weakness in the economy had shown up a few years earlier. One of the first manifestations of a deterioration in economic performance was that when the Swedish economy grew at a rate comparable to other OECD

Table 9.4. *Average annual growth rate of GDP, GDP per person employed and GDP per capita, 1970–92 (%)*

	GDP	GDP per person employed	GDP per capita
Sweden	*1.7*	*1.2*	*1.2*
OECD	2.9	1.9	2.0
OECD Europe	2.4	2.0	1.8

Note: No data exist for the development of GDP per employed before 1977 for the two aggregates. Instead we have used unweighted averages for these years.
Sources: OECD, *Economic Outlook*, June 1993 for GDP and GDP per employed; OECD, *National Accounts, Main Aggregates*, vol. 1, 1982 and 1994 for GDP per capita.

countries, a current account deficit tended to emerge. In 1970–1 a sizeable current account deficit arose, prompting the government to respond with drastic austerity measures. Moreover, in 1969, the real product wage began to exceed the level consistent with long-run equilibrium (Wissén, 1982). For these and other reasons, it is proper to regard 1970 as a watershed year, rather than 1973, which is customarily used in economic growth studies.

From Table 9.4 it is clear that the growth rate of GDP in Sweden has been only slightly more than half that of the OECD. The same pattern is apparent for GDP per person employed and GDP per capita. Sweden's relative economic performance appears more favourable in terms of GDP per capita than in terms of GDP per employed. This reflects the fact that the growth of employment has been much faster than the OECD average, particularly in the latter half of the 1980s.

Thus, in terms of both overall growth and the simplest productivity measures, the performance of the Swedish economy has lagged behind since 1970. More sophisticated productivity comparisons across countries are not readily available. In Table 9.5 the results from one study of TFP in fourteen countries during 1970–85 is presented. Swedish TFP growth is the lowest of all fourteen countries.

In Table 9.6 a simple growth accounting decomposition of growth of value added in the non-government sector during the period 1950–90 is presented. The decomposition is done using the conventional formula

$$\frac{\dot{Y}}{Y} = \frac{\dot{A}}{A} + (1 - \alpha)\frac{\dot{L}}{L} + \alpha\frac{\dot{K}}{K}$$

where K is the capital stock, L is hours worked, α denotes the actual income share of capital averaged over the relevant period, and A is the level of TFP. A dot above a variable indicates rate of change.

This simple exercise shows that, until the mid-1980s, growth in value added in the non-government sector can be predominantly ascribed to growth in TFP, although increases in the capital stock in some subperiods have been of great importance. During the 1960s and 1970s, the contribution from labour was invariably negative. In the last period, 1987–90, the pattern is dramatically different: the growth rate of

Table 9.5. *Growth rate of total factor productivity (TFP) in the private sector in 14 OECD countries, 1970–85 (% p.a.)*

	TFP growth
Japan	3.29
Australia	2.54
Belgium	2.53
Italy	1.95
Canada	1.77
France	1.72
USA	1.66
Finland	1.65
Denmark	1.53
West Germany	1.21
Netherlands	0.89
Norway	0.74
UK	0.67
Sweden	*0.61*

Note: TFP growth in a country is estimated as the average output growth in the private sector in each country minus the growth rate accounted for by growth of labour, capital and catching-up potential where the latter is measured by the log of the ratio of labour productivity between the productivity leader and the respective country (productivity leadership is measured at the industry level, i.e. different countries are taken to be the technological leader in different industries).
Source: Hansson and Lundberg (1991b).

TFP fell to a fraction of earlier levels, whereas the strong growth of employment and capital stock contributed substantially to output growth.

The slow economic growth rate in Sweden since 1970 has had a highly significant impact on the Swedish income level *vis-à-vis* that of other countries. It is well known that comparing income levels is more difficult than comparing growth rates across countries. The most suitable method is probably to use the OECD's purchasing power parity adjusted measures of GDP per capita. Sweden together with Luxembourg had the third highest GDP per capita in the OECD area in 1970. By 1990, Sweden had fallen below the OECD average for the first time. In 1991, Sweden fell to rank 14, and the GDP level was 8 per cent below the OECD average. In 1993, Sweden was ranked seventeenth with a GDP per capita 13 per cent below the OECD average.

Sweden is not the only country that has fared relatively badly; the Netherlands, Australia and New Zealand also lag behind, but no other country has regressed to the same extent. On the other hand, there are a number of countries that have performed extremely well, notably Japan, Iceland, Norway and Austria.

In summation, the analysis in this section shows that the rate of economic growth in Sweden was comparable to the average of other industrialized countries until the late 1960s. But the data on growth and productivity indicate clearly that since 1970 Sweden's economic performance has been well below the average of other OECD

Table 9.6. *Proximate sources of economic growth in the non-government sector, 1950–90: contributions from growth of TFP, labour (hours worked) and capital*

Period	Decomposition of growth				Relative contribution from		
	$\frac{\dot{Y}}{Y}$	$\frac{\dot{A}}{A}$	$(1-\alpha)\frac{\dot{L}}{L}$	$\alpha\frac{\dot{K}}{K}$	$\frac{\dot{A}}{A}$	$(1-\alpha)\frac{\dot{L}}{L}$	$\alpha\frac{\dot{K}}{K}$
1950–60	3.3	2.3	0.1	0.9	0.70	0.03	0.27
1961–5	5.4	4.7	−0.3	1.0	0.87	−0.06	0.19
1966–70	3.9	4.4	−1.3	0.8	1.13	−0.33	0.21
1971–7	1.9	2.2	−1.1	0.8	1.16	−0.58	0.42
1978–86	2.3	2.0	−0.2	0.5	0.89	−0.11	0.22
1987–90	2.5	0.6	0.9	1.0	0.23	0.38	0.39
1961–90	2.8	2.6	−0.5	0.8	0.93	−0.21	0.29

Note: The results in Tables 9.5 and 9.6 are not directly comparable due to different levels of aggregation, and differences in estimation methods and in methods used to calculate capital stocks. Furthermore, in Table 9.5 a potential catching-up effect is taken into account.
Sources: Bentzel (1991) for 1950–60; data from Bergman and Hansson (1992) for 1961–90.

countries. Apart from the period 1978–86, when the economy was boosted by a series of devaluations, the growth record is poor. This tendency was accentuated during the latter part of the 1980s and the early 1990s. The accumulated effect of the slow economic growth has been substantial. In terms of the GDP level per capita, Sweden now ranks in the lower half among the OECD countries.

2.2 *The policy environment and macroeconomic performance*

2.2.1 *The Swedish model*

The performance of the Swedish economy in the postwar period is commonly discussed under the heading 'the Swedish model'. There is no clear or commonly accepted definition of the Swedish model, although the literature on the model constitutes something of a growth industry in itself.[2] Economists, sociologists and political scientists tend to give different interpretations. Recent surveys of the development of the Swedish economy during the post-1945 period emphasize as a rule the following three features deemed specific to Sweden (see, for example, Andersen and Åkerholm, 1982; Jörberg, 1991; Lundberg, 1985; Samuelsson, 1988).

1. The labour movement, as represented by the Social Democratic Party and the blue-collar trade union (the LO), has held a uniquely strong position of political power since the election of 1932. The Social Democrats ruled the country either alone or in coalitions from 1932 to 1976 and from 1982 to 1991. In no other European OECD country has one party held power for so long. This dominant political role has allowed the Social Democrats to shape Swedish society in a Social Democratic mould, creating an institutional set-up encompassing unions and organizations, and conducive to the growth of corporativism, non-market-oriented regulations and a large public sector.

Table 9.7. *Composition of GDP: Sweden, 1950–90 (%)*

	1950	1960	1970	1980	1990
Private consumption	66.4	57.9	53.9	52.8	52.6
Government consumption	14.0	17.7	21.8	29.6	27.7
of which: central	6.9	8.4	8.3	9.6	7.9
of which: local	7.1	9.3	13.5	20.0	19.8
Investment	19.2	22.2	22.7	20.0	20.7
of which: private	13.6	15.0	14.2	16.6	18.2
of which: government	5.3	7.2	8.5	3.4	2.5
Stocks	−0.2	2.8	3.1	1.1	0.0
Exports	22.4	24.4	24.3	30.1	30.8
Imports	−21.7	−25.1	−24.9	−32.0	−27.8

Source: National Accounts.

2. Sweden has carried out a very ambitious package of economic policies in the postwar era. This package includes stabilization policies, growth policies, industrial policies, labour market policies, and far-reaching welfare policies.[3] The prime goal of stabilization policy from the end of the war until the end of the 1980s was the maintenance of full employment. A number of instruments have been used. Government regulation of investment and interest rates, of the flow of credit and capital within different sectors of the economy, and of foreign exchange are other features of the Swedish policy mix. Labour market policies have been extensive. The policies of taxation and transfers have aimed at reducing differences in income and wealth.

3. The public sector is very large. Measured in relation to GDP, public expenditure expanded rapidly in the 1970s and 1980s, from a level fairly close to the average of the OECD in the early 1960s. In 1993 the ratio reached a record level above 70 per cent. According to this measure, Sweden holds a unique position among the OECD countries. In 1992, when total government outlays constituted 67.3 per cent of GDP in Sweden, the OECD average was 41.2 per cent. High public expenditure has been accompanied by high average and marginal taxes.

Accounts of the Swedish model commonly emphasize that Sweden is a small open economy with a large export sector. Exports as a share of GDP increased from a low of 5 per cent at the end of World War II to above 30 per cent in the 1980s (see Table 9.7). The unweighted average for the OECD in 1990 was 19 per cent. As a consequence of the high degree of openness, the secular and cyclical growth of the Swedish economy has been closely tied to international developments.

Commentators focusing on a broad definition of the model generally stress a well-functioning relationship between government, labour and industry: that is, a political climate based on consensus, cooperation and corporativism. The role of the government in this framework is to stabilize the economy and to form it 'progressively', while avoiding direct interference in the wage-setting process between unions and private industry, and in the management of the leading multinational firms that constitute the core of the export sector. Other commentators

suggest a narrow definition, arguing that the Swedish model basically refers to the workings of the labour market and of labour market policies.

The Swedish model developed gradually, starting in the 1930s. The 1950s and 1960s mark its heyday. A broad political consensus reigned concerning the general framework of the Swedish model roughly until the end of the 1960s and early 1970s, when a more radical wing of the Social Democrats pressed for far-reaching reforms, for more equality and less stress on growth.

Many of the prerequisites for the model have now been abolished or have disappeared: the system of foreign exchange and credit controls which allowed political control over capital formation, the strong position of the blue-collar union (LO) and the political hegemony of the Social Democratic Party.

The following account of Swedish economic performance, structural changes, policies and institutions attempts to describe various aspects of the evolution of the Swedish model.

2.2.2 Macroeconomic performance

The goals or objectives of Swedish stabilization policy are generally summarized as maintaining high economic growth, full employment, low inflation and external balance. Often the aim of stabilization policies is expressed as minimizing cyclical fluctuations and maintaining a 'proper' demand pressure (see Table 9.8).

1. *Growth.* The growth rate of real GDP from 1940 until 1993 is displayed in Table 9.8. According to the table, the growth rate of the 1960s was considerably higher than that of any other decade. The rate of growth of the 1970s and 1980s was positive but declining. During the early 1990s it was negative for three consecutive years. The growth rate during the 1950s was fairly high, although lower than during the 1960s.

The tables demonstrate a major difference between the fairly high growth performance of the 1950s and 1960s and a phase of lower growth from around 1970 until today. This pattern is a common one for the OECD countries as a whole.[4] However, the relative decline in Sweden is more pronounced. This decline is strikingly apparent in the growth of industrial production. Figure 9.1 compares Swedish industrial production to that of the OECD. The growth rate of the 1960s appears to be a unique episode, a period of uninterrupted industrial expansion without precedent, followed by dismal performance in the 1970s – more precisely, by an absolute decline between 1975 and 1978. A similar fall in the index of industrial expansion took place in 1981–2 as well as in the first years of the 1990s. The fall in 1991–3 is the most dramatic one in the whole period, demonstrating the severity of the most recent downturn.

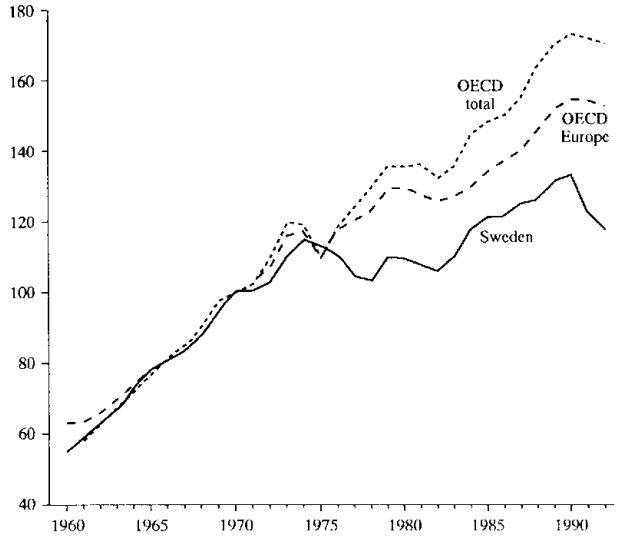
2. *Cycles.* The cyclical pattern is shown in Figure 9.2, displaying a three-year moving average of the annual percentage change in real national income as well as the behaviour of a composite index measuring the Swedish business cycle. The average length of the cycle is roughly four years from peak to peak.

The international business cycle has been a prime determinant of the Swedish cycle (see, for example, Lundberg, 1968). However, after the fall of the Bretton Woods system, domestic stabilization policies have been a considerable source of cyclical disturbances as well. This was particularly the case during the policy of 'bridging over' in 1974–5, when the authorities tried to bridge over the expected

Table 9.8. *Macroeconomic outcomes: Sweden, 1940–93 (period averages, %)*

	1940–9	1950–9	1960–9	1970–9	1980–9	1990–3
Growth	3.0	2.8	4.1	2.3	1.6	−1.1
Unemployment	5.7	2.2	1.5	2.1	2.5	4.5
Inflation	4.8	4.4	3.7	8.6	7.9	6.6
Current account	0.3	0.3	−0.2	−0.4	−1.7	−1.7

Notes:
Growth: GDP per capita, annual percentage change.
Unemployment: annual averages.
Inflation: consumer price index, annual percentage change.
Current account: as a percentage of GDP in current prices.

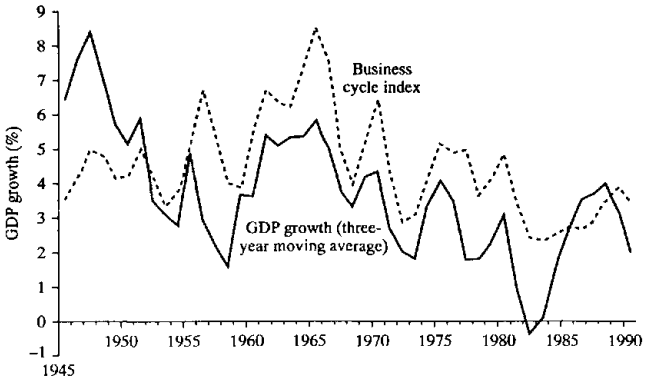


Source: OECD.

Figure 9.1 Industrial production in Sweden and OECD, 1960–92 (1970 = 100)

international downturn by applying a set of expansionary measures. In retrospect this policy of meeting a supply shock with demand expansion did not turn out successfully. Swedish prices and wages rose more rapidly than international prices and wages. Competitiveness was sharply reduced, which eventually induced a series of devaluations of the krona in the period 1976–82.

The amplitude of the cycle (a rough measure of the cyclical performance of the Swedish economy) has been constant throughout the period 1948–88 (see, for



Source: Frennberg and Jonung (1992).

Figure 9.2 Annual percentage changes in Swedish GDP and the Swedish business cycle, 1945–90

example, Bergman and Jonung, 1993). The disturbances hitting the economy after the fall of the Bretton Woods system appear, however, stronger than during the Bretton Woods period. As is evident from Figure 9.2, the growth performance began to worsen around 1970. In the 1950s and 1960s, cycles were growth cycles: growth in real income was positive during the downturns of the cycle, at least 1–2 per cent a year. After 1970 the downturns became associated with gradually lower growth rates.

3. *Unemployment.* Full employment has been the overriding goal of Swedish economic policy in the postwar period, at least until 1990. There has been considerable popular support across party lines for this goal. Between 1950 and 1990 the unemployment rate fluctuated between 1 and 3 per cent. Most remarkably, the Swedish rate remained low in the 1980s, when the rate of the OECD varied between 5 and 10 per cent. Unemployment has also displayed a cyclical pattern, peaking as a rule a few quarters after the bottom of the business cycle.

Behind these aggregate numbers lie large cyclical and secular sectoral differences. Employment in the private sector displays more pronounced cyclical fluctuations than employment in the public sector. Employment in the public sector, as shown below, displays a strong positive trend during the postwar period. Furthermore, high labour force participation rates for women and the elderly characterize the Swedish labour market.

4. *Inflation.* As a consequence of the firm commitment to full employment, inflation has been given secondary priority in the policy process, in particular after the breakdown of the Bretton Woods system. Swedish inflation in the 1950s and 1960s roughly followed the international trend. This pattern was consistent with the EFO-model of wage and price inflation, which is based on a separation of the Swedish economy into two sectors: an open and a sheltered sector. In this model,

export firms, which comprise the major part of the open sector, are viewed as price-takers in international markets. The wage inflation in the tradables sector is determined by productivity growth and international inflation. Domestic inflation is determined by the international rate of inflation and domestic productivity gains, assuming that the rate of wage inflation is identical for the two sectors.[5] The model was based on a system of fixed exchange rates and thus applied to the conditions of the Bretton Woods period. Since OPEC I, Swedish inflation has been considerably higher than that of the OECD.

4. *The external balance.* Since Swedish growth and cycles have primarily been regarded as driven by export demand, the external balance plays a major role in the forming of economic policies. In the 1950s and 1960s there were no balance of payments problems, except at the end of the 1960s. Since OPEC I, Sweden has experienced more or less permanent problems with its balance of payments (see Table 9.8). The current account balance has displayed considerable short-run fluctuations, movements that are not shown in the table.

2.2.3 Structural changes

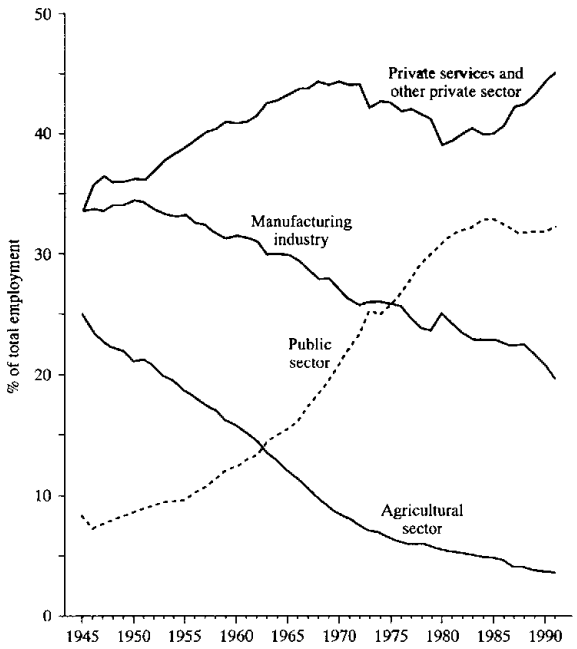
The structure of the economy has changed considerably in the past fifty years. The most striking feature is the growth of the public sector, and the decline in agriculture and in industry.

Looking at the *demand side* of the economy displayed in Table 9.7 above, private consumption fell from 66 per cent as a share of GDP in 1950 to 53 per cent in 1990, while public consumption rose in the same period from 13 to 28 per cent. Practically all of the expansion is due to a rise in the expenditure of local authorities. The share of investment remained roughly unchanged, while the share of exports rose from around 20 to 30 per cent between 1950 and 1990.

Changes in the *employment shares* in the Swedish economy displayed in Figure 9.3 cogently illustrate structural shifts. Employment within agriculture as a share of total employment fell from 25 per cent in 1945 to 3 per cent in 1990. For manufacturing, the same numbers are 33 per cent and 20 per cent. The number of industrial workers peaked in 1965, when more than 743 000 were employed in industry. The employment share of the public sector rose from 8 per cent in 1945 to more than 30 per cent by 1990, most of the expansion taking place in the 1960s and 1970s. Employment in the remaining sectors, primarily in the service sector and – notably – in construction, expanded from 33 to over 40 per cent at the end of the 1980s.

The expansion of the public sector reflects major structural shifts within the labour market, primarily a large increase in the employment of women. Labour force participation rates of women increased rapidly, particularly in the 1970s, reaching the highest ratio within the OECD. A large part of the expansion of jobs took the form of part-time employment. Significant immigration of labour started in the 1960s.

Structural changes in the economy may also be analysed using the EFO approach, which was originally presented as a structural model of inflation in an open economy. Figure 9.6 is based on two sectors: a competitive sector and a sheltered sector, which can in turn be subdivided into a public and a private sheltered sector.[6] The figure shows that the competitive sector has declined secularly since 1952, most rapidly in the 1950s and 1960s. In the early 1990s it comprised less than 20 per cent of the Swedish economy.



Source: National Accounts.

Figure 9.3 Structure of Swedish employment, 1945–91

3 A review of macroeconomic policies

3.1 Legacy of the 1930s and World War II

The economic and political events of the 1930s and World War II had far-reaching effects on economic policies in the postwar period. Sweden was influenced fairly late by the depression of the 1930s. As a consequence of the British decision to let the pound float in September 1931, the krona was forced to leave the gold standard. It depreciated significantly, which had expansionary effects on the domestic economy. The Swedish economy was isolated from the full impact of the international depression in 1932–3, although unemployment reached high levels in those years.

The rapid rise in unemployment in the early part of the 1930s made unemployment the major economic, social and political issue: a challenge for the economics profession. A new generation of economists, the Stockholm School of Economics, made its breakthrough in the 1930s.[7] The Stockholm School included Bertil Ohlin, Gunnar Myrdal, Erik Lundberg and Erik Lindahl. They attempted to find policies

to reduce unemployment and cyclical disturbances. They favoured active counter-cyclical policies with deficit financing. Their message, which had a strong Keynesian flavour, prior to the publication of Keynes's *General Theory*, attracted wide attention. The influence of the Stockholm School in the 1930s paved the way for the rapid absorption of Keynesian views after World War II. Thus, at a very early stage Sweden became a Keynesian showcase, and it remained so until the end of the 1980s.[8] In fact, the fall of the Bretton Woods system in 1973 allowed the government to experiment with demand policies to a greater extent than during the fixed rate of the Bretton Woods arrangement.

The Social Democrats laid the foundation in the 1930s for their unique dominance of Swedish politics in the postwar period. To the voters they appeared to have brought the country out of the depression.[9] The party remained in power for the rest of the 1930s.

The experience of World War II exerted a profound influence on economic policies for a long time to come. Most importantly, a system of exchange controls was instituted in 1940, and it remained in effect until 1989. The Swedish economy was characterized by far-reaching controls in the setting of wages, prices and rents. A comprehensive housing policy was initiated during the war. The country was isolated from foreign trade, which also facilitated the system of rationing and controls. Business, labour and government cooperated closely in the framing of economic policies.

The regulatory system established during the war was commonly regarded as successful. It was viewed as proof that economic planning and far-reaching government intervention could work in Sweden, and even that this could also be the case under peacetime conditions. It increased public belief in regulation and disbelief in markets, which facilitated the establishment of regulations and controls in the postwar period.

In order to function, government actions such as economic policies have to be acceptable and regarded as legitimate by the public. Sweden's ability to stay out of the war while the rest of Europe was devastated lent legitimacy to government actions, *per se*. This legitimacy also carried over to domestic affairs, contributing to a greater acceptance of government intervention in the economy after the war.[10]

3.2 The return to peace, 1945–51

The second half of the 1940s marks the transition from wartime to peacetime conditions. Domestic policy debate was lively. The postwar programmes of the Social Democrats aimed at far-reaching controls of economic activity, *inter alia*, to maintain the full employment that had been established during the war. Many expected the war to be followed by a depression. For this reason, requests for expansionary economic policies were made. In 1944 parliament adopted a monetary programme for the postwar period. The programme codified a policy of low and stable interest rates and a stable price level.

Actual monetary and fiscal policies turned out to be expansionary in the second half of the 1940s. Inflation, not unemployment as expected, became the major economic policy problem. The Riksbank tried to curb the inflationary impulse by an appreciation in July 1946. This step was eventually counteracted by a devaluation in

1949, as part of a general European depreciation *vis-à-vis* the US dollar. Growth was rapid in 1945–51 as Sweden benefited from the rebuilding of Europe.

3.3 'The Golden Age', 1951–73

Sweden officially entered the Bretton Woods system in 1951. Swedish economic thinking of the day strongly recommended government intervention to stabilize the economy as well as to foster economic growth, primarily by enhancing investment. Fiscal policy was characterized by ambitious attempts to stabilize private investment activity by taxes, subsidies and investment funds. Fiscal policy was regarded as superior to monetary policies, and direct controls and regulations were accepted as part of this outlook. One aspect of the policy mix was the stress on planning. A national medium-term budget was set up at the end of the 1940s, and medium-term plans have been published regularly ever since.

The Riksbank, which was not an independent central bank, aimed at maintaining a 'low' and stable rate of interest.[11] This policy forced the Riksbank to introduce non-market-oriented techniques of monetary control in 1952, since it could not raise its discount rate and thus any other interest rates to an equilibrating level. From then on the Riksbank directly controlled the rate of interest and the flow of credit in the economy behind the insulation furnished by foreign exchange controls. The system of credit controls was extended to the bond market through the Riksbank's control over new issues of bonds. The timing, size and interest rates of every new bond issue had to be approved by the bank – a system that remained in force until the 1980s.

Sweden's growth performance in the 1950s and 1960s was impressive. According to Table 9.8, the growth rate in the 1950s averaged 2.8 per cent per annum, which increased to 4.1 per cent in the 1960s. Unemployment and inflation remained at low levels.

3.4 Shocks and stagflation, 1973–82

The period 1973–82 represents a severe deterioration in Swedish economic performance relative to the OECD average. Economic growth and industrial production declined sharply (see Figures 9.1 and 9.2 above). Wage costs and domestic inflation increased more rapidly then internationally. Domestic saving and investment fell. The soaring budget deficit and a current account deficit were financed by borrowing from abroad. Unemployment, however, remained at a low and stable rate as a result of the economic policies pursued, in particular due to a rapid rise in public employment.

When facing the rise in energy prices and an expected international recession in 1974–5, the government adopted a policy of 'bridging over'. This strategy involved an expansionary fiscal policy that was supposed temporarily to counterbalance the fall in foreign demand. However, the expected international recovery was slow in materializing. Moreover, policy-makers did not recognize that OPEC I was a supply shock and that bridging over meant delaying necessary real adjustments. Instead, Sweden experienced high price and wage inflation, a loss of international

competitiveness, a fall in exports and a rapidly growing deficit on the current account. The expansionary fiscal policy, involving large subsidies to declining industries, contributed to an expanding budget deficit. Government debt as a ratio of gross domestic product rose from 20 per cent in the mid-1970s, peaking at over 60 per cent ten years later.

As a consequence, the Swedish currency, which after 1973 was pegged at a fixed rate to the German mark, was devalued twice in 1977 and tied to a currency basket. After the devaluations, domestic fiscal policy was not made sufficiently contractionary. Public expenditures continued to rise. The liberal minority government, formed a year before the election of 1979, gave its policies an expansionary profile in 1978–9.

OPEC II represented a large contractionary disturbance in 1979–80. At this point no attempt to initiate a new policy of bridging over was made. A new devaluation of the krona took place in August 1981. Eventually, as a response to the large twin deficits, a programme of fiscal restraint was initiated.

3.5 The 'recovery' of the 1980s and its legacy

Having been in opposition since 1976, the Social Democrats returned to power in 1982 with an election programme aimed to counter the cutdowns in government expenditure made by the former centre–liberal government. The new government attempted to 'jump-start' the economy with a devaluation of 16 per cent, which resulted in a sizeable undervaluation of the krona. The aim of the devaluation, which was supposed to be a once-and-for-all measure, was to increase dem Swedish exports and to cause an expenditure switch, moving resources out of the sheltered sector and into the tradables sector. The devaluation was supposed to be followed by a tight monetary and fiscal policy to hold down inflation. This policy was called 'the third way'.

The strategy appeared to work for a short time in 1983–5. Demand for Swedish exports increased. Industrial production expanded. The rise in unemployment was arrested at a level of around 3 per cent. The budget deficit declined. However, from the middle of the 1980s, the third way showed increasing signs of malfunction. The expenditure switch did not take place. The growth in public expenditures continued. Price and wage inflation was not arrested. Swedish industry expanded abroad instead of domestically. The large increase in profits was not accompanied by a rise in domestic investments.

Fiscal measures dominated the mix of economic policy that followed OPEC I. The major task of monetary policy after OPEC I was to finance the twin deficits: the budget deficit and the balance of payments deficit. The Riksbank began by expanding its system of credit controls. However, this process was soon arrested and replaced by financial deregulation, which took off around 1983. A number of selective credit controls were abolished. After abolishing domestic credit controls in 1985, the policy of the Riksbank began to focus solely on stabilizing the exchange rate of the Swedish currency to a basket of currencies,while largely refraining from attempts to regulate the flow of credit and capital domestically.

In the second half of the 1980s, the economy entered a phase of 'overheating', with rapid inflation and a rate of unemployment around 1 per cent. The domestic

deregulation contributed to a boom in the real estate business, causing rapid asset inflation. The stock market displayed impressive growth. New financial techniques and instruments emerged as part of the deregulation.

In the middle of the 1980s, Swedish Keynesianism came under heavy attack, in particular by the SNS Economic Policy Group.[12] Low economic growth and high inflation in the 1970s and early 1980s were regarded as a dismal record and were blamed on the Keynesian strategy. With the international trend towards a greater emphasis on the role of expectations and the credibility of policy commitments, the prevailing Keynesian ideology came increasingly under fire. Furthermore, the public choice school introduced ideas that contributed to a sceptical attitude towards discretionary economic policy.

Influenced by the emergence of a new policy view, the Social Democratic government made its prime goal a low rate of inflation at the expense of full employment, and this was made official in the budget of 1991. A number of supply-side measures were taken, most importantly a major tax reform aimed at increasing the incentive to work and save. In the spring of 1991, the Swedish currency was tied unilaterally to the ECU. And in the summer of 1991, Sweden applied for EC membership.

The 1986–90 period of overheating created a major loss in competitiveness. When the Social Democrats lost the election of 1991, the Riksbank and the new government tried to avoid a new devaluation by a number of austerity measures. Open unemployment rose from 2 per cent to 7·8 per cent in a short time. The Swedish financial system suffered from a severe deflation in asset values, and was hit by a deep crisis. In the aftermath of the European currency crises in the autumn of 1992, the Riksbank was forced eventually to let the krona float, marking the end of the era of a fixed exchange rate.

4 Ultimate causes of Swedish economic performance

At the end of the Second World War, Swedish income and productivity levels were very high compared to the OECD average. Sweden managed to retain its lead *vis-à-vis* an average of other industrialized countries in the 1950s and 1960s. However, since then relative economic decline has set in, and in the last two decades Sweden has been overtaken by several other countries. This development motivates a focus on aspects where Sweden differs from other countries to a large extent. In this section we deal with a number of factors that may help explain the Swedish growth performance.

4.1 Catching-up effect

Long-run economic growth among OECD countries has been influenced by a catching-up effect, particularly during the 1950s and 1960s (Dowrick and Nguyen, 1989; Abramovitz, 1989). The catching-up hypothesis maintains that, when the productivity level is higher in one or more countries than in a number of other countries, the latter have the opportunity to embark on a catching-up process by applying superior production techniques transferred from the more advanced economies. Hence, we should expect technologically less advanced countries to grow faster than the technologically leading country or countries.

In 1950, Sweden had the second highest productivity level of all European countries (Maddison, 1982), which no doubt gave the country less scope for catching up. Crafts (1992) estimates that Sweden's potential growth bonus from catching up in GDP per hour worked was 0.8 percentage points per annum below the average for European countries during the 1950s, and 0.2 percentage points below the European average in the period 1960–73. Dowrick and Nguyen (1989) have estimated that Sweden's smaller scope for catching up, *ceteris paribus*, led to a lower rate of growth in GDP per capita of about 0.8 percentage points during the period 1950–73 compared to the OECD average.

Hence, there is little doubt that catching up was an important factor in Sweden's relative growth performance in the 1950s and 1960s, but is it a valid partial explanation for the bleak performance of the economy after 1970? Although it was straightforward at the end of World War II to assume that the USA was the technological leader in virtually all industries, over the years this assumption became increasingly questionable. Now technological leadership in different industries is likely to be spread among different countries.

In order to account for this possibility, it is necessary to use disaggregated data. This is done by Hansson and Henrekson (1994a), who test for the existence of catching up in fourteen OECD countries during the period 1970–85, using a data set disaggregated into fourteen different industries (the OECD Intersectoral Data Bank, ISDB). There are nine industries in the tradables sector and five industries in the non-tradables sector. In no instance do they find catching up in the tradables sector, and if a uniform catching-up effect in both sectors is assumed, no significant catching up is found. This is the case regardless of whether the catching-up potential is measured by the ratio of a country's labour productivity or total factor productivity (TFP) to that of the leading country.

The results indicate that technological catching up in the tradables sector, although it was probably important in the 1950s and 1960s, seems to have lost importance after 1970. This indicates that, in the part of the economy facing direct competition from foreign rivals, the potential for fast TFP growth based on catching up was exhausted by 1970. Based on the results of the Hansson and Henrekson study, we conclude that the catching-up effect can be reasonably dismissed as an explanation for Sweden's slow growth since 1970 compared to the OECD average.

4.2 Saving and physical capital formation

4.2.1 Saving

The development of saving is shown in Table 9.9. Saving rose between the 1950s and the 1960s, and has thereafter declined sharply. Average gross saving as a share of GDP declined by almost 8 percentage points between the period 1960–9 and the period 1980–92. Average net saving fell by over 10 percentage points, reflecting a more rapid rate of capital consumption during the latter period. The magnitude of the drop can be explained by the deterioration of public saving. Although the magnitude of the decline in household saving is smaller, the secular decline in this category throughout the period under study is noteworthy.

Table 9.9. *Saving as a percentage of GDP: Sweden, 1950–92 (annual averages)*

	1950–9	1960–9	1970–9	1980–92
Gross saving	21.9	24.8	21.8	17.0
Household	7.2	6.4	4.6	3.6
Corporate	10.3	9.2	9.6	11.9
Consolidated government	4.4	9.2	7.5	1.5
of which: social insurance	0.1	2.6	4.1	2.7
Net saving	11.9	14.7	11.5	4.3
Household	4.5	3.6	2.1	0.9
Corporate	4.0	2.6	3.0	3.7
Consolidated government	3.4	8.4	6.4	−0.4
of which: social insurance	0.0	2.6	4.1	2.8

Source: National Accounts.

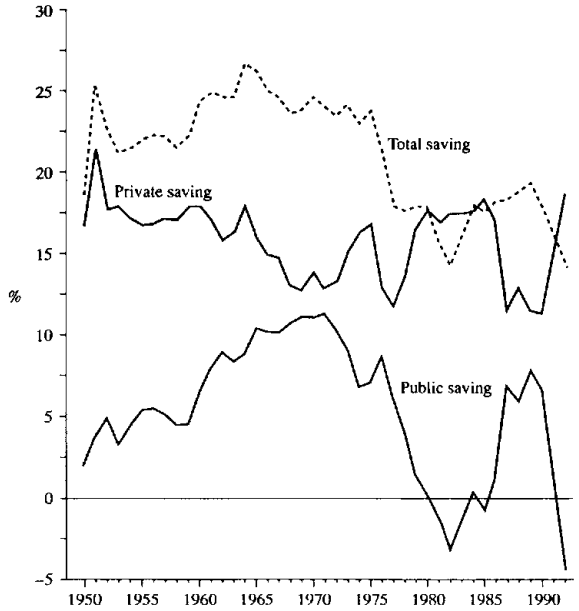
Public saving began to increase rapidly after 1960 due to the establishment of the national pension system (the AP fund) in 1959, according to Figure 9.4. The build-up of reserves within the AP system had a dramatic impact on the capital market. Saving in the social insurance system increased from zero in 1959 to 4.7 per cent of GDP in 1972.

While gross public saving rose from around 3 per cent of GDP to over 10 per cent, private saving fell at the same time from around 17 per cent to a little over 12 per cent. Part of the reduction in private saving reflects the reduced saving for retirement purposes. In addition, a number of policy measures – in effect, institutions that are often seen as the core of Swedish social policies – all served to reduce the precautionary motive as well as the life-cycle consumption-smoothing motive for private saving.

The laws which most probably had this impact on private saving are: general child allowance (which went into effect in 1947); work disability insurance (1954); social assistance (1956); the national pension scheme (1959); student support (1964); supplemental old-age pension (1969); housing allowances (1969); general unemployment insurance (1973); general dental insurance (1974); paid parental leave (1974); adult education support (1976); support for partial retirement (1976); and extensions of and increases in child allowances, parental leave allowances, partial retirement allowances, child care allowances, etc. (1985–).

No attempt is made to quantify these schemes here. The point is that since they are in practice available to all, and since they mostly provide significant replacement of forgone income, they reduce incentives for private individuals to save. The term 'insurance' for these programmes is something of a misnomer. First, the link between fees and benefits is often weak. Second, the schemes are mostly compulsory, with fees being payable by the employer, leaving the individual no choice about whether to participate or not. Adding to this list free schooling, up to and including tertiary education, as well as almost free hospital care, further diminishes incentives for private saving.

The inflationary environment of the 1970s and 1980s provided additional saving disincentives. Nominal earnings on the return on capital were taxed at the same rate



Private saving: household, corporate.
Public saving: government, social insurance.

Source: National Accounts.

Figure 9.4 Private and public sector gross saving as a percentage of GDP: Sweden, 1950–92

as earned income until the late 1980s. As a result of rapid inflation and high marginal taxes, the after-tax real return on saving was negative for many categories of saving and for most income groups throughout the period. Similarly, interest payments for all kinds of borrowing (mortgages as well as borrowing for consumption) were fully deductible against earned income until the end of the 1980s, implying that the real cost of borrowing was negative. Understandably, demand for borrowing was high. The deregulation of capital markets during the 1980s removed the last constraints on household borrowing. Household saving fell to an all-time low of −2.4 per cent of GDP in 1988 and 1989 (net household saving; gross saving was approximately zero).

Against this background, the dramatic increase in private saving between 1989 and 1992 is understandable. Today the perceived ability of the national pension system to fulfil its future obligations is increasingly questioned. Compensation

levels have been reduced in sick leave allowances and unemployment allowances. Rapid disinflation since early 1991 has increased pre-tax real interest to significant positive levels. Post-tax returns to saving (and costs of borrowing) have risen additionally as a result of the reduction in taxation of capital income (and deductibility of capital expenditures) to 30 per cent.

Thus, public commitments reduced private incentives to save throughout the postwar period. Public finances, on the other hand, began deteriorating after the early 1970s. Increasing payments of benefits have reduced saving in the social insurance system by about 2 percentage points as a share of GDP since the peak in 1972. Public saving excluding social insurance has deteriorated even more rapidly. As can be seen from Figure 9.4, the recent increase in private saving has not been sufficient to substitute for this drop, and total saving is currently at its lowest level for the postwar period.

4.2.2 Physical capital formation

Throughout the postwar period, the process of capital formation has been the outcome of compromises between market-oriented philosophies and a strong political move to direct investment activity.

A heated debate about central planning took place immediately following the war, but the push for planning was eventually abandoned. However, Social Democratic policy-makers proposed methods to influence investment decisions that had fundamental effects on capital formation in the ensuing decades.[13] The strategy of the Social Democrats, in the words of Pontusson (1992: 11), was 'to influence investment decisions in ways that respected the autonomy of corporate managers and owners of capital'.

At least four policy developments during the 1950s are of central importance for the understanding of this statement. The first is the implementation of the policy of 'low interest rates'. Interest rates were kept at levels below market equilibrium. This made it necessary to maintain binding credit rationing, which involved active central bank monitoring of commercial bank activities (Jonung, 1993).

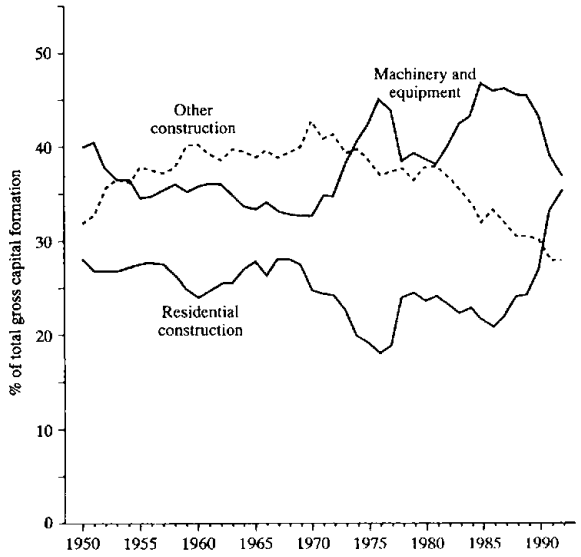
The second policy development is the system of 'investment funds'. This instrument was introduced before World War II, but increased in importance from the mid-1950s. It allowed firms to reduce taxable profits by setting aside current earnings for future investment. The government announced the periods when firms were allowed to draw from the investment funds. The counterpart of the policy was high levels of taxation of corporate profits and dividend payments. Taken together, the investment funds and corporate taxation served to lock in profits in firms, as was the intention (Bergström and Södersten, 1990). Combined with credit controls, this amounted to a system with a bias towards the expansion of existing firms rather than the establishment of new ones.

A third important development was the 'solidaristic wage policy' of the Rehn–Meidner model, described elsewhere in this paper. Since it contributed to a flat-tening of wage levels across firms and sectors, it discouraged investment in low-productivity activities. Through this mechanism the policy influenced capital formation. However, it is unclear to what extent the Rehn–Meidner model reached its goal of releasing resources for higher-productivity investments. Since there was already a bias towards existing firms, this model contributed to making resources

Table 9.10. *Gross investment as a share of GDP: Sweden, 1950–89 (annual averages per decade)*

	Public	Private	Machinery and equipment	Residential	Other construction	Total
1950–9	3.0	17.8	7.6	5.6	7.6	20.8
1960–9	4.1	19.9	8.2	6.3	9.4	24.0
1970–9	3.7	17.5	8.3	4.7	8.3	21.2
1980–9	2.7	16.3	8.2	4.6	6.3	19.0

Source: National Accounts.



Gross investment, current prices.

Source: National Accounts.

Figure 9.5 Swedish capital formation by category, 1950–92

available for surviving firms and for public investments. However, the sources of finance for potential high-productive investment outside existing enterprises were limited.

Gross investment as a share of GDP averaged 20.8 per cent during the 1950s (see Table 9.10). Investment in machinery and equipment fell gradually as a share of

total investment from about 40 per cent in the early part of the decade to around 35 per cent towards the end of the decade (see Figure 9.5). Public investment rose from about 2 per cent of GDP to 4 per cent during the same period.

A fourth important policy development was the introduction of the national pension fund system (AP funds) discussed in the previous section. During the 1960s, public intervention in capital formation became increasingly direct. The high saving rate of the social insurance system manifested itself in rapidly growing stocks of assets in the AP funds. The AP funds were subject to politically determined rules concerning the composition of the portfolio, and priority was given to the housing sector, the government sector and the export industry. In the early 1970s, the AP fund system accounted for 35 per cent of the total supply of credit. The AP funds lent to industry through intermediate credit institutions. At the end of 1976, these funds accounted for 69 per cent of the long-term liabilities of these institutions (Pontusson, 1992).

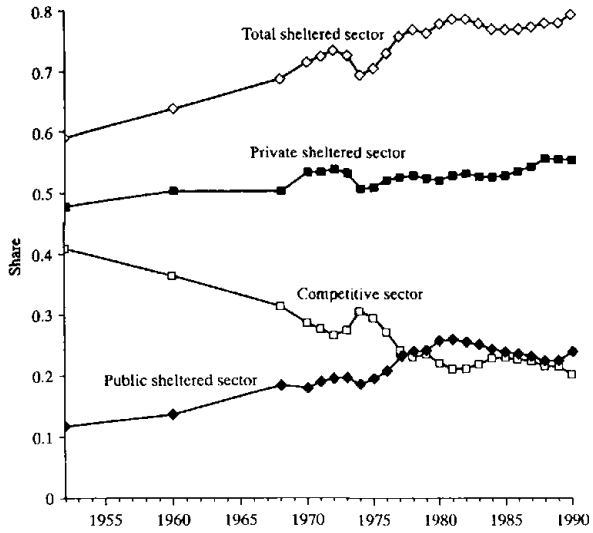
Englund (1993) argues that capital was directed into the housing sector from as early as the 1950s, while the policy of 'low interest' was still maintained. Beginning in 1965, the process was accelerated through the 'million programme' – a political programme to construct one million new housing units by 1974. In the years 1967–72, 100 000 units were constructed each year, and residential investment accounted for between 5 and 6 per cent of GDP. During that period, about 50 per cent of net lending by the AP funds went to housing construction (Pontusson, 1992).

Total gross investment as a share of GDP fell by some 5 percentage points between the 1960s and the 1980s (see Table 9.10). Part of the explanation for this was that investment was unusually high during the 1960s, in particular because of the abundance of funds made available through public saving. In addition to the housing investment already mentioned, ambitious public investment programmes were undertaken during that decade.

To sum up, the credit market was regulated from the beginning of the postwar period (Jonung, 1993). The importance of public policy both in the mobilization of savings and in their transformation into capital became pronounced during the period. The gradual socialization of saving (and later, dissaving) was a strong tendency. A potential justification for this policy was that it was a way of channelling saving into investment, which gave higher economic returns than if investment decisions were left to private agents. However, the reduction of total factor productivity in the post-1970 period indicates that this was not successful.

De Long and Summers (1991) have provided evidence that there is a strong correlation between investment in machinery and equipment and economic growth. A change in the composition of investment away from equipment would show up in basic two-factor growth accounting as a reduction in total factor productivity. Could this be part of the explanation for the Swedish productivity slowdown? Judging from Table 9.10, this is not the case. Although there have been significant year-to-year variations in investment in machinery and equipment, annual averages as a share of GDP have remained almost unchanged for three decades. Thus, in Sweden's case, the explanation has to be sought elsewhere.

Another possible explanation for the growth slowdown is that the capital stock is sufficiently large for marginal returns on capital to be smaller than elsewhere. However, this is a variant of the catch-up hypothesis, and does not explain why Sweden has been overtaken by a number of countries.



Source: Edgren *et al.* (1970) and the EFO-grouped National Accounts.

Figure 9.6 The competitive and sheltered sectors of the Swedish economy, 1952–90

A tentative conclusion from the experience of saving and capital formation is that the cause of the Swedish slowdown is not so much a question of a reduction in levels of potentially productive investment. Rather the cause may be that the political system has increasingly determined the mobilization of saving and the allocation of investable resources.

4.3 Competitive pressures

In analyses of the Swedish economy, following Edgren *et al.* (1970), a distinction is often made between the competitive and sheltered sectors of the economy. The competitive sector consists of the export and import-competing industries, whereas the sheltered sector comprises all non-tradables industries. The sheltered sector is at times further divided into the private and the public sheltered sectors. The share of the competitive sector has been halved since the early 1950s, while the public sheltered sector increased dramatically up to the early 1980s (Figure 9.6). During the 1980s, the private sheltered sector increased relative to the two other sectors.

But does this change in the composition of the economy have any bearing on economic growth? It is clear from Table 9.11 that productivity growth was roughly twice as large in the competitive sector as in the sheltered sector in the 1950s and 1960s. In this period, the competitive sector constituted on average approximately

Table 9.11. *Growth in productivity per hour worked in the competitive and sheltered sectors of the Swedish economy, 1951–90*

Period	Competitive	Private sheltered	Total sheltered
1951–5	3.0	2.4	1.9
1956–60	4.9	2.3	1.9
1961–5	7.9	3.6	3.2
1966–8	4.8	2.8	2.5
1951–68	5.7	3.1	2.6
1971–7	3.0	4.0	..
1978–86	3.2	2.3	–
1987–91	2.3	1.3	..
1971–91	2.6	3.0	–

Sources: Edgren *et al.* (1970) for 1951–68; the EFO-grouped National Accounts compiled by Statistics Sweden for 1970–91.

one-third of the economy, and therefore its strong productivity growth contributed sizeably to a high overall growth. Since the 1970s, the competitive sector has declined in relative importance, but more importantly, after 1970 its rate of productivity growth was no longer higher than in the private sheltered sector. This is all the more remarkable since average productivity growth in the (secularly shrinking) competitive sector has been bolstered by a positive Salter effect: that is, average productivity has partly increased as a result of closures of the least efficient plants and firms.

Thus, productivity growth in the competitive sector has not exceeded that of the private sheltered sector since 1970, even though employment there has declined. This may indicate that exposure to international competition did not continue to function as a forceful productivity-enhancing mechanism in the way it was conceived by the main architects of the Swedish model. According to Flam *et al.* (1993), there is considerable evidence of lack of competition in tradables as well. Many industries are highly concentrated, and sometimes domestic markets are segmented from international markets even in traded goods.

The lack of competition could have been corrected by policy measures. But the government has had a permissive attitude towards low competition within the country, generally resorting to the argument that the country's openness is sufficient to impose discipline on Swedish industry, at least in the competitive sector, but also indirectly in the sheltered sector. However, this mechanism has probably been largely ineffective since the late 1960s. One important reason may be the effect found by Wissén (1982), that after 1967 the real product wage exceeded the level consistent with long-run equilibrium. Somewhat simplified, this implies that the EFO relationship was fulfilled *ex post* but not *ex ante*, which led to an excessive shrinkage of the industrial sector. In particular, Wissén notes that the (erroneous) EFO assumption that productivity growth is independent of the growth of the real product wage has had detrimental effects.

As a response to the excessive contraction of the competitive sector, policy-makers

hastened the expansion of public sector employment in order to avoid unemployment (Söderström and Viotti, 1979). This was particularly prevalent during the 1970s (see Figure 9.7). In the 1980s an expansionary economic policy allowed the private service sector to grow at a rate that proved unsustainable (Henrekson, 1991). In all, we deem that these features of economic policy have lowered the transformation pressure and hence the rate of economic growth.

4.4 *Effects of stabilization and labour market policies*

The priorities and the strategies of macroeconomic policies have differed from those of the average OECD country in a number of respects. Most remarkably, Sweden maintained a low rate of unemployment in the 1970s and 1980s, while unemployment in the OECD area increased significantly. At the same time, the rate of inflation remained above the OECD average after OPEC I. During these decades, Swedish relative growth performance deteriorated as well. To what extent – if any – is there a connection between the design of short-run stabilization policies, including labour market policies, and long-run economic growth in the Swedish economy?[14]

The effects of monetary and fiscal policies on growth should be considered in the context of the unique labour market policies and labour market institutions that emerged in Sweden in the postwar period. Wage setting has been strongly centralized. Incomes policies have not played any major role. The degree of unionization is the highest in the OECD for all segments of the labour market. Government expenditures for labour market programmes (public relief work, labour market training, disability programmes, youth programmes) are substantial. The unemployed are expected actively to move to a new job or to be retrained. Cash support is avoided. In the 1989/90 fiscal year, when unemployment was as low as 1.5 per cent, expenditures on active labour market measures were equal to approximately 1.5 per cent of GDP. In 1992/3, with unemployment at almost 7 per cent, these expenditures were equal to more than 3 per cent of GDP.

The labour market policy was originally based on the Rehn–Meidner programme developed at the end of the 1940s and in the early 1950s. This programme, which aimed to reconcile full employment with a low rate of inflation, consisted of the following basic elements:[15]

- A restrictive fiscal and monetary policy to curtail inflation and high profits.
- A solidaristic wage policy, defined as equal pay for equal work across firms and branches, regardless of productivity and profit developments.
- An 'active' and 'ambitious' labour market policy that could quickly move those who became unemployed, as a consequence of the solidaristic wage policy and the restrictive demand policy, towards new employment.

The Rehn–Meidner programme should be regarded as a model for structural change and economic growth.[16] The goal was to eliminate low-productivity firms and branches, and move labour into firms and industries with high productivity, thus improving economic growth as well as paying a higher wage rate.

The heyday of the Rehn–Meidner policy was the end of the 1950s and the early 1960s, but later it started to run into trouble for a number of reasons. Popular resentment against structural changes increased. Regional policies counteracted the

mobility necessary for the model to work. Rapid growth in transfer payments reduced the incentives for people to move and accept new jobs. Fiscal and monetary policies became more expansionary than the model allowed. In the 1970s, a number of laws went into force that aimed at inducing firms to not lay off workers with low productivity.

The scope and aims of labour market policies were thus gradually increased. Following OPEC I, firms were supported by subsidies to maintain their workforce. As a consequence of low economic growth, the labour market programmes tended to expand throughout the 1980s, reaching a record level in the early 1990s.

The prime goal of economic policies in Sweden, in particular fiscal, monetary and labour market policies, has been to establish and maintain full employment in the short run, basically regardless of the type of disturbances and shocks the economy is subjected to. Sweden has been a 'high-pressure economy', maintaining overfull employment – that is, unemployment below the NAIRU level - for long periods of time.[17]

Overfull employment lowers productivity growth in various ways. It reduces the allocative efficiency of the labour market. It strengthens the bargaining power of unions, while making employers less prone to resist wage demands. Wage drift becomes stronger in periods of high demand pressure. Thus, it contributes to high inflation and recurrent cost crises, which *per se* may lower economic growth.

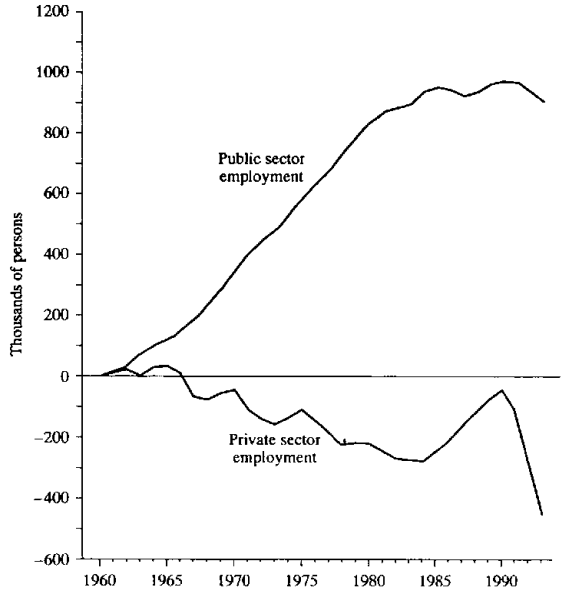
Due to the high priority given to full employment, Swedish economic policies have accommodated the wage agreements reached between the unions and employers, even if the contract wages have been above the level consistent with the fixed exchange rate: that is, above the rate warranted by the EFO model.[18] This response by the policy authorities has run counter to the original Rehn–Meidner programme, which was based on a restrictive aggregate demand policy – not an accommodating one. The accommodation policy seriously undermined wage discipline. Labour unions tended to ask for and successfully obtain large nominal wage increases, expecting the government to guarantee full employment by adjusting its policies accordingly.

Accommodation policies developed in several stages during the postwar period. Initially, the process started as an element of the Rehn–Meidner programme. The basic idea was to squeeze firms and industries with low productivity, forcing them out of business. With the help of an active labour market policy, those who became unemployed would be transferred to jobs in firms with high productivity. However, as the growth in the number of jobs in the manufacturing sector ceased in the mid-1960s, the public sector in effect became the employer of last resort.

According to this interpretation, the solidaristic wage policy contributed to the decline of the Swedish manufacturing industry, in particular of the consumption industry. It also contributed to the growth of the public sector, since there was no private industry that could re-employ those pushed out of the labour force due to high wage demands.

This development is reflected in Figure 9.7, which displays cumulative changes in public and private sector employment in the period 1960–92. During these years, private employment fell by close to 300 000, while public sector employment rose by over 900 000, and most of this expansion took place during the 1960s and 1970s.

To the extent that the productivity of new jobs within the public sector was lower than that of the old jobs disappearing from the private sector – and much suggests



Source: National Accounts.

Figure 9.7 Cumulative changes of public and private employment in Sweden, 1960–93

that this was the case – this form of accommodating employment policy reduced overall growth in the economy.

The rise in employment within the public sector was influenced by other factors as well, most importantly by women entering the labour force in large numbers.[19] Due to the ideological outlook of the Social Democrats, a number of services began to be supplied by the public sector, instead of the private sector. This expansion in the job opportunities of women made the labour force participation rates of Swedish women the highest among the OECD countries.[20]

The second phase of the accommodation strategy started in the second half of the 1970s. At this time, the large budget deficit prevented a continuation of the expansion of public employment as a means of counteracting the negative disturbances after OPEC I. Internal accommodation was then combined and eventually replaced by external accommodation: that is, by exchange rate policies.

The devaluations of 1976,1977,1981 and 1982 were all part of a policy of regaining the international competitiveness that had been lost due to domestic wage

accommodation. The devaluations had detrimental effects on productivity and growth because they reduced the pressure on firms to innovate and upgrade their products and productive capacity.[21] The pressure on companies to improve productivity growth was reduced when it became common knowledge that wage and cost increases would eventually be accommodated by devaluations.[22] Furthermore, the devaluations were beneficial for established labour-intensive industries. Thus, they preserved the existing industrial structure.[23]

The devaluations were intended to accomplish a reswitching of expenditures, increasing the size of the tradables sector at the expense of the sheltered sector. Such a structural shift did not materialize in the 1970s or 1980s, however, since the political process resisted a fall in the relative size of the sheltered sector.

To sum up, in the short run, the devaluations were successful in raising profitability in the tradables sector. In the long run, they did not bring about the structural adjustment needed in order to increase the size of the tradables sector, nor did they improve productivity growth.

A third and final stage in the evolution of the full employment accommodation policy may be envisaged. At the end of the 1980s there was a political consensus that Sweden should not use devaluations or increases in public employment to meet future negative shocks. Thus, the Riksbank and the government made a serious attempt in 1990–2 to maintain the fixed rate for the krona in spite of a large loss of competitiveness due to the overheating of the late 1980s. This policy was abandoned in November 1992 after a loss in industrial production larger than after OPEC I and II.[24]

The full employment policy was associated with a high inflation. To the extent that high inflation *per se* contributes to low economic growth, as suggested, *inter alia*, by De Long and Summers (1992), Swedish growth was reduced in this way by the policy mix.[25]

Hence, the design of stabilization policies after the fall of the Bretton Woods system probably reduced economic growth. The long-run effects on the supply side of short-run demand policies appear to have been detrimental to economic performance.[26]

The low unemployment rate in Sweden (see Table 9.8) has often been attributed to successful labour market policies. This view has increasingly come under question. Calmfors (1993) is unable to find evidence that centralized wage bargaining and active labour market policy provide any favourable effects on unemployment. On the contrary, the policies may only have contributed to wage pressure. According to Calmfors (1993), the main cause of the lower unemployment in Sweden than in the OECD during the 1980s was Sweden's more accommodative fiscal and monetary policy.

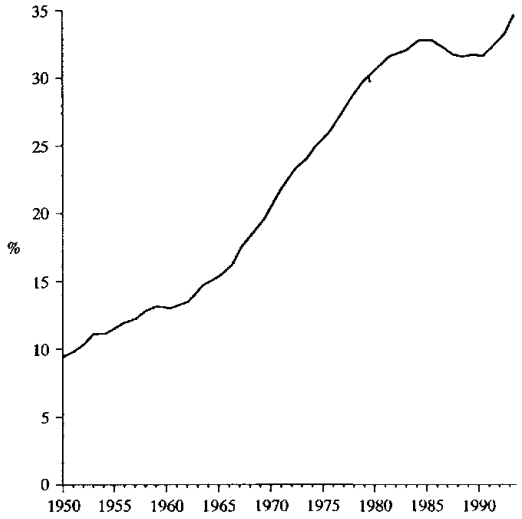
4.5 *Effects of public sector expansion*

One salient feature of the Swedish economy is the exceptionally large public sector. Since the late 1960s, Sweden has had the largest public sector, measured as a share of GDP, in the OECD. In particular, government consumption as a share of GDP has become extremely high (close to 30 per cent of GDP), which has resulted in a very large share of public employment (Figure 9.8). Three measures of government size

Table 9.12. *The public sector share as a percentage of GDP in Sweden and in the OECD, selected dates*

		Total outlays	Consumption	Current receipts
Sweden	1960	31.1	15.8	32.1
	1971	45.3	22.5	49.4
	1983	66.0	28.7	59.6
	1992	67.3	27.8	60.2
Total OECD	1960	28.0	14.4	27.6
	1971	32.9	16.0	31.1
	1983	41.5	17.5	35.8
	1992	41.2	17.7	37.5

Sources: OECD, *Economic Outlook* and *Historical Statistics.*



Source: Statistics Sweden.

Figure 9.8 Public employment as a share of total employment in Sweden, 1950–93

relative to GDP in Sweden compared to the OECD average are presented in Table 9.12 for selected years.

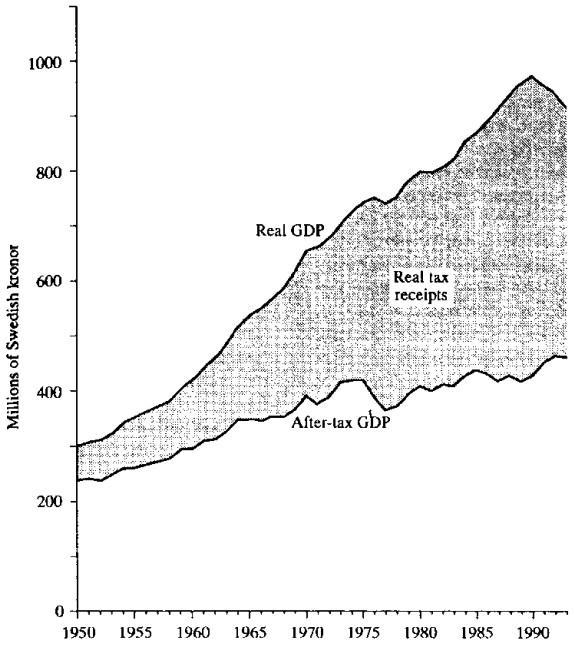
In 1960, Sweden was not an exceptional case. The relative size of the public sector was only marginally above the OECD average.[27] But over the following quarter of a century this situation changed dramatically. Total government expenditures as a share of GDP were almost 25 percentage points above the OECD average by 1983,

and the share of government consumption expenditures in GDP was two-thirds larger than the OECD average. During the latter half of the 1980s, this difference diminished somewhat on the expenditure side, but measured from the income side, the public sector remained at a level that was more than 20 percentage points larger as a share of GDP than the OECD average. In the early 1990s, the expenditure ratio exploded, largely reflecting the abysmal downturn of the economy. In 1993, the government expenditure ratio exceeded 73 per cent of GDP.

Does government expenditure have a positive or negative effect on economic growth? A priori, we do not know.[28] Barro (1989) and Engen and Skinner (1992) have used the Summers–Heston database to test for the effect of government expenditure on growth. Barro finds that the level of government consumption excluding education and defence as a share of GDP has a negative effect on the growth of GDP per capita. On the other hand, he finds no effect of government investment, whereas educational expenditure has a positive effect. Engen and Skinner use an explicit production function approach, where they attempt to identify separate effects of expenditure and taxation. The main finding is that a balanced budget increase in the government spending share by 10 percentage points reduces GDP growth by 1.4 percentage points. A number of studies find that the level of government as a share of national income has a significantly negative effect on GDP growth for OECD countries (see, for example, Smith, 1975; Saunders, 1985; Landau, 1983; Cameron, 1982).

In sum, the level of government consumption appears to have a fairly robust negative effect on economic growth, in particular in the richer countries. For other types of expenditure the results are less consistent, although it is fair to say that expenditure for investment and educational purposes has at least no negative effect on growth. The measured effects also seem to differ between developed and developing countries. Negative effects of government expenditure on economic growth are more prevalent among the rich than among the poor countries.

In a recent study, Hansson and Henrekson (1994c) argue that it is more appropriate to focus on the effect of government expenditure on the non-government sector, specifically on the rate of growth of TFP. In their study, they use a production function approach based on disaggregated data. Account is taken of a potential catching-up effect. The study covers fourteen industries in fourteen OECD countries during the period 1970–87. The results indicate that the levels of government consumption, transfers and total spending as a share of GDP have a strongly negative effect on the growth of TFP in the non-government sector. Educational spending has a positive effect, and the level of government investment has no effect. Increases in the level of government consumption, transfers and total outlays are estimated to lead to a decrease in the annual rate of growth of TFP in the non-government sector of 1.4, 0.7 and 0.8 per cent per annum, respectively. Since the level of transfers and consumption expenditure exceed the OECD average by approximately 10 percentage points and total outlays exceed the OECD average by roughly 20 percentage points, the results from the Hansson and Henrekson study would indicate that Sweden's large government sector could account for a decrease in TFP growth of approximately 1.5 per cent per annum compared to the OECD average.



GDP in 1985 prices.

Source: National Accounts.

Figure 9.9 GDP and taxation in Sweden, 1950–93

4.6 Taxation

Rising levels of taxation have been an integral part of Swedish economic policy. The rate of increase of taxes as a share of GDP has since the mid-1960s been considerably higher in Sweden than in the OECD as a whole. In the early postwar period, the levels of taxation were similar. In 1950, Swedish tax receipts corresponded to about 20 per cent of GDP. By 1960 they had grown to 27 per cent, as compared with the OECD average of just under 25 per cent. By the late 1970s, the OECD average had just exceeded 30 per cent, and in the early 1990s it is still slightly less than 40 per cent. In Sweden, tax receipts increased monotonically to reach 51 per cent in 1977, and have since fluctuated between 50 and 56 per cent of GDP.

Real tax receipts rose from 60.6 billion kronor in 1950 (in 1985 prices) to 484 billion in 1982, an annual average growth rate of 5.1 per cent. This can be compared

Table 9.13. *Total tax wedge on labour income: Sweden, 1952–92*

Year	Average earner	White collar
1952	n.a.	37.8
1955	40.2	42.2
1960	47.9	52.2
1962	n.a.	52.4
1965	55.3	59.1
1967	n.a.	64.3
1970	62.3	68.2
1975	69.6	74.7
1980	72.4	81.7
1982	73.7	79.8
1985	71.4	72.9
1988	73.0	79.2
1989	73.3	79.3
1990	71.5	n.a.
1991	63.4	69.0
1992	60.9	n.a.

Source: Calculations made by Ingemar Hansson (average earner) and Gunnar Du Rietz (white collar).

to the average growth rate of GDP of 2.7 per cent over the same period. In Figure 9.9, GDP is divided into real taxes and 'after-tax' GDP. The latter is not a standard concept. It should be noted that it is not the same as disposable income, since a large share of tax receipts is returned to taxpayers in the form of transfers. However, the relevance of 'after-tax' GDP is that it indicates the share of national income which is neither consumed nor redistributed by the public sector.

This measure of 'after-tax' GDP grew by about 50 per cent from 1950 to the mid-1970s. In the following two decades it has grown very little, reflecting increasing government ambitions combined with a slowdown in growth. During this period, most of the increase in national income has, through taxation, been either redistributed or used for public consumption.

The egalitarian goals of postwar economic policies have in part been expressed through the redistribution of income through high marginal taxes in higher income brackets.[29] However, the marginal tax on labour income has been high and increasing for average salaries as well. In Table 9.13, two different calculations of total marginal taxes are presented.

The methodology varies somewhat between the two calculations, but the general pattern is clear. Both sources calculate taxes on marginal income increases and take into account direct wage taxes as well as wage fees payable by employers. Such fees have added up to approximately 50 per cent of the wage bill. In his calculations, Hansson corrects for the fact that wage fees are to be seen partly as insurance premia, partly as outright taxes, which should account for his consistently lower calculation of the tax wedge. Also, his calculations are based on a median earner for the various years, while Du Rietz's calculations are based on a typical earner.

Although the effects of taxation on behaviour have been much studied, both theoretically and empirically, the results are not conclusive. In the traditional theoretical models, the dynamic effects of taxation are limited to steady-state levels of wages, the capital–labour ratio, etc., while growth rates remain unchanged, as shown in Atkinson and Stiglitz (1980). The advent of endogenous growth models has made it possible to consider theoretically growth effects of taxation.

There is considerable debate also on the static welfare effects of taxation. Hansson (1984), using Swedish data, estimates the excess burden of raising additional public funds for redistributive purposes, and finds that increases in marginal taxes need to generate benefits of between 1.5 and 7 times the amount raised.

Gustafsson and Klevmarken (1993), in a survey of the incentive effects of taxes and transfers in Sweden, present results from studies of income taxation and various transfer systems such as unemployment insurance, sickness benefits and family allowances. Their final conclusion is that the evidence on labour supply effects of the welfare system is incomplete.

From a growth perspective, however, the question is different. The issue is not limited to one of labour supply or static welfare costs, but rather concerns whether the system of taxes and transfers has contributed to an inefficient allocation of resources, and whether tax wedge-induced differences between private and social returns on labour and saving have reduced the growth performance of the economy. If it is the case that high levels of marginal and average taxation stifle growth, this should be evident in Sweden, given that Sweden's tax burden is particularly high in an international perspective. This is not inconsistent with Sweden's growth experience over the past quarter century. The deterioration of the relative growth performance coincides with the divergence in the growth in tax burdens between Sweden and the OECD.

It can be noted that Gustafsson and Klevmarken (1993) conclude that the most important consequence of recent reductions in marginal taxes may not be an increase in labour supply, but 'although there is even less empirical evidence about the incentives to invest in human capital, increased investments in human capital might well become the most important result of the Swedish tax reform'. This leads us to questions concerning the relationship between human capital formation and growth.

4.7 Human capital formation

In the literature on economic growth, human capital has been assigned several roles. First, it is often seen as a separate factor of production (see, for example, Mankiw *et al.*, 1992). Second, it is a source of innovative activity, and therefore an important input in the production of basic knowledge (Nelson and Phelps, 1966; Verspagen, 1991). Third, a larger stock of human capital makes it easier for a country to absorb the new products or ideas that have been discovered elsewhere, and hence the catching-up potential may be better exploited (Hansson and Henrekson, 1994b). Fourth, there may be an external effect of human capital: that is, human capital embodied in a worker may raise the productivity of colleagues (Lucas, 1988).

In cross-country studies of economic growth, human capital has also proven to have significant explanatory power (see, for example, Barro, 1991; Mankiw *et al.*,

Table 9.14. *Share of labour force having completed secondary education, 1987 (%)*

	Sweden	Germany	UK	USA	Japan
Total	55.9	77.5	43.8	83.6	70.8
Manufacturing	49.9	73.1	42.5	79.4	67.9

Source: Landell and Victorsson (1991).

Table 9.15. *Share of labour force having completed tertiary education, 1987 (%)*

	Sweden	Germany	UK	USA	Japan
Total	11.1	6.3	17.0	23.4	14.5
Manufacturing	4.9	2.7	10.4	18.1	11.7

Source: Landell and Victorsson (1991).

1992). Although the accumulation of human capital is of vital importance for economic growth, it is as yet unclear how important each of the hypothesized mechanisms are. In our analysis we take as given that human capital is important for growth, rather than specifying exactly through which routes.

Directly comparable data on the level and rate of human capital accumulation are scant. However, the data presented in Tables 9.14 and 9.15 do not indicate that the educational level in Sweden is high relative to the technologically most advanced countries. In particular, in manufacturing the educational level is comparatively low. A more sophisticated attempt to rank the Swedish education level compared to eleven other countries has recently been made by Sohlman (1992), in which she ranks Sweden in seventh place. But it is well known that international comparisons of educational levels are imperfect measures of human capital, and therefore a more direct test of the rate of human capital accumulation in Sweden relative to other OECD countries may be obtained by studying changes in the pattern of specialization. Hansson and Lundberg (1991a) show that during the 1980s the structure of industrial production was shifted towards industries with a low level of human and physical capital per employed. Lundberg (1992) examines how the use of human capital per unit of output has changed in Swedish imports and exports during the period 1969–89. The exports/imports ratio remained virtually unchanged during the 1970s, but at the end of the 1970s imports started becoming relatively more human capital intensive. These studies show that Sweden appears to have successively lost its comparative advantage in human capital-intensive production.

According to human capital theory (Becker, 1964; Schultz, 1960), the decision to acquire human capital should be analysed as an individual investment decision. In other words, the individual decision to acquire and use human capital is governed by the rate of return on human capital. Thus, one hypothesis is that the incentives to accumulate human capital have fallen since the 1960s.

If the direct costs of education are small and the individual has an infinite time horizon, the rate of return is approximately equal to the educational premium: that is, the relative increase in the wage that can be attributed to an additional year of schooling (Willis, 1986). The educational premium is conventionally estimated

Table 9.16. *Before-tax educational premiums (Mincerian rates of return) in Sweden, 1968–91 (%)*

Study	1968	1974	1981	1984	1991
Björklund (1986)	7.8	4.3	3.5	3.9	
Fornwall (1991)				4.2[a]	
				2.0[b]	
Palme and Wright (1992)	7.6		3.6		3.5

[a] Concerns individuals born before 1950.
[b] Concerns individuals born in 1950 or later.

using Mincer's (1974) method. A number of such studies have been performed on Swedish data for selected years during the period 1968–91. The results, reported in Table 9.16, are noteworthy. First, it is obvious that the educational premium fell dramatically from the end of the 1960s to the early part of the 1980s. Since then the rate of return has stabilized at a low level according to Palme and Wright (1992). Edin and Holmlund (1992), on the hand, find an increase in educational premiums during the latter half of the 1980s and early 1990s, when they compare the evolution of high school/compulsory education and college/high school premiums. Unfortunately, their study is not directly comparable to the studies cited in Table 9.16, since they allow for differential effects of each additional year of schooling. Second, the sharp increase in the college/high school premium experienced in the USA between 1979 and 1986 (Murphy and Welch, 1989) cannot be detected in Sweden. We conclude that the rate of return on education fell to very low levels in the early 1980s, and as Fornwall (1991) shows, the fall was larger for young people. But there is evidence indicating an increase in the late 1980s.

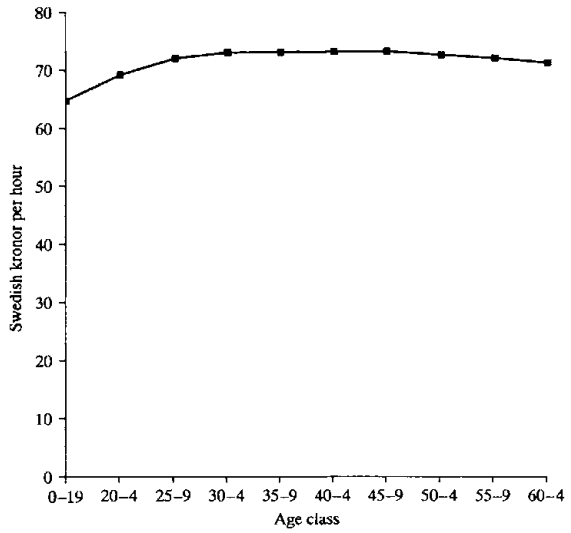
Why did the rate of return on schooling decrease so much, and what effect did this have on the willingness to invest in human capital? Since the Swedish labour force cannot be said to have considerably more schooling than in other countries, it can probably not be explained by a lower scarcity value. Another possibility is that the successful implementation of the solidaristic wage policy resulted in lower educational premiums. Some support for this thesis is given by Hibbs (1990). A third potential explanation for the decline in the rates of return is that the quality of education has deteriorated, despite the fact that Sweden has one of the highest ratios of educational expenditure to GDP of all OECD countries (Fägerlind, 1991). This may very well be the case, particularly considering that the incentives to acquire human capital have become weaker. If the rate of return on schooling is low, the individual may adjust to this situation to some extent by consuming education rather than investing in human capital. Hence, it is quite likely that human capital investment is endogenous, in the sense that the individuals have adjusted their actual investment in human capital (as opposed to the number of years of schooling) to the institutionally given rate of return.[30]

Empirical research also shows that there is a positive correlation between formal education and informal human capital investment in the form of on-the-job training (OJT), etc. (Mincer, 1984). At the same time, strong incentives for OJT may be a partial substitute for weak incentives to formal education, and the wage structure

Table 9.17. *Percentage increase in the hourly wage attributable to an additional year of labour market experience (for an individual with no initial experience): Sweden, 1968–91*

Study	1968	1974	1981	1984	1986	1988	1991
Björklund (1986)	2.4	1.1	1.6	1.5			
Edin and Holmlund (1992)	3.7	2.8	2.3	2.2	1.9	1.9	2.4

Note: The two studies differ regarding the inclusion of other explanatory variables. The most notable difference is that Edin and Holmlund do not include age among the explanatory variables. This explains why their estimates are larger, although the general pattern is similar.



Source: Verkstadsföreningen.

Figure 9.10 Average hourly wages for blue-collar workers in Swedish manufacturing, 1990: II

may also encourage intensive and efficient use of the individual's human capital. As shown theoretically by Lazear (1979, 1981) a steep age/wage profile, often called a deferred payment contract, may enhance productivity. Such a wage profile can be important in motivating employees to deliver maximum effort, to continue to invest in human capital and to accept technical change that increases the employer's chances of long-run survival (Henrekson, 1993).

Substantial evidence indicates that the age/wage profile has become considerably flatter since the 1960s. Jonsson and Siven (1986) and Skedinger (1991) document a considerable reduction in the effect of age and experience on the wage for both blue-collar and white-collar workers. This development is also evident from two econometric studies reported in Table 9.17. In particular, the relative wage for youths has increased markedly. Edin and Holmlund (1992) show that, holding other factors constant, the wage of 18–19-year-olds rose from 55 per cent of the level for 35–44-year-olds in 1968 to 80 per cent in 1986. For blue-collar workers in manufacturing, in particular, the age/wage profile has become strikingly flat, as Figure 9.10 illustrates.

The flat age/wage profile is in stark contrast to the conditions in many other countries, notably Japan (Mincer and Higuchi, 1988; Andersson, 1992). Mincer and Higuchi also show that firms in Japan with a steeper age/wage profile have a higher rate of productivity growth. In recent years the intensified phasing out of old tayloristically organized production lines has increased the need for continuous OJT in order to achieve a high rate of productivity growth.

Investment in human capital is crucial for economic growth. The analysis in this section has shown that the incentives for individuals to invest in human capital, formally or informally, declined in Sweden over time and became very low during the 1970s and 1980s. These incentives were further weakened by the high marginal tax rates on wage income. Furthermore, when the solidaristic wage policy was gradually reformulated into a desire for a general levelling of wages across professions (rather than equal pay for equal work), this had the unanticipated side-effect of a decline in the rate of return on investment in human capital. This is consistent with a specialization away from human capital-intensive commodities. The available evidence suggests that this could be an important explanation for Sweden's slow growth since 1970.

4.8 Investment in R & D

Technical change is not readily incorporated into the basic neoclassical growth model. Technical change is fundamentally a disequilibrium process for which the tools of equilibrium economics are ill-suited. The Schumpeterian concept of creative destruction, in which firms compete with each other to introduce new products, provides more appropriate insights. Creative destruction as a force behind economic growth, with endogenization of technical change, has been formalized only in recent years (see, in particular, Romer 1990; Grossman and Helpman, 1991).

Segerstrom (1991) develops a model in which R & D is either innovative or imitative. Firms engage in R & D activities either to invent new products or processes, or to imitate existing products or processes. To see creative destruction as a process in which firms attempt to obtain monopoly rents either by reducing costs relative to competitors or by developing methods to exploit unmet demands (innovation), or else catch up (imitation), has become a useful but problematic approach. Because of the externalities involved in the innovative process, models tend to reach the result that firms' R & D spending is less than the socially optimal level. There has so far been little empirical testing to evaluate the appropriateness of different theoretical models.

Caballero and Jaffe (1993) study the process empirically, using 'data on patents and patent citations as empirical counterparts of new ideas and knowledge spillovers, respectively'. In their paper, the authors estimate rates of creative destruction and of technological obsolescence for the USA. However, this is not followed up by an estimate of the relationship between R & D activities and economic growth. Lichtenberg (1992) estimates the returns to investment in R & D investments in a cross-country study based on a methodology similar to that of Mankiw *et al.* (1992). However, the results seem tentative. Data of varying quality have been used, and estimated returns to investment in R & D are unreasonably high.

Thus, the current state of thinking on investment in R & D and economic growth provides some, but limited, guidance as to the best way of approaching the issue in order to throw light on the Swedish growth experience.

The two most striking facts about R & D expenditures in Sweden are their high levels compared to other OECD countries, especially the smaller ones, and their rapid increase between 1970 and the late 1980s. In 1989, expenditure on R & D in the business enterprise sector was close to 2.8 per cent of the domestic product of industry. The same year, countries such as the USA, Japan and West Germany had shares between 2.0 and 2.5 per cent, while smaller countries such as Norway, Denmark, the Netherlands, Austria and Belgium all had shares between 1.2 and 1.6 per cent (Ohlsson, 1992).

Relative to other OECD countries, expenditure in Sweden was only average in 1970, when it corresponded to 1.2 per cent. Thus, it more than doubled during the period. The increase in Swedish expenditure on R & D in the business sector far exceeded that of other countries. Interestingly, the share of product R & D (as distinct from process R & D) is high by international standards. This could indicate that Swedish firms tend to focus comparatively more on innovation than on imitation.

A priori, one would expect that the growing importance of R & D would give a payoff in the form of more rapid economic growth. In Sweden's case, however, the obvious question becomes: how are the significant R & D investments consistent with the slow growth performance of the post-1970 period?

Ohlsson (1992) notes that, after taking various lags into account, there tends to be a strong correlation between R & D spending and growth in industrial production in individual countries. However, as has been observed previously (see Figure 9.1), industrial production in Sweden fell significantly relative to the OECD average during the post-1970 period.

Ohlsson (1992) analyses various potential explanations for this weak relationship between R & D spending and growth in industrial production. He rejects the hypothesis that R & D spending is unproductive: the size of spending predicts well the number of US patents per capita. Instead, he finds that the most likely explanation is that Swedish enterprises do not tend to exploit their inventions domestically, within the country. In fact, net exports of licences during the period have been exceptional.

In a non-distorted environment, the sale of licences rather than the domestic exploitation of inventions should not be detrimental to growth. Under the twin assumptions that the revealed behaviour maximizes the firm's profits, and that all the returns of R & D activities are appropriated by the firm, the firm's behaviour is economically efficient.

However, there are some reasons why firm behaviour may be inefficient. First, the cash-flow consequences of the sale of licences and the implementation of ideas are quite different. In an environment where firm behaviour is short-termist, and geared towards quick payoffs, there would be an excessive share of licence sales. However, the short-termist hypothesis seems to be contradicted by the very fact that R & D spending rapidly increased during the period.

Second, the tendency to license the results of R & D may be seen as an indication of higher costs of implementation in Sweden. This hypothesis is consistent with the previously observed high labour costs and high taxation, which increase the return requirements on domestic implementation relative to the export of licences.

Third, a consequence of the transfer of licences may be a reduced spillover rate. Given the externalities, the individual firm is unable to appropriate the entire returns on R & D. Such externalities may exist, for instance, if new products or processes that result from R & D activities are eventually copied by competitors, or serve as incentives for further improvements by competitors. In either case, the pressure on costs and continuous improvements in quality would be expected to promote growth. The observation that Swedish firms concentrate more on product than process R & D is consistent with this line of reasoning.

In conclusion, the evidence suggests that Sweden has a comparative advantage in R & D activities, but that various mechanisms obstruct the economy from fully benefiting from the potential externalities. The process of creative destruction is stifled.

4.9 Sclerosis

The disappointing performance of most European economies following OPEC I has inspired various explanations based on the concept of sclerosis. Sclerosis stands for the gradual emergence of overall inflexibility and lack of adaptability, which eventually shows up in slow economic growth. However, there is no commonly accepted definition of the concept.

The metaphors of 'institutional sclerosis' and 'institutional arthritis' were used in the late 1970s and early 1980s by Mancur Olson (e.g. 1983). In the early 1980s, Lindbeck (e.g. 1983: 17) applied a similar concept, emphasizing the negative effects on aggregate economic performance of government interventions in a large number of separate markets and sectors:

> When all these various system changes [i.e policy-induced changes], in the form of market distortions, disincentives, inflexibilities and uncertainties, are considered, it is tempting to speak of emerging arteriosclerosis of Western economic systems, accentuated by the resistance to change and the fights about income shares, by organised interest groups.

The term 'Eurosclerosis' has been widely applied to the social ageing process in Europe in the 1980s, which is assumed to account for the poor growth performance of Europe compared to countries in many other parts of the world. The Swedish form of sclerosis has recently been described as 'Suedosclerosis' (see Ståhl and Wickman, 1993).[31]

Corporativism and rent-seeking behaviour of interest groups are stressed by some observers as an important source of sclerosis. This is the main theme of

Mancur Olson's analysis.[32] Sclerosis arises through government policies influenced by rent seeking. These policies create an incentive structure and institutions that give rise to inflexibilites. Thus sclerosis may be found in all markets and sectors, perhaps most markedly in the labour market, where the strong position given to labour unions through labour market policies, the rules for collective agreements, the reservation wage set by the transfer system, etc. have reduced flexibility and competition, notably in many European economies.[33]

The debate on sclerosis is a fairly recent one in Sweden, involving primarily commentators on current economic and political issues.[34] The issue of sclerosis has so far not induced major research efforts by economic historians or economists. One reason for this is that the concept of Suedosclerosis has been used in a fairly loose sense, which has prevented empirical work. Another reason is that Swedish economists as a rule have been sceptical towards public choice analysis, as it runs counter to the message of orthodox welfare theory, which has held a strong position in Sweden. However, many of the arguments presented in our previous analysis of the ultimate determinants of Sweden's relatively slow economic growth in the 1970s and 1980s may be viewed as aspects of a sclerosis process.

5 Conclusions

Beginning in the late 1860s, the Swedish economy entered a process of rapid modernization, industrialization and internationalization, and one hundred years later Sweden had been transformed into one of the richest countries in the world. Since the early 1970s, however, Sweden's growth performance has been poor compared to other industrialized countries. However they are measured, Swedish annual growth rates have been roughly 1 percentage point below the OECD average over the last quarter century. This unfavourable development has become particularly pronounced in the recession of the early 1990s. Industrial production, which before the 1970s grew at the same rate in Sweden as the OECD average, has since then exhibited a much slower growth rate. From a growth perspective, this pattern makes Sweden a highly interesting case.

Swedish postwar economic development is commonly discussed under the heading of the Swedish model. This model is based on the idea of an active state with a broad mandate to intervene to influence the allocation and distribution of resources. The dominant role of the Social Democratic Party since the early 1930s has been a necessary condition for the implementation of this model. Its ideology has been based on a mix of corporativism, welfarism, non-market-oriented regulations, full employment, a large public sector and strong all-encompassing unions.

The core question of this study is this: what factors account for the post-1970 deterioration of Swedish economic performance? Or, why has the Swedish model been less successful in generating economic growth than other industrialized countries?

A possible hypothesis to account for the growth slowdown is that it is the result of a catching-up effect, a convergence of productivity levels among industrialized economies. The fact that many countries have overtaken Sweden suggests that this hypothesis is insufficient. Several studies verify that the Swedish growth performance cannot be explained in terms of a catch-up process. In consequence, after rejecting the catch-up hypothesis, we focus on several alternative explanations, which we

regard as potential 'ultimate' determinants of economic growth.

Theory suggests that saving and investment play an important role in the process of economic growth, and therefore we examine capital formation. We note that aggregate saving became significantly socialized during the 1960s as a result of the establishment of the National Pension Fund. The increasing importance of politically controlled investment from the 1960s onwards, substituting for private investment, combined with far-reaching controls on the flow of credit and capital, probably reduced the efficiency of capital formation.

The Swedish economy is to a large extent sheltered from competitive pressures. The share of the 'sheltered' sector of the economy grew from around 60 per cent in the early 1950s to approximately 80 per cent in the early 1990s. Much of the expansion during the 1980s took place in the private sheltered sector, especially construction. The decline of the competitive sector is likely to have contributed to a stifling of competitive pressures in the economy.

Short-run stabilization measures have had long-term structural consequences, primarily due to their focus on holding down unemployment by a policy of accommodation, largely based on devaluations and expansion of public employment. The main vehicle for maintaining low unemployment has been the expansion of public employment – not the design of labour market policies. A particularly rapid increase in the public employment share occurred in the 1970s. The higher rate of public employment creation in Sweden compared to the OECD during the 1970s and 1980s coincides with the growth slowdown. A corollary is that there is scant empirical support for the commonly held view that labour market policies have contributed positively to economic growth.

The public sector has grown rapidly in recent decades and is exceptionally large. Between 1960 and 1990, total outlays of the public sector grew by 30 percentage points of GDP, or twice the OECD total. Estimates indicate that since 1970, Swedish public expenditure growth may account for a decrease in TFP growth of approximately 1.5 per cent per annum compared to the OECD average. From 1950 to 1992, real tax receipts grew at a rate almost double GDP growth. The total marginal tax on labour income grew from around 40 per cent in the early 1950s to between 70 and 80 per cent in the 1980s. Calculations from the mid-1980s show that the resource costs of marginal tax increases at these rates are between 1.5 and 7 times the resources raised.

Human capital formation is assigned an important role in recent theories of economic growth. Incentives for human capital formation deteriorated, however, over the past decades. From the end of the 1960s to the early part of the 1980s, the educational premium fell dramatically. Also, the age/wage profile has become flatter since the 1970s, which has reduced incentives for accumulation of human capital in the form of on-the-job training.

Investments in R & D account for a larger share of business enterprise expenditure in Sweden than in other OECD countries. This share increased rapidly between 1970 and 1989. However, although the R & D activities have resulted in a number of US patents commensurate with expenditure, there has apparently not been a payoff in terms of growing industrial production. Instead, firms have licensed out production abroad. The most likely reason for this is a comparatively higher cost of implementation in Sweden.

To summarize this review of domestic factors that contributed to the decline in the growth rate in the 1970s and 1980s, the rise and subsequent size of political intervention in the Swedish economy has gradually reduced the efficiency of and the returns on work, saving and investment decisions. This has resulted both from an increasingly distorted incentive structure and from the fact that a growing fraction of economic decisions are taken in the public rather than private sphere, or are influenced by an institutional structure with strong non-market elements. The public sector has acted as an increasingly opaque veil between price signals and economic decisions, thus reducing the ability of the economy to adapt to shocks and disturbances. The timing of the deterioration of economic performance is accounted for by the accumulation of structural weaknesses that to some extent were already exposed before the oil shocks of the 1970s, but whose severity increased following the shocks (sclerosis).

In addition to these domestic reasons for the reduced growth performance of the economy, we suggest that crucial changes in the conditions regarding production and the international division of labour have occurred, and that these changes disfavoured the Swedish model. Comparative advantages that Sweden enjoyed in the nineteenth century – in the form of a high educational level in the population at large and a rich supply of raw materials, which were in great demand and which stimulated the growth of a technologically advanced investment goods industry – laid the foundation for a century of sustained economic growth at a rapid rate. Over time, other factors have become increasingly important as driving forces of economic growth. Comparative advantages are continuously acquired through investment in human capital, R & D, product development, organizational change and large overall flexibility. A corollary of this change is that microeconomic conditions are gaining in importance compared to macroeconomic conditions. The institutional set-up that became known as 'the Swedish model' was less effective in providing a growth-inducing framework when faced with the disturbances following OPEC I and II.

In his study of the long-term dynamics of the Swedish model, Mancur Olson (1990) attempts to provide answers to the question 'Why isn't the Swedish economy performing worse than it is?' Our answer is that the economy has, in fact, been performing increasingly poorly over time, and that these weaknesses have only gradually become apparent. The major message of this study is that explanations for the comparatively low growth rate in Sweden during the last twenty-five years can be found in the design of economic policies and institutions. This design has not fostered an incentive structure conducive to rapid economic growth.

NOTES

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1 For an examination of Sweden's long-run economic performance, see Jörberg (1991).

2 The Swedish model and its recent development is considered, *inter alia*, by Delsen and van Veen (1992), Bergström (1992), Lundberg (1985), Weaver (1987) and Samuelsson (1988). Recently, the government commissioned a major inquiry on medium-term economic policy. The final report (SOU, 1993), also known as the Lindbeck Report, contains substantial analysis and critique of the model (see Lindbeck *et al.*, 1994). The 'welfare state' more generally defined is discussed in Lindbeck (1988).

3 See Lindbeck (1975) for a review of Swedish economic policies in the 1950s and 1960s.

4 See, for example, Lindbeck (1983) for a discussion of the productivity slowdown during the 1970s.

5 The EFO model was based on the Norwegian Aukrust model. The two models are commonly classified as the Scandinavian model of inflation.

6 The competitive sector is exposed to international competition. Thus, one can use tradables and non-tradables as synonyms for competitive and sheltered, respectively.

7 Traditionally, Swedish economists have exercised a profound influence on the framing of economic policies. Perhaps economists have had a larger impact on policy making in Sweden than in any other country. This pattern goes back to the founding fathers of Swedish economics: that is, to Knut Wicksell, Gustav Cassel and Eli Heckscher, active during the first three decades of the twentieth century. They made economics a well-known and respected subject in the eyes of the public. They engaged in the policy debate and were highly influential in this respect. See Jonung (1991).

8 Martin (1979: 93) suggests that 'Sweden was the first country in which a Keynesian pattern of policy was implemented.'

9 The economic impact of the counter-cyclical fiscal measures in the 1930s was small, but the intellectual impact was great. The devaluation of 1931, when Sweden left the gold standard, in combination with a programme of price stabilization, explains why the Swedish economy fared fairly well in the 1930s. See Jonung (1979).

10 This argument is stressed by Olson (1982), who suggests that it is easier for countries that lose wars to deregulate their economies than countries that win wars.

11 Belief in the beneficial effects of low interest rates characterized economic thinking. Several arguments were presented in support of low interest rates: a rise in rates would have adverse effects on the distribution of income by raising rents and it might reduce the volume of investments. The low interest rate doctrine was a major driving force behind the credit and foreign exchange controls. They aimed primarily at keeping the rate below the equilibrium rate. During most of the years 1950–80 *ex post* real after-tax rates were negative, suggesting that the economic policy in a wide sense transferred wealth from saving units to investors.

12 The SNS Economic Policy Group publishes an annual report evaluating economic policies and economic development in Sweden since 1974. The reports have invariably been given a great deal of attention, and their impact on the policy debate has been substantial.

13 Gunnar Myrdal (1944) proposed a policy of 'high taxes and low interest'. In this influential paper, Myrdal suggested that high taxes on corporate profits would reduce the demand for capital. This would make it possible to maintain a low

interest rate in order to reduce the cost of borrowing for public investment and for housing. The role of the interest rate as a mechanism for allocating capital was reduced significantly.

14 As a rule, demand management is analysed in a short-run context, separate from considerations regarding the secular behaviour of the economy. Growth is determined by supply-side factors, independent of stabilization policies. The Swedish case calls into question this dichotomy.

15 The Rehn–Meidner model is discussed by Lundberg (1985) and Bergström (1992).

16 In order to function, the model requires a strong central union, which most likely explains why LO embraced it.

17 This was most clearly the case during the period of overheating at the end of the 1980s. Swedish industry had difficulties in expanding at home and, therefore, chose to invest abroad during these years. This is an example of industrial 'crowding out'. The movement out of Sweden was influenced by other factors as well.

18 For a description of the Swedish process of wage formation, see Calmfors and Forslund (1990).

19 To our knowledge no estimates exist of the displacement effect of the Rehn–Meidner model. It probably contributed to a deindustrialization process in Sweden, but this process would have taken place regardless of the Rehn–Meidner programme.

20 There are no studies of the effects on growth and productivity resulting from the high labour force participation rate of women in Sweden. A detailed analysis of the labour force participation of men and women in Sweden in a comparative perspective is provided by Jonung and Persson (1993).

21 This line of critique of the policy of devaluations is developed by Henrekson (1991).

22 Expectations of future devaluations remained in force throughout the 1980s after the devaluation of 1982. They contributed to the depreciation of the krona in November 1992.

23 For the UK record, see Crafts (1993).

24 A group of US economists has proposed that Sweden should avoid a fixed exchange rate policy because such a policy is not consistent with domestic priorities regarding full employment. See Bosworth and Rivlin (1987).

25 Swedish stabilization policy also reduced capital formation severely in the 1970s by the large increase in the budget deficit. This effect is analysed elsewhere.

26 See also the conclusion in OECD (1992: 65) on the Swedish economy: 'However, the macroeconomic and public employment policies which appear to have shielded the labour market from deflation may well have undermined the long-run dynamism and efficiency of the economy.'

27 Going back to 1950, the ratio of total public expenditure to GDP was among the lowest of all industrial countries at roughly 26 per cent, the same level as Switzerland and the United States.

28 See Hansson and Henrekson (1994c) for an overview of the arguments put forward and for a more extensive review of empirical studies.

29 Calculations by Björklund and Fritzell (1992) indicate that the Gini coefficient calculated from individual annual incomes is, in fact, considerably lower after tax than before tax. In Sweden this measure of income dispersion was reduced by 20 per cent as a result of redistributive taxes in the second half of the 1980s. In the USA, the corresponding reduction was between 4 and 6 per cent.

30 Although it should be noted that Edin and Holmlund (1992) argue that the decline in the rate of return to education can be explained by an increased supply of individuals with a tertiary education. However, we find it unlikely that the general tendency towards a sharp drop in education premiums during the 1970s was not to a large extent influenced by ideological factors. This does not preclude the possibility that a free-market wage formation would have led to lower education premiums as well, but we deem it likely that the size of the drop would have been substantially smaller.

31 Meyerson (1985) provided an early account of the sclerosis of the Swedish economy.

32 Olson (1982) stressed the growth-retarding effects of interest groups. Their attempts to accomplish redistribution in their favour reduce the efficiency of the economy. However, large encompassing organizations, such as SAF and LO in Sweden, may actually be beneficial for growth under certain circumstances (see Olson, 1990).

33 The term 'Eurosclerosis' has been applied to the European labour market to describe its lack of flexibility compared to the US labour market,

34 A common feature of the various policy proposals inspired by sclerosis is that reform should not be made in one area or market; it should be a 'broad' programme covering many sectors, in particular concerning the institutional and political framework. This is, for example, the argument of Lindbeck *et al.* (1994).

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