

Svante Öberg: Monetary policy and the elusive resource utilisation

Speech by Mr Svante Öberg, First Deputy Governor of the Sveriges Riksbank, at Handelsbanken, Stockholm, 25 May 2009.

The original speech, which contains various links to the documents mentioned, can be found on the Sveriges Riksbank's website.

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Resource utilisation is falling rapidly and is unusually low. But it is difficult to determine exactly how low it is. And it is difficult to ascertain what consequences the low resource utilisation will have for inflation and monetary policy. These are the questions I intend to discuss in my speech today.

I have divided my speech into four parts. I shall begin by discussing the importance of resource utilisation for monetary policy and pointing out the differences as to how the targets for inflation and resource utilisation can be expressed. After that I shall discuss different measures of resource utilisation. I shall go on to describe monetary policy and resource utilisation at present and I shall conclude with a few summarising comments.

I wish to make clear from the start that I will not make any new assessment today of the appropriate direction for monetary policy in relation to the Monetary Policy Update that was published at the end of April. I also want to point out that the picture I paint of resource utilisation and monetary policy here is not necessarily shared completely by my colleagues on the Executive Board of the Riksbank.

Resource utilisation is important for monetary policy

When we members of the Executive Board make decisions on monetary policy we take into account both inflation and resource utilisation. Our monetary policy is normally aimed at attaining the inflation target of two per cent a couple of years ahead. If we are also able to support economic policy in general without neglecting the inflation target, then we do so. At present this means that we can also use monetary policy to try to mitigate the current economic recession.

It is fairly easy to follow inflation. Inflation is measured by means of a well-established and relatively uncontroversial instrument, the annual change in the consumer price index – the CPI. Of course, there are other measures of inflation that we regularly follow, such as the CPI with a fixed interest rate – the CPIF, the CPI with a fixed interest rate excluding energy, the EU-harmonised measure HICP, and a number of measures of what is known as underlying inflation. But we always clearly state that it is the CPI that is our target variable. We only use the other inflation measures to analyse and better understand developments in inflation.

However, it is much more difficult to determine the degree of resource utilisation. On a general level, resource utilisation refers to how much of the available labour and capital assets are used. In practice, one tries to measure it in several different ways. For example, GDP in relation to trend GDP, employment ratio, unemployment and capacity utilisation. I will take up a number of these measures a little later on.

It is also fairly simple to see how inflation relates to the set target, but it is much more difficult to gain an impression of what the target for resource utilisation should be. We express the inflation target as being that the annual change in the CPI should be two per cent, but we do not have an equally well-defined target for resource utilisation. Instead, we usually say that we endeavour to reduce the fluctuations in the real economy.

Resource utilisation is important in a monetary policy context for two reasons. Firstly, it is related to important targets in economic policy, such as a high GDP, a high level of employment and low unemployment. The economic recession we are now experiencing means that GDP will fall by around 4.5 per cent this year, that employment will fall by almost 300,000 persons in three years, and that unemployment will reach approximately 11 per cent in two years' time, all according to our most recent forecasts in April. The expansionary monetary policy we are now conducting is thus partly motivated by an aim to limit the depth of the recession.

Secondly, resource utilisation is important because it is an indicator of future inflationary pressures. But a difficult question is how resource utilisation co-varies with inflation. My impression is that the connection between resource utilisation and inflation has been weaker over the past two decades than it was before. But the connection probably still remains, albeit in a weaker form. This means that in our monetary policy we also have to take into account what effects resource utilisation has on inflation in the slightly longer term. I will return to this issue later on.

Different measures of resource utilisation

There is no clear-cut means of defining resource utilisation, nor of measuring it. When one tries to measure resource utilisation one is faced with different alternatives. For example, one can draw conclusions regarding resource utilisation in the economy by comparing output or employment with a trend, normal or ideal level. Examples of this approach include the GDP gap, the employment gap and the flexprice gap. Another alternative with regard to measuring resource utilisation is to use as a base responses to direct questions put to companies regarding, for instance, their utilisation of labour and capital. Both of these approaches have inherent difficulties. In the first case, one must relate actual output or employment to a trend, normal or ideal level that is difficult to determine, and in the second case one must rely on the companies' own assessments of their resource utilisation.

GDP gap

A common means of measuring resource utilisation is to relate actual GDP to a long-term or trend level of GDP. This GDP level is also often called potential GDP, despite the word potential implying that GDP cannot be greater than this level. The measure obtained by relating actual GDP to potential GDP – what is known as a GDP gap – has the advantage of being easy to understand. It is also close to a number of concepts that are used in monetary policy analysis. The so-called Taylor rule often used to describe how monetary policy is conducted contains such a GDP gap. When one talks about the target for monetary policy being to minimise deviations in inflation from the target and fluctuations in the real economy, the latter is often illustrated with a GDP gap.

But it is not entirely clear how one should measure the long-term or trend level of GDP. A common method for determining this GDP level is to use some statistical tool to find a trend in the available GDP statistics. The Hodrick-Prescott filter, or HP filter, is one such tool. This filter is used to obtain an HP trend which is a cross between a linear trend and the uneven curve showing the actual GDP outcome. Such HP trends are regularly reported in the Riksbank's Monetary Policy Reports.

Figure 1 shows actual GDP, potential GDP measured as an HP trend and the GDP gap, which is the difference between these. The actual GDP gap is stated as a percentage of GDP, measured on the right-hand scale, and in the figure this becomes a form of enlarged image of the difference between actual and potential GDP. The dotted parts of the curves represent the Riksbank's forecasts from the April Monetary Policy Update. One can draw the conclusion from this figure that resource utilisation in terms of the GDP gap has recently

fallen below the normal level and that we are assuming that it will remain negative over the coming years.

There are both advantages and disadvantages in measuring resource utilisation with the aid of the GDP gap. One advantage is that this method does not require any other information than historical GDP data. One disadvantage is that when using this method it is difficult to estimate the trend and thereby the GDP gap at the end of the time series and it is precisely the GDP gap at the end of the series that is the most interesting part. This problem becomes particularly troublesome in a recession like the current one. This is because experiences of previous recessions imply that some of the output capacity that is lost after a fall in resource utilisation never returns when the upturn comes. Quite simply, it is easier to wind up companies than to build them up. To some extent these problems are dealt with in the Riksbank's calculations, in that the calculation of the trend level of GDP is affected by the outcomes for years of weak GDP growth and by parts of the fall in productivity being assumed to be permanent.

Another consequence of using HP filters to find the trend-based GDP gap is that one risks interpreting an increase in growth that is due to a temporary rise in productivity as an increase in resource utilisation. But in a situation with sticky prices an increase in productivity may actually lead to a decline in resource utilisation as the increase in productivity makes it possible to use fewer resources to produce the same volume as before. If we were in such a case to use a trend-based output gap as a base, there is a risk that monetary policy would become contractionary when it needed to be expansionary.

The difficulty with the trend-adjustment method is thus to distinguish from current developments what constitutes changes in the trend and what are deviations from the trend, that is, changes in resource utilisation.

Flexprice gap

A theoretically interesting measure of resource utilisation that has gained increased attention in the research on monetary policy is the so-called flexprice gap. This is a measure that relates actual output to potential output in an economy with entirely flexible prices and wages.

The advantage of this measure is that it has a well-defined theoretical base. To calculate the flexprice gap one tries to determine the level of output that would be attained without some of the imperfections that the real economy suffers from. One can, for instance, use as a base a dynamic stochastic general equilibrium model of the New Keynesian type, where the primary reason for inefficient resource utilisation is that prices and wages are slow to adjust to new circumstances. Such a model makes it possible to obtain a measure of the effective output that would arise if both prices and wages were entirely flexible – the flexprice output. The difference between actual output and the calculated flexprice output is the flexprice gap. If one has a good model for calculating the flexprice gap, one avoids the problems with the trend-based measure of managing disruptions caused by productivity shocks.¹

However, this measure also has disadvantages. The results of the calculations are sensitive to the exact design of the model. Nor is it as easy to interpret these results, which is partly because the flexprice output varies more over time than the measure of the trend in GDP

¹ For a more detailed description of the flexprice gap in the context of an in-depth discussion on how potential production can be defined and measured, see Palmqvist, S. (2007), "Flexible inflation targeting – how should central banks take the real economy into consideration?" Economic Review 2, pp. 91-105, Sveriges Riksbank. [http://www.riksbank.com/upload/Dokument_riksbank/Kat_publicerat/Artiklar_](http://www.riksbank.com/upload/Dokument_riksbank/Kat_publicerat/Artiklar_PV/07_2eng_palmqvist2.pdf)

[PV/07_2eng_palmqvist2.pdf](http://www.riksbank.com/upload/Dokument_riksbank/Kat_publicerat/Artiklar_PV/07_2eng_palmqvist2.pdf).

usually used. The flexprice gap is therefore not yet used in practice in our monetary policy work.²

Nevertheless, I can show how it looks when it is calculated using the Riksbank's macro model RAMSES.³ Figure 2 shows that the flexprice gap occasionally differs somewhat from the GDP gap. The fluctuations in the flexprice gap have in general been slightly less, which is partly because the flexprice gap only captures the fluctuations in GDP that can be explained by sticky prices and wages. However, the flexprice gap and the GDP gap do provide a uniform picture of the recent development towards an excessively low level of resource utilisation in the economy. The fact that the flexprice gap is now negative is currently interpreted to mean that output is now lower than it would have been if prices and wages had adjusted to the changes that have recently affected the economy.

Labour market gaps

Another type of measure focuses on utilisation of labour. These are based on Statistics Sweden's labour force surveys and on the National Accounts. Figure 3 shows two such measures: unemployment and the employment rate, that is, what percentage of the population of working age is employed. The curves provide a consistent picture of changes in resource utilisation over time. At the same time, they show that the crisis of the 1990s permanently raised unemployment and reduced the employment rate. This makes it difficult to determine what is a long-term sustainable level for resource utilisation in the labour market.

From the perspective of general politics, it is normally regarded as an advantage if employment is high and unemployment is low. But in a monetary policy perspective it may be a problem if resource utilisation is so high that inflation risks overshooting the target. If resource utilisation is so low that inflation risks undershooting the target, the general political and monetary policy implications coincide.

An estimate of what level of employment can be regarded as normal can be obtained by calculating an HP-based trend similar to that used for calculating the GDP gap. This can be considered to represent a normal situation in the labour market, without temporary disruptions that affect the supply of or demand for labour. Gaps that measure the actual deviation in employment from the normal level, either in the number of persons or in the number of hours worked, are called labour market gaps. Figure 4 shows two such labour market-based gaps.

Capacity utilisation

But neither the number of persons employed nor the number of hours worked provides a really good picture of resource utilisation. During a severe cutback in output such as in the current economic situation, companies tend to a large extent to retain their employees, although they have less work for them to do. To obtain a better picture of resource utilisation the labour market statistics need to be supplemented with data from, for instance, Statistics

² For a discussion of the flexprice gap and monetary policy, see Jonsson, M., C. Nilsson and S. Palmqvist (2008), "Should monetary policy stabilise resource utilisation?" Economic Commentaries 1, Sveriges Riksbank. http://www.riksbank.com/upload/Dokument_riksbank/Kat_publicerat/Ekonomiska%20kommentarer/2008/080306e.pdf.

³ For a more detailed description of the model, see Adolfson, M., S. Laséen, J. Lindé and M. Villani (2007), "RAMSES - a new general equilibrium model for monetary policy analysis", Economic Review 2, pp. 33-68, Sveriges Riksbank. http://www.riksbank.com/upload/Dokument_riksbank/Kat_publicerat/Artiklar_PV/07_2eng_ramses.pdf.

Sweden's data on capacity utilisation in industry and the National Institute of Economic Research's Economic Tendency Survey.

Figure 5 shows capacity utilisation in industry as reported by the companies. According to figures from Statistics Sweden, capacity utilisation in industry reached a peak of around 91 per cent in the first quarter of 2007, and has since fallen to around 78 per cent in the first quarter of 2009. According to the National Institute of Economic Research's Economic Tendency Survey, capacity utilisation in industry during the same period has fallen from around 88 per cent to around 72 per cent. In both cases a large fall is reported. But these data concern only a small percentage of the economy and do not in general provide the same picture as, for instance, the GDP gap also shown in the Figure.

Aggregate measure of resource utilisation

At the Riksbank we have also produced an aggregate measure of resource utilisation. But this is not intended to replace all other measures; it will be used as a generic complement to the other measures.

The aggregate measure of resource utilisation has been produced with the aid of a principal component analysis. This is a statistical method that extracts the common component from a large amount of data. Figure 6 shows the results of one such analysis, where around thirty labour market and business tendency indicators have been used to extract a common component for resource utilisation. To be comparable to the traditional, trend-related measures of resource utilisation the indicator has been normalised so that its standard deviation coincides with that of the GDP gap.

The figure illustrates two important conditions. Firstly, the aggregate measure of resource utilisation follows the GDP gap very well. Secondly, the labour market gap lags a few quarters behind both the resource utilisation indicator and the GDP gaps.

One disadvantage of this measure is that it is not suitable for forecasts of resource utilisation short of making forecasts of all of the indicators included. As the measure coincides so well with the GDP gap, I believe that it provides some support for the argument that GDP forecasts are a good indicator of how resource utilisation will develop in the future, however with some reservations, and I will return to these later.

Which measure of resource utilisation is best?

My conclusions are firstly, that the various measures of resource utilisation provide a similar picture of the economic cycles. However, the more precise picture varies quite substantially between the measures. Each individual measure offers some extra piece of information in addition to what is contained in the other measures. But this does not prevent it from being very useful to continue developing aggregate measures of resource utilisation.

Secondly, all of the measures described show that resource utilisation has recently fallen rapidly. The GDP gap, the flexprice gap and the indicator that is intended to provide an aggregate measure of resource utilisation show that resource utilisation is already below the normal level. The labour market gaps are lagging behind, but will, according to our current forecast, soon point to labour force use of below normal levels.

The GDP gap that is based on an HP trend for GDP indicates that resource utilisation is falling by around 10 percentage points from the peak level in 2007 to a trough in 2010. Although we have used a gradually declining output capacity as a basis for the calculation of the HP trend, this fall in the GDP gap probably gives an exaggerated picture of the fall in resource utilisation during the period as the potential output level ought to have fallen more than is reflected in the HP trend. The deeper and longer the economic recession is, the larger the output capacity that can be expected to disappear. The resource utilisation indicator shows the same picture as the GDP gap, but there are no forecasts for this.

The employment rate and unemployment will deteriorate by around 5 percentage points from 2008 to 2011 according to the forecast we made in April. These measures, which are not related to any normal level, show a slightly smaller, but similar, deterioration in resource utilisation to that described by the hours gap and the employment gap. But for these two later measures it is also a question of the deeper and more prolonged the recession is, the greater the part of the fall in employment and hours that will be interpreted as a weakening in the labour market trend that will not disappear in the next economic upturn. In this case we will have what is usually termed persistence in unemployment, a phenomenon that has proved common in many countries.

To illustrate the significance of the recession for the calculations of the HP trend and the trend gap, one can compare the calculations of the future trend levels of GDP and employment in the calculations made in October 2008 and April 2009. The trend level for GDP in the fourth quarter of 2011 is approximately 5 per cent lower in the more recent calculations and the trend level for employment is approximately 2.5 per cent lower. The recession is thus assumed to have lowered the potential level of GDP and employment and thus also reduced the GDP and employment gaps.

Monetary policy and resource utilisation in the current situation

At the most recent monetary policy meeting at the end of April we made a substantial downward revision to the forecast for GDP growth in the world in relation to the February forecast. My assessment was then that our main scenario, with a decline in GDP in the world of around 1 per cent this year and an increase of just over 2 per cent next year was reasonable. But at the same time I considered that there was a risk that the recession would even be deeper and more protracted than we predicted. My reasoning was based on the fact that recessions that arise as a consequence of financial crises and recessions that are synchronised between several countries are normally followed by slow recoveries.

Sweden was in a severe recession in April and we are still. We were assuming a fall in GDP of around 4.5 per cent this year and a weak recovery next year. As in the case of international developments, my assessment was that on balance the predominant risks were that the recession could be deeper and more prolonged. CPI inflation was expected to be negative this year, but underlying CPI inflation with a fixed interest rate, the CPIF, was expected to be close to 2 per cent throughout the entire forecast period. In my opinion, there was no reason to worry about deflation and no reason to worry about high inflation. We decided to cut the policy rate to 0.5 per cent.

Today I would like to take up two questions in the current situation that are linked to monetary policy. These are the link between resource utilisation and inflation, and the limits for stabilisation policy.

Monetary policy affects inflation through its impact on the exchange rate and thereby resource utilisation in the economy, but also through its influence on demand and inflation expectations. It may appear strange that inflation is calculated to be close to the target of two per cent, despite the fact that resource utilisation has fallen rapidly and is so low during the forecast period.

There are two explanations for this. Firstly, the connection between resource utilisation and inflation is weaker now than before. I mentioned this in my introduction. And this is probably because a changeover to a credible monetary policy that is aimed at stabilising inflation will lead to the connection between resource utilisation and inflation weakening. Stable inflation

expectations close to the inflation target quite simply provide less scope for other variables to affect inflation.⁴

But the connection is not negligible. The expansionary monetary policy in the world as a whole, the large GDP growth in the world during the years 2004-2007 and the increasingly high resource utilisation finally led to substantial rises in energy, food and other commodity prices in the world market, and thereby also to rising consumer prices. The forecasts now being made both by international organisations and by ourselves indicate that inflation in the world over the coming years will be positive, despite the low resource utilisation, but slightly lower than was normal a few years ago.

The other explanation as to why inflation in Sweden is remaining close to the target despite the low resource utilisation is that there are other factors than resource utilisation which exert upward pressure on prices. One such factor is that unit labour costs have been increasing by around 5 per cent a year during the period 2007-2009. Slightly higher wage agreements, but above all falling productivity, have contributed to pushing up unit labour costs, something that will change in the future as companies reduce their workforces. Another factor that is underpinning inflation is the weak krona.

Given this, the assessment I made at the most recent monetary policy meeting was, as I recently mentioned, that there was no reason to worry about either deflation or high inflation during the forecast period. Resource utilisation is not so low that it could lead to deflation, but it is sufficiently low to prevent inflation from becoming too high.

The second question I would like to take up is the limits for stabilisation policy. There are limits as to what stabilisation policy can achieve with regard to alleviating the consequences for the Swedish economy of such a powerful and global economic recession as the one we are undergoing. For fiscal policy the limits are set by what is considered compatible with a long-term sustainable development in public sector finances. Monetary policy is to some extent limited by the fact that there is a floor under which the repo rate cannot be cut. It is not possible to avoid an international economic downturn entirely, but it is possible to prevent it from becoming too deep.

In monetary policy it is also necessary to take into account what might happen further ahead if one conducts a very expansionary monetary policy over a long period of time. In particular the experiences of the years with low interest rates and rapid international growth prior to the current financial crisis indicate that one may also need to take into account the more long-term consequences of monetary policy and at what pace inflation should be brought back on target.

There is also reason to take into account not only the total amount of spare resources in the economy, but also the composition of those resources. For an export-dependent country such as Sweden it is important, for instance, to take into account to what extent a large fall in exports could be replaced by other parts of demand through expansionary monetary policy and at what rate this could be done without inflation problems arising. Correspondingly, one may need to take into account the extent to which the labour supply will decline as a result of the depth and length of the recession when assessing what consequences a coming recovery may have for wage formation.

The conclusion I draw from this is that it is important not to overestimate the available resources in the economy over the coming years. We must try to make the best possible assessments of the amount of resources that will disappear more permanently as a result of

⁴ For a more detailed analysis of this connection, see Adolfson, M. and U. Söderström (2003), "How is the economy affected by the inflation target?" *Economic Review* 1, pp. 49-63, Sveriges Riksbank. [http://www.riksbank.com/upload/Dokument_riksbank/Kat_publicerat/Artiklar_](http://www.riksbank.com/upload/Dokument_riksbank/Kat_publicerat/Artiklar_PV/er03_1_artikel3.pdf)

[PV/er03_1_artikel3.pdf](http://www.riksbank.com/upload/Dokument_riksbank/Kat_publicerat/Artiklar_PV/er03_1_artikel3.pdf).

the recession and of how quickly output can increase without causing inflation problems. Otherwise there is a risk that we will conduct an expansionary monetary policy for too long and thus risk inflation problems later on.

One necessary condition for conducting effective monetary policy is that the financial system functions. Since last autumn the Riksbank has taken a number of measures to safeguard financial stability, in particular the extensive lending to the banks. We have recently decided to extend the eligible counterparties for our monetary policy operations and to offer the banks the opportunity to borrow from the Riksbank not merely at maturities of three months and six months, but also at twelve months.

If economic developments should prove to be much worse than we are now predicting, there may be reason to proceed with more unconventional measures to support the economy. One possibility is to do as they have in a number of other countries and purchase government, mortgage and corporate bonds. We are currently examining the experiences of other countries and analysing the advantages and disadvantages of this type of measure. For instance, we need to consider to what extent it is the Riksbank that is best suited to carry out this type of measure and whether it might instead be a task for a government agency.

Summary

I would like to summarise my speech as follows:

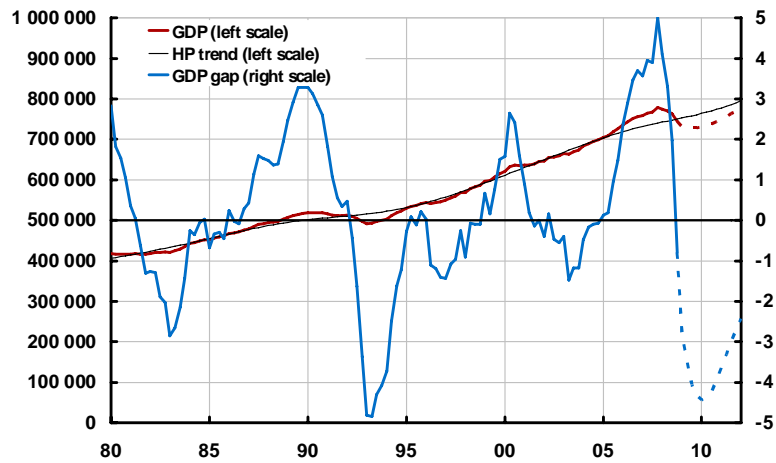
Resource utilisation is falling rapidly and is at an unusually low level. All of the measures of resource utilisation that we have provide the same general picture.

But it is difficult to ascertain how low it is and when it will turn around. Different measures paint different pictures on this issue. The GDP gap implies that resource utilisation will fall to minus 4-5 per cent at the beginning of 2010 before it turns around, and the employment gap points to resource utilisation falling to minus 3 per cent in 2011 before the labour market begins to improve. However, in both of these cases the measures are based on very uncertain estimates of the available resources in the economy.

It is also difficult to ascertain what consequences the low resource utilisation will have for inflation and monetary policy. The assessment we made at the most recent monetary policy meeting was that the policy rate ought to be cut to 0.5 per cent. With this cut and the low level of the policy rate that we envisaged, resource utilisation would show an upturn and underlying inflation would be close to two per cent during the forecast period. If developments were to prove much more negative, there is a possibility to proceed with more unconventional measures.

Figure 1. GDP gap

SEK million and percentage deviation from HP-trend respectively, seasonally-adjusted data

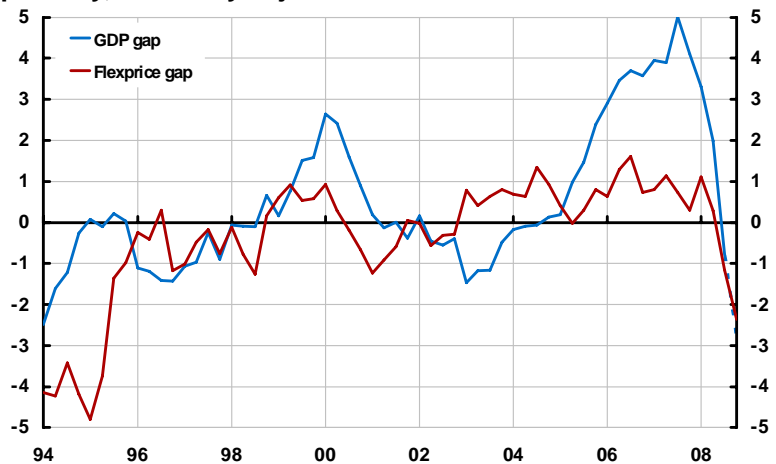


Note. Trend calculated using the Hodrick-Prescott filter. Broken lines refer to the Riksbank's forecasts.

Sources: Statistics Sweden and the Riksbank

Figure 2. Flexprice gap

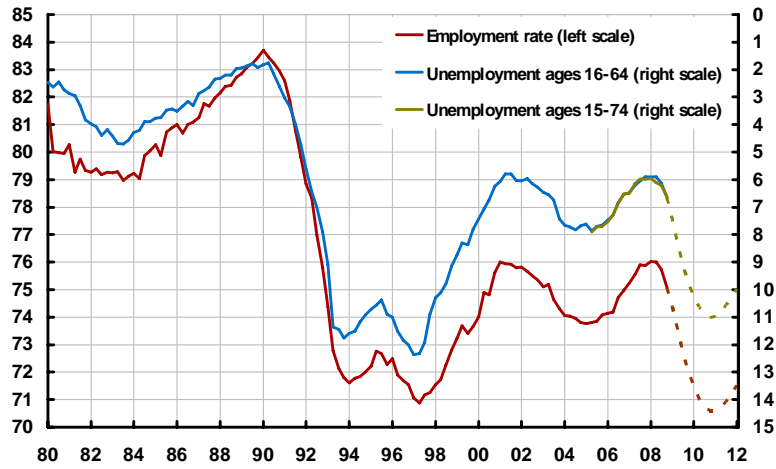
Percentage deviation from HP trend and flexprice output respectively, seasonally-adjusted data



Note. Trend calculated using the Hodrick-Prescott filter. Flexprice gap calculated using the Riksbank's macro model RAMSES. Broken lines refer to the Riksbank's forecasts.

Sources: Statistics Sweden and the Riksbank

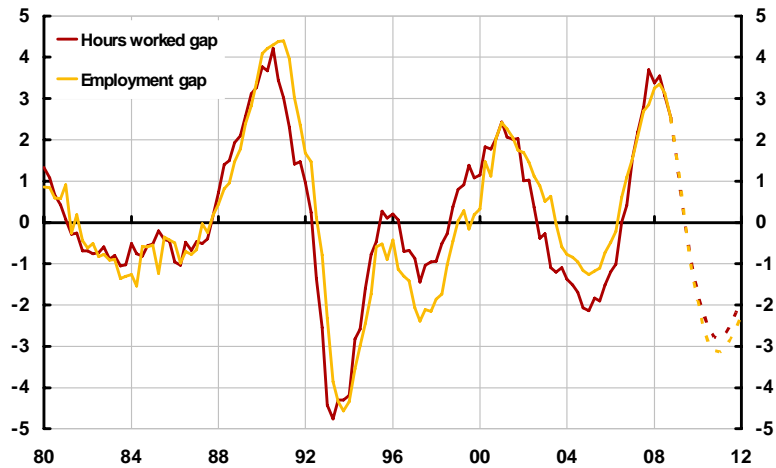
Figure 3. Employment and unemployment
Per cent, seasonally-adjusted data



Note. Broken lines refer to the Riksbank's forecasts.

Sources: Statistics Sweden and the Riksbank

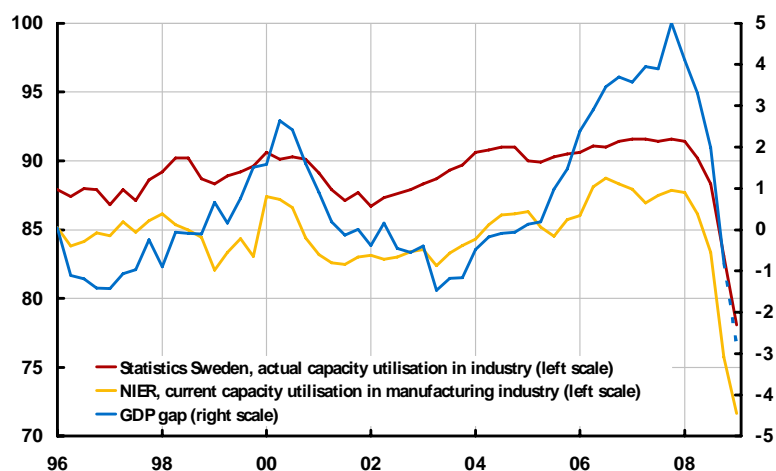
Figure 4. Labour market gaps
Percentage deviation from HP trend, seasonally-adjusted data



Note. Trend calculated using the Hodrick-Prescott filter. Broken lines refer to the Riksbank's forecasts.

Sources: Statistics Sweden and the Riksbank

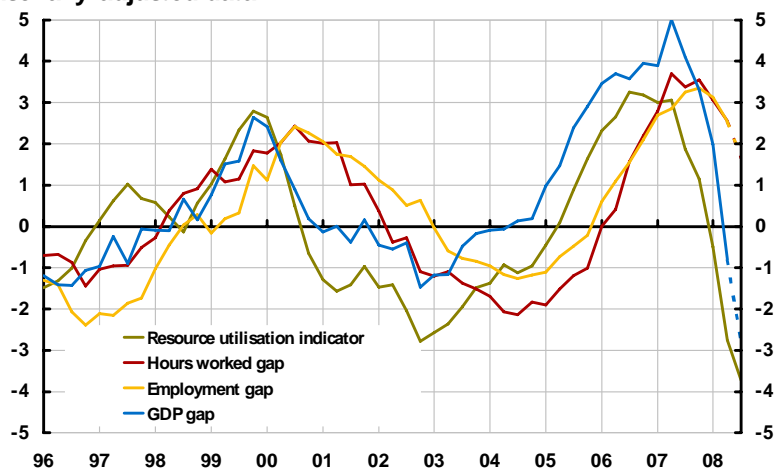
Figure 5. Capacity utilisation in industry
 Index and percentage deviation from HP trend respectively,
 seasonally-adjusted data



Note. Trend calculated using the Hodrick-Prescott filter. Broken lines refer to the Riksbank's forecasts.

Sources: National Institute of Economic Research, Statistics Sweden and the Riksbank

Figure 6. Resource utilisation indicator
 Index and percentage deviation from HP trend respectively,
 seasonally-adjusted data



Note. Trend calculated using the Hodrick-Prescott filter. The standard deviation of the resource utilisation indicator is normalised to that of the GDP gap. Broken lines refer to the Riksbank's forecasts.

Sources: Statistics Sweden and the Riksbank