

## **Villy Bergström: Can we be best again? The importance of capital formation for long-term growth**

Speech by Mr Villy Bergström, Deputy Governor of Sveriges Riksbank, at a meeting in Kiruna, 8 December 2003.

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I would like to begin by thanking you for the invitation to come here and speak before the local group of the Center for Business and Policy Studies.

I intend to speak today about the factors that affect a country's long-term growth capacity. To this end, I will focus on the role played in this regard by capital formation, but will also discuss other important factors such as changes in both the labour supply and the age structure of the population in the coming years. Like many other countries, Sweden is facing the problem of an ageing population. This is going to place a greater burden on the public finances and will entail increased demands on the working population to forgo consumption in favour of supporting the elderly. Meanwhile, labour force growth in Sweden will be slower in the years ahead. Moreover, the rate of net investment in Sweden is low in comparison to previous periods. This affects Sweden's long-term growth capacity and thereby also the prosperity of people in general. It is these topics that I shall be concentrating on in my speech today. But allow me first to begin with a few words about the Riksbank's role in this context.

### **The Riksbank has little opportunity to influence Sweden's long-term growth capacity**

As everyone knows, one of the Riksbank's statutory remits is to promote price stability. A large part of the Riksbank's operations revolve around this remit. In order to be successful in this regard, it is important that the process of wage formation works well and that both the central and local governments manage their finances in a responsible manner. Relatively stable inflation in recent years and expectations of future inflation around the Riksbank's target of 2 per cent indicate that the Bank has been successful in its conduct of monetary policy in recent years. This success has been largely attributable to increased stability in economic policy in general; in particular, fiscal policy has been governed by a ceiling for central government expenditure and a surplus target for the public finances. Furthermore, partly as a result of greater credibility for the Riksbank's inflation target, the social partners have managed to halve the rate of wage increases from the levels that were common in the 1970s and 1980s. These circumstances have formed the environment in which the Riksbank has acted in recent years.

The very point of giving the Riksbank's objective of price stability high priority in economic policy is that a stable economic environment fosters economic growth and high employment. The experiences from the beginning of the 1970s and 20 years thereafter indicate that high inflation, devaluations that fuelled economic growth followed by austerity measures to prevent overheating, entailed weak productivity growth and a drop in the standard of living compared with other industrialised nations.

The Riksbank can help to create a favourable environment for rapid economic growth but the growth itself must come from other sources than monetary policy. Nevertheless, the Riksbank has every reason to take an interest in these sources of economic growth since fast growth facilitates the Riksbank's task. This task involves tightening or easing monetary policy to regulate demand, so that it keeps even pace with our country's growth capacity. In that way inflation is stabilised. A higher potential rate of growth allows scope for higher aggregate demand without giving rise to inflationary pressures.

### **Long-term growth and demand**

The Riksbank distinguishes between two concepts of growth: potential growth and demand-driven growth. Potential growth is the rate of growth that is sustainable in the long term, taking account of resource growth in the economy and how effectively these resources are employed. Thus, you could say that potential growth is determined by a combination of labour force growth, investment activity and scientific and technological progress. The latter determines how efficiently the labour force and capital can be utilised. None of these fundamental factors can be influenced by the Riksbank other than temporarily. The Riksbank's work is, however, affected by potential growth. The higher the

long-term sustainable rate of growth, the easier it is for us to balance aggregate demand in the economy so that it coincides with what is available for household consumption, business investment and the needs of the public sector. So monetary policy cannot raise the potential growth rate but, in a worst case scenario, as we witnessed during the 1970s and 1980s, it can worsen our chances of attaining a high potential growth rate by affecting demand in the economy in the wrong way.

Consequently, on an abstract level, the “formula” for economic growth is very simple. It is the weighted sum of labour force growth and capital growth as well as technological progress.

However, when we compare growth between different countries, it is not that interesting to note that a country has high growth because its labour force is growing fast. It is the standard of living that is of interest and this does not have to improve just because the population and labour force are growing. The important issue instead is how quickly a country’s production grows per capita and this leads us into concepts such as productivity in a broad sense. For productivity is just that - production per capita. It can be measured per inhabitant, per employee or per hour worked. The concepts are closely related. One interesting observation is that the United States’ rapid growth in recent years has been attributable mainly to high labour force growth. Productivity in the United States, however, has not been faster than in Sweden.

During the first half of the 1990s, Swedish productivity growth was among the most vigorous in the world, which resulted in increased prosperity for Swedish citizens. During the 1950s and 1960s, productivity growth in Sweden increased further. This was partly due to considerable reconstruction needs following the Second World War and the robust demand that resulted from this. In addition, trade was liberalised during this period which led to stiffer competition, and - most of all - capital formation was rapid. The favourable productivity growth during these years furthered Sweden’s prosperity. In 1970, Sweden was in fourth place in the OECD league in terms of GDP per capita, which means that it was one of the four richest countries in the world.

During the period that followed, however, productivity growth was appreciably slower and it is widely known that the 1970s and 1980s were bad periods for Sweden. Today, Sweden finds itself in 17th place in the OECD league and is below the average for industrialised countries. What caused this decline then? It may be relevant to look at the reasons behind Sweden’s weak growth during the 20 years up to the mid 1990s. These are mistakes that we need to avoid in the future.

When I discuss this unsuccessful period in Sweden I will mainly focus on productivity since it is the measure that determines our standard of living. We then have to somewhat modify the growth formula that I mentioned earlier. The basic growth mechanism for our standard of living, i.e. labour productivity, now becomes the weighted sum of capital growth per capita and technological progress. Given a constant age structure of the population, and an evenly balanced age pyramid, the basic formula for growth in the standard of living can also be expressed as the weighted sum of capital growth per employee and technological progress (a complication that I will return to later is that the age structure is not constant).

### **Capital formation contributed to lower productivity growth in Sweden**

Why did it go badly for Sweden during the 1970s and 1980s? First, it should be noted that the majority of industrialised nations suffered a drop in productivity growth from the beginning of the 1970s. This was due to the supply shock associated with the first oil crisis, when the price of oil tripled, followed by a second oil crisis at the end of the 1970s when the price once again increased threefold but this time from a higher level. As we know, the price of oil affects many parts of the economy. Oil is used as energy for transport and heating purposes and its price therefore has a direct impact on the costs of these. Moreover, firms’ costs are affected since oil products are often used as intermediate inputs in, for example, different plastic products. So all countries encountered problems due to the oil supply shock, but productivity growth declined more in Sweden than in other countries.

Many explanations have been put forward for this. Social benefits were improved during this time. Compensation for sick leave was raised and the qualifying day was abolished. Furthermore, legislation was introduced for job security and co-determination in the workplace. Many believe that firms’ costs rose and that production was disrupted by sick leave and other kinds of leaves of absence that had also been introduced. These factors are difficult to assess but it is likely that they contributed. At the same time as the oil price shock, the Swedish economy was also hit by a domestic cost crisis which resulted in a decline in production. In spite of this, firms retained employees to a greater extent than in other countries, which led to lower growth in labour productivity.

Moreover, in the mid 1970s, there were dramatic changes in capital formation, which undoubtedly explain some of the slowdown in productivity growth. Of course, this capital growth is in turn the result of a variety of economic conditions for enterprise and the public sector, including those mentioned earlier.

For the most part we speak about investment activity in our country in gross terms. This concept also includes such investment that is needed to replace the depreciation that occurs during all production. When we exclude the part of gross investment that is made to compensate for this depreciation, we are left with net investment. Net investment is the new additions to the capital that is already employed in production in the form of plant, machinery and buildings.

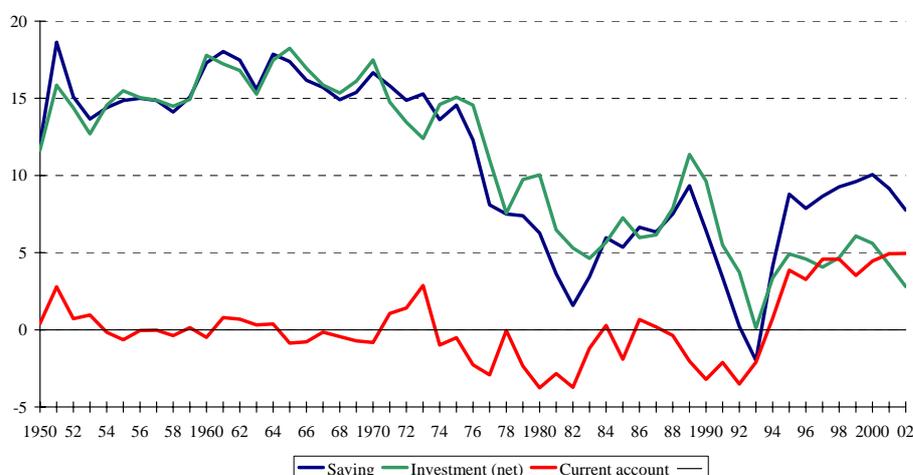
So, as regards net investment, in other words the contribution to capital formation, this was more than halved as a percentage of GDP in the mid 1970s. This meant two things.

First, capital growth per employee, or per hour worked, fell. For a number of years, investment dropped so much that capital per employee in the business sector actually declined. In other words, each employee worked with less capital. In order to illustrate what capital per employee means, we can take an extreme example, namely what a lone worker can accomplish when digging with a spade and iron bar compared with a hydraulic excavator. The latter represents considerably more capital per employee than just digging with a spade, as well as substantially less physical effort for the worker. Therefore, we should expect productivity growth to fall when capital per employee declines.

But there is also another indirect effect. With new capital, new technology is introduced into the production process. Investment is the means for putting new technology and research into practical production. Through investment, new methods and new technology are ushered into production processes. For this reason, we should expect less technological progress in production when capital formation falls. An excavator is so much more than a large number of spades; it represents entirely new technology that affects the whole production process.

Figure 1 shows that capital formation, net investment as a percentage of GDP, fell in the mid 1970s - from around 15 per cent of GDP to about 5 per cent. So growth in capital per employee was slower from the mid 1970s, and new technology was not employed to the same extent as before. Such a dramatic change has to have consequences. This is evident in the bottom curve showing the current account, which was almost always in deficit during the 20 years after 1975 because Sweden's saving declined even more than investment. It was only during the first half of the 1990s that a surplus was restored, as a result of a weaker krona, higher capital formation and even higher saving.

Figure 1. Saving, investment(net) and the current account, as percentage of disposable income



Source: Associate Professor Lennart Berg, Uppsala University

In order to illustrate the importance of the lower capital formation, I have compiled productivity data from the period when the marked change took place (see Table 1). In the 1980s, the lower capital growth had been established. Capital per employee - capital intensity - had been more than halved both in industry and in the business sector as a whole. Productivity growth followed this trend and was more than halved from the high growth levels of the 1960s. This means that the value of the work performed decreased, as did the scope for higher real wages.

Table 1. Capital intensity and productivity growth

	<b>Industry</b>		<b>Business sector</b>	
	Capital/ employee	Productivity	Capital/ employee	Productivity
1963-70	8.3%	7.6%	6.5%	5.3%
1970-80	6.3%	3.4%	6.2%	3.2%
1980-86	2.8%	3.2%	3.0%	2.0%

Source: Own calculations

The previous diagram also shows that the level of capital formation in relation to our total resources that we had during the 1960s has not returned but that the fluctuations have been larger after the mid 1970s. On average we have remained at approximately one-third of the level of resources that we previously had allocated to new capital. One difference is that saving has increased, but not investment. This means that we are exporting capital.

Despite a continuation of relatively low capital formation, the weak trend seen in total Swedish labour productivity in recent years was broken during the first half of the 1990s when productivity growth increased. But it was other factors than capital formation that contributed to this. Among other things, the economic crisis at the beginning of the 1990s led to substantial rationalisation measures and the winding up of low-productivity operations, which resulted in increased productivity growth but also high unemployment. During the same period, there was also a shift in Swedish economic policy in order to create conditions for more sustainable long-term economic growth. This shift in fiscal and monetary policy led to increased stability and predictability, which most likely enhanced the efficiency of the economy. Moreover, the tax and social security systems were reformed. Sweden's entry into the EU's single market together with the deregulation of several important markets also entailed stiffer competition. Furthermore, the faster growth in the private sector compared to the public sector, as well as the evolution of the ICT sector during the second half of the 1990s, most likely contributed to higher productivity growth.

Against the background of the lower capital formation since the 1970s, however, it is worth asking what the prospects for Swedish growth are in the years ahead. Will we be able to regain any of our previously prominent position as a comparatively rich industrialised nation? What does the low level of capital formation imply for Sweden's chances of recapturing the leading position it had among industrialised nations at the beginning of the 1970s?

It is important here to note that the structure of the business sector has changed. The industrial sector as a whole, including the basic industries, such as mining, ironworks and steelworks, and paper and pulp, have decreased as a proportion of GDP in favour of the expanding services industries. Basic industries' share has fallen from 6.5 per cent of GDP in 1970 to just over 4 per cent today, while service production in the business sector has increased from approximately 30 per cent of GDP to just over 40 per cent during the same period. We have therefore moved further and further away from capital-intensive production to production that is more dependent on human capital than heavy plant and machinery. Another factor to take into account is the decline in housing construction, which has also contributed to the drop in the figures for capital formation. However, housing construction does not have the same importance for productivity growth as industrial investment, for example. This means that the dramatic decline in capital formation does not have to imply an equivalent fall in productivity growth.

Nevertheless, I still have the impression that we are focusing less on capital formation than before. This is indicated by the fact that structural change is currently relatively limited.

## **The labour supply**

Permit me now to discuss the other component that determines a country's long-term growth capacity besides productivity, namely the labour supply. This is determined by the number of people in work and the number of hours they work.

The number of hours worked rose during the years after the crisis at the beginning of the 1990s. This was partly due to greater demand for labour, to a rise in the working age population (20-64 years) and relatively low numbers on sick leave. The trend in the number of hours worked has been broken in recent years, however. This is because the total number of people on sick leave has risen in Sweden since 1997-1998. According to the most common measurement methods, Sweden has the highest incidence of sick leave in the EU. There has also been an increase in work absence due to holiday and other leaves of absence as well as a decrease in overtime and additional working hours. Meanwhile, the labour market has not made satisfactory use of the immigrant population in Sweden. The employment rate among this group has been markedly lower than among native Swedes.

In addition, according to Statistics Sweden, population growth in the years ahead will be less favourable from a labour force perspective than it has been up to now. The number of people of working age will indeed continue to rise but by an increasingly smaller amount. This is because the number of people entering retirement in the years ahead will rise sharply. In particular, large numbers of the 1940s generation will start to retire in a few years. This could have a negative impact on potential growth.

Over the coming 10-year period, the number of people over 65 years of age is estimated to rise by 270 000 - some 1.6 per cent per year on average. Between 2012 and 2030, this group will increase by around 1.3 per cent per year. The number of people of working age is forecast to rise by 170 000 over the coming 10-year period, i.e. by only approximately 0.3 per cent per year. Between 2012 and 2030, the increase in the working age population is estimated to average 0.05 per cent per year, which in effect amounts to stagnation.

In all, this means that measures will need to be taken to boost the supply of labour in the years ahead. These could be achieved by reducing the numbers on sick leave and if fewer people were to take early retirement. The trend also implies greater demands on people to enter working life at an earlier age and on increased labour force participation among the elderly. Moreover, we currently have an unutilised labour force reserve in the form of our immigrant population. The employment rate among this group averages about 30 per cent lower than that of native Swedes. Measures to improve integration of immigrants into the labour market could make a positive contribution to the labour supply.

For example, growth in the number of hours worked could be 0.4 percentage points higher per year up to 2008 if the Government's target of halving sick leave were to be attained. Furthermore, if the labour reserve represented by our immigrant population were to be utilised, the number of hours worked could rise further. If this reserve were to be utilised to the same extent as native Swedes, the number of hours worked could rise an additional 0.1 percentage points. This would have a positive impact on potential growth.

## **Heavier burden on the public finances**

As I mentioned initially, it is important that monetary policy and the wage formation process are efficient and that the central and local governments manage their finances in a satisfactory way. The change in the population's age structure in the years ahead is not only a challenge to future potential growth. It also has other implications.

For instance, the population trend means that the proportion of people that are 65 years or older will increase from 17 per cent today to 23 per cent in 2030. At the same time, the working age population will decrease from 59 to 54 per cent during the same period. This implies that the working age population in Sweden will have to support an increasingly large proportion of both the young and elderly. At present, each person of working age supports 0.70 people that do not work - in other words, the young and old. By 2030, it is forecast that each person of working age will have to support 0.84 people, which represents a rise in the dependency burden of 20 per cent. The whole increase in the dependency burden is due to the retirement of large numbers from specific generations, the 1940s generation in the years 2005-2015 and the 1960s generation in the years around 2030, at the same time as average life expectancy is expected to increase. So if we only take the elderly into account,

each person of working age today supports 0.29 people that are 65 years or older. By 2030, this is forecast to have risen to 0.42.

So the problems we are seeing today with the public sector's financing are a trifle compared with what awaits us if nothing is done. The population's age structure will entail great demands on welfare services and thereby a heavier burden on the public finances. In addition, a smaller supply of labour and a resultant lower level of production will mean a drop in receipts for the Government.

However, the problems would increase even in the event of even population growth. The structural shift implied by an ever larger production of services is also a problem in this context. Workers in the services sector demand the same wage as other parts of the population despite considerably slower productivity growth compared with the industrial sector, which is exposed to competition. The latter is undergoing constant rationalisation through an increasing ratio of capital per employee - something that is not quite as feasible in the services sector. This means that the relative price of services is increasing over time, which is a particularly large problem when services, like in Sweden, are largely provided by the public sector and financed via taxes. The wage rises that are being driven forward by the high-productivity industrial sector are spreading to services and could entail consequent increases in prices and taxes.

Allow me finally to touch upon an overlooked industrial sector in Swedish business - basic industries.

### **Basic industries - a good example.**

In the public debate during the 1990s on the New Economy, it was often claimed that the old industrial society had had its day and that traditional industry would suffer the same fate as agriculture. Basic industries, which are roughly composed of the iron and steel industry, paper and wood product industry and mining, have indeed declined in significance in recent decades, especially for employment, but are still important for net exports. While the rise and fall of the ICT sector during a number of years has taken centre stage in the debate, an evolution has long been under way within other industry. For it is in non-ICT industries that much of the gains afforded by the new technology have been achieved and will be able to be achieved.

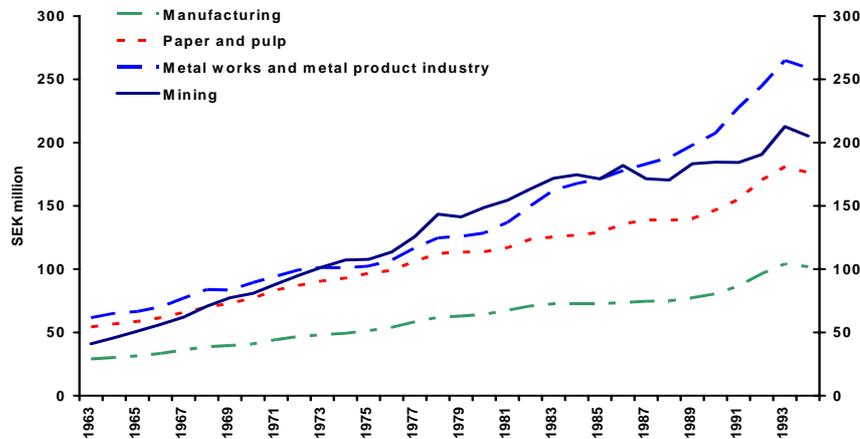
Basic industries have undergone marked structural change. For example, average production capacity per mill in the forestry sector has increased eight times for paper manufacture and six times for the manufacture of pulp in the past 40 years. The small mills have been closed down and there is now a substantial concentration of companies. The exploitation of economies of scale as well as stricter environmental standards have forced companies to invest on a large scale. Sweden currently accounts for about 3 per cent of paper manufacture in the world and 9 per cent of exports. Almost 85 per cent of the production of paper and pulp is exported. It is true that the mining industry is not as big as it once was. Its value added today accounts for just over 1 per cent of the total value added in industry. But after a period of stagnation at the beginning of the 1990s, net exports of ore increased at the end of the same decade to account for approximately 2 per cent of total net exports of industrial products. LKAB accounts for approximately 4 per cent of world trade in iron ore, and Swedish companies hold a dominant position in Europe in terms of production of iron, silver and lead.<sup>1</sup>

In spite of competition from countries with considerably faster-growing forests and cheaper ore, as well as the fact that technology in some areas has become easier to transfer between countries, the basic industries have survived several crises over the years. The reason for this and for the fact that basic industries are still relatively important today is probably that the owners of industry and its executive management have been quick to assimilate new technology and have constantly sought to refine and create a niche for their businesses. They have substituted labour for capital at a fast rate (see Figure 2) . Sweden's biggest paper and pulp mill, Husum outside Örnsköldsvik, is run by 113 people per shift, while Boliden's opencast mine, Mauriliden, employs around 12 people when the mine is in operation.

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<sup>1</sup> Svensk Basindustri , Ds 2001:63 (Basic industries in Sweden, Ds 2001:63)

Figure 2. Capital stock per employee



Sources: Statistics Sweden and the Riksbank

So basic industries in Sweden have undergone the necessary adjustment to a modern structure and have subsequently performed very well in relation to international competitors. The contrast is striking compared with the rusting steel-industry and the problem-ridden forestry industry in the United States where attempts have been made to circumvent the necessary adjustment by way of import tariffs.

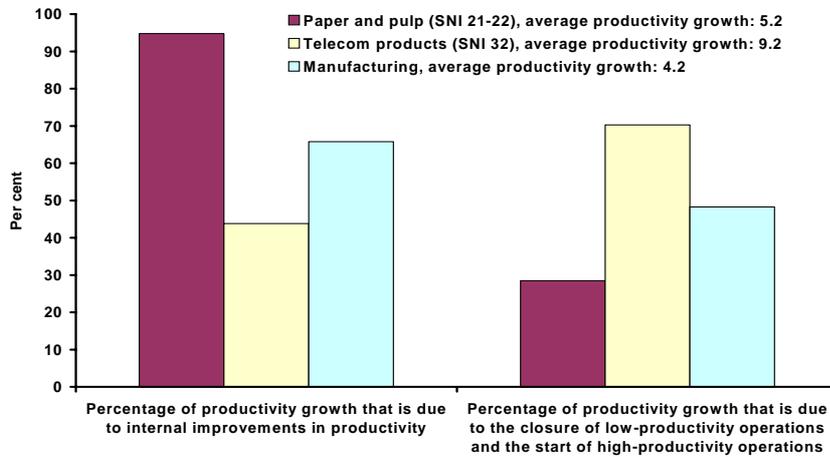
While Swedish industry as a whole lost just under 20 per cent of its world market shares in relation to other OECD countries between 1970 and 1990, basic industries recovered towards the end of the 1980s. Basic industries also outperformed other industry in terms of productivity, with vigorous productivity growth in particular during the second half of the 1980s. In the iron and steel industry, for example, productivity rose sharply between 1977 and 1984, reflecting extensive rationalisation measures especially as regards the manufacture of merchant steel.

As I said earlier, Swedish capital formation as a percentage of GDP was halved in the mid 1970s. Thus, factors other than a good supply of cheap real capital have been behind the favourable development of basic industries. Our country has specialised in capital-intensive process industry based on inexpensive energy and a good supply of raw materials, notably wood. Thus, the driving force has mainly been the supply of energy and raw materials rather than cheap real capital.

Another important factor is growth in total factor productivity. This is a result of technological progress and essentially measures how much production can rise during a given period without needing to increase labour and capital. Total factor productivity depends in turn on how many resources the country and industry invest in R&D. In 12 of 19 industrial sectors, R&D intensity is higher in Sweden than in the other OECD countries. Relative R&D intensity is particularly high - that is R&D compared with corresponding sectors in other countries - in basic industries, i.e. in the steel and paper industry. Besides a cheap supply of energy and raw materials, the success of basic industries is also due to the relatively sharp focus on R&D compared with other countries.

Figure 3 shows that productivity in the paper and pulp industry is a result of internally generated technological progress as opposed to closures of weak units, which is predominant in other sectors.

Figure 3. Breakdown of total factor productivity, 1990-1998



Sources: Statistics Sweden and the Riksbank

Note. The Figure does not show a complete breakdown of productivity and therefore does not sum up to 100. A full breakdown would also include covariance terms. See, for example, Foster, Haltiwanger and Krizan (1998), Bureau of Census, USA.

Overall, the standard of living in Sweden has dropped in comparison with other countries because the country's total factor productivity has lagged behind. We have fallen from a leading position in terms of standard of living to being a relatively poor industrialised nation with a below average income per capita among OECD countries. Our fall behind in total factor productivity is evident in industries such as engineering and chemicals while our basic industries have performed well.

It could be said that since relative R&D expenses have been especially high in our basic industries, it has helped to 'conserve' the traditional industrial structure. It has even been claimed that our standard of living lags behind that of other countries because we have locked the factors of production into traditional basic industries. This is wrong of course. The alternative conclusion is that if Swedish business as a whole had been as alert to developments as the basic industries, and invested as much in R&D compared with other countries, Sweden would not have declined into relative poverty.

### Conclusions - well, can we be best again?

Growth is now in the focus of the public debate in Sweden. It is important that we re-establish a relatively high standard of living and cope with the unfavourable consequences of our population trend - not least for the sake of our public finances. Moreover, if we succeed in our work to create high potential growth, the Riksbank would be able to refrain from tightening monetary policy in times of low growth.

It is vital that we lay the foundations to enable an increase in the labour supply in the years ahead. First, it is important to create conditions that enable our immigrant population to work. It is also important that economic policy is focused on finding ways to reduce the distortional effects of the tax and benefit system, not least as regards people's willingness to work and the motivation of entrepreneurs to start up new businesses within all Swedish industries.

It is mainly an increase in productivity that lays the foundations for long-term growth. Thus, a fundamental precondition for success is to re-establish a high rate of capital formation and thereby the introduction of new technology. But we do not primarily need to increase saving, since we have a substantial current account surplus. Investment in Sweden could replace capital exports. The evolution of basic industries also demonstrates that investment in R&D has the potential to yield considerable productivity gains and that old industrial sectors do not have to be written off.

Therefore, it is important that we do not lose our traditionally successful basic industries and only focus on ICT and biotechnology, not to mention the so-called creative industries. Our basic industries

have demonstrated their staying power; they have coped with major structural change and are growing steadily. They are also the industries in Swedish business that, compared with their counterparts in other countries, have come furthest in terms of technological level, productivity and innovation. So there is also scope for an expansion of the capital-intensive basic industries.

Allow me to conclude by saying that we certainly have the potential to be among the best again. But it will require diligence, enterprise, increased investment and a healthier population. It took 20 years to go from being one of the richest countries to being a comparatively poor industrialised nation. Productivity will have to improve a few tenths of one per cent more than in other countries year in and year out for a couple of decades. So it will take an equivalent period of persistent effort to regain a leading position.

Thank you.