DANMARKS NATIONALBANK

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Higher Growth Figures Confirmed the Upswing

- Statistics Denmark's revised GDP figures provide a more complete picture of the Danish economy as being in an upswing since 2012. Prior to the revision, the national accounts gave the impression of a growthless recovery of the labour market, which entailed very weak productivity growth. This brought into question the solidity of the development in employment.

- The new figures do not change Danmarks Nationalbank's assessment of the state and direction of the Danish economy to any significant extent. For the past three or four years, special emphasis has been placed on labour market signals and indicators of capacity pressure and value creation in the sectors that are the primary drivers of labour market developments.

- Danmarks Nationalbank's forecasts of GDP growth after the 2008-09 downturn have not been too high to any systematic extent. Moreover, the deviations between the forecasts and the compiled growth have been relatively small. The GDP revision emphasises that assessments of current developments in the Danish economy cannot be based merely on GDP.

1.3 per cent p.a.

of GDP growth since 2010 after upward revision

Read more

Productivity

has increased considerably faster than previously compiled

Read more

Growth forecasts

were not systematically too high after the 2008-09 downturn

Read more

New growth figures better reflect developments in employment

In November 2016, Statistics Denmark revised the compilation of the gross domestic product, GDP, for the period 2005-15. The national accounts are regularly revised as more and better source data for Danish economic activity becomes available. In addition, major revisions are performed regularly. This is a necessary process to provide the most accurate view of economic developments. However, the November revision stands out as an unusually large upward revision of the compilation of GDP level and growth. The reason is that, in addition to the ordinary revisions of the past three years, the November revision also comprised an extraordinary revision, based on new current account figures.

The most pronounced revision of the figures concerns the period after the economic downturn in 2008-09, and average annual GDP growth has now been compiled at 1.3 per cent for the period 2010-15, up from 0.8 per cent in the previous compilation. GDP in volume terms is now 3.4 per cent higher in 2015 than previously compiled, cf. Chart 1.

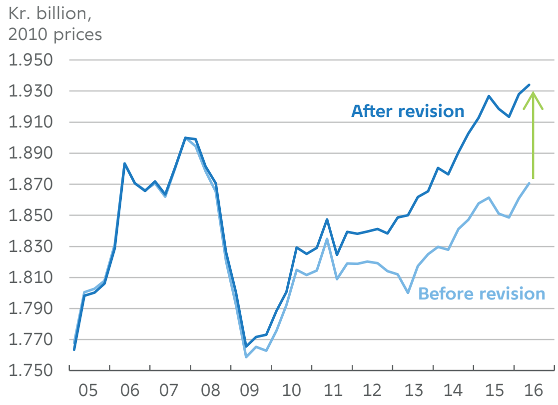
Especially new figures for Danish firms' foreign trading in which goods and services do not cross the Danish border entailed substantial revisions. Gross investment was also revised upwards. In addition, real growth in public consumption of hospital services was revised upwards, without an accompanying revision of public consumption in value terms. Using the revised figures, GDP in value terms is 2.1 per cent higher in 2015.

Prior to the revision, GDP developments indicated weak growth in value creation, which – seven years after the financial crisis – reportedly had not reached the level seen during the latest boom in 2006-07. This was inconsistent, inter alia, with the strong labour market performance, with employment growing by more than 60,000 persons in 2012-15, representing a 2.2 per cent increase. During the same period, GDP grew by 2.0 per cent. The GDP revision supports that the Danish economy has been in an upswing since 2012 and is heading towards a boom with output above the normal level of capacity utilisation.

The Danish economy is close to its capacity limit

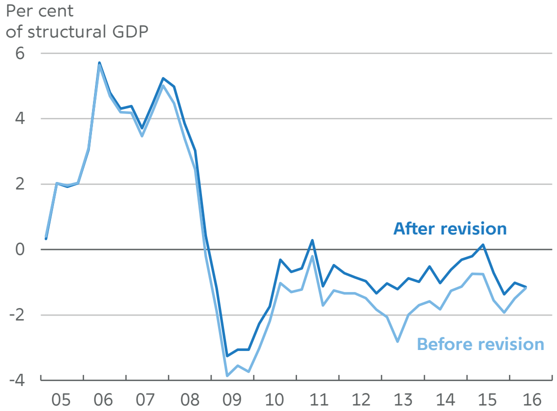
Despite the upward revision of GDP, Danmarks Nationalbank's assessment of economic developments since the financial crisis is basically unchanged. GDP

Substantial upward revision of the gross domestic product in recent years Chart 1



Source: Statistics Denmark.

Output gap before and after the revision Chart 2



Note: Here the output gaps are estimated using the methodology applied in Andersen and Rasmussen (2011), with data from before and after the revision of the national accounts. The same adjustments have been made in the estimation. Since the December 2016 Monetary Review, Danmarks Nationalbank has used the methodology applied in Danielsen et al. (2017).

Source: Danmarks Nationalbank.

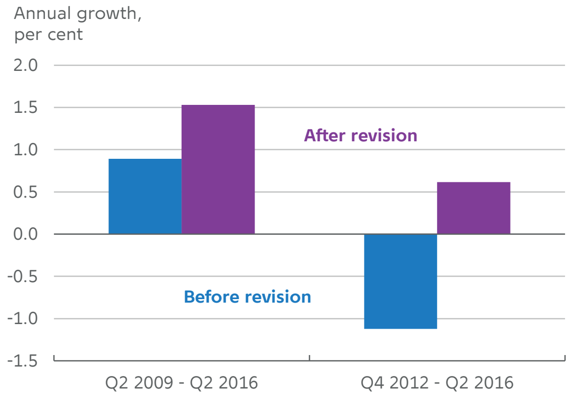
is a key indicator of economic developments – but not the only one. A number of other indicators are included in Danmarks Nationalbank's cyclical assessments, including labour market developments and developments in various Danish business sectors. The output gap provides an overall measure of the state of the economy, indicating how far output (measured by GDP) is from an estimated level of output at normal capacity utilisation in the economy (structural GDP), cf. Danielsen et al. (2017).

The output gap is relatively robust to GDP revisions because it is based also on labour market indicators and indicators of the capacity pressure in the manufacturing sector. Since these indicators are not directly affected by changes in the compilation of GDP, their indication of capacity utilisation is no different from before the revision. This entails that revision of the compiled GDP is to a high degree reflected in a similar adjustment of structural GDP. Although GDP was revised upwards by almost 3.5 per cent in 2015, viewed in isolation, the output gap was revised by approximately 0.7 percentage point in 2015, cf. Chart 2. This should be viewed in the context of a somewhat uncertain estimation of the output gap. This does not change the overall picture to any significant extent. The Danish economy is very close to its capacity limit.

Substantial upward revision of productivity growth
Weak GDP growth before the revision, in conjunction with a strong increase in private sector employment, gave the impression of stagnant productivity in Denmark. Other countries have also been experiencing productivity growth on the slow side after the financial crisis, but Danish productivity growth was particularly low by international comparison. Productivity is a key element in the creation of prosperity. Thus, the remarkably weak growth prompted a discussion of the potential causes and initiatives to promote productivity growth.

The upward revision of GDP has provided a new and more positive view of productivity growth. This applies, in particular, to the current upswing from 2012. During the period from the 4th quarter of 2012 to the 2nd quarter of 2016, hourly productivity in the private non-primary sector increased by an average

Upward revision of productivity after the downturn Chart 3



Note: Hourly productivity, private non-primary sector.
Source: Statistics Denmark.

of 0.6 per cent per year, relative to a 1.1 per cent decrease per year before the revision, cf. Chart 3.[1] This masks an upward revision of average growth in gross value added, GVA, and a downward revision of the number of working hours per employee. For the entire period after the downturn, i.e. from the 2nd quarter of 2009 to the 2nd quarter of 2016, annual growth in hourly productivity for the private non-primary sector was revised upwards by 0.6 percentage point to 1.5 per cent per year. The relatively weak productivity growth during the upswing is associated only with the period from the 2nd quarter of 2015 to the 2nd quarter of 2016 during which productivity declined by 2.4 per cent, driven mainly by a decrease in GVA in the financial sector. For the period from the 2nd quarter of 2012 to the 2nd quarter of 2015, average annual growth in productivity was 1.6 per cent.

Productivity now follows a more normal upswing pattern, cf. Chart 4. A common characteristic of an upswing is more stickiness in employment growth in the early stages. The reason is that firms do not expand their production capacity until they believe the upswing is sustainable. This is why the highest productivity increase is observed in the early stages

1 The analysis reviews the period until the 2nd quarter of 2016, as this is the period covered by the national accounts at the revision.

of an upswing. In later stages, employment growth rises at a faster rate than GDP growth, curbing productivity growth. However, as already mentioned, lower financial sector productivity has been the primary driver of the decline seen in recent quarters.

The upward revision of GDP does not entail that Denmark's challenges in terms of low productivity growth have been resolved. In a historical context, structural productivity growth has been low after the crisis. However, the Danish productivity level is high compared with that of other countries. Consequently, the possibility of increasing productivity by studying countries with higher productivity is limited. Still, productivity can be strengthened through reforms, as documented by the Productivity Commission, among others, a few years ago.

No signs of extraordinary wage pressures in the Danish labour market

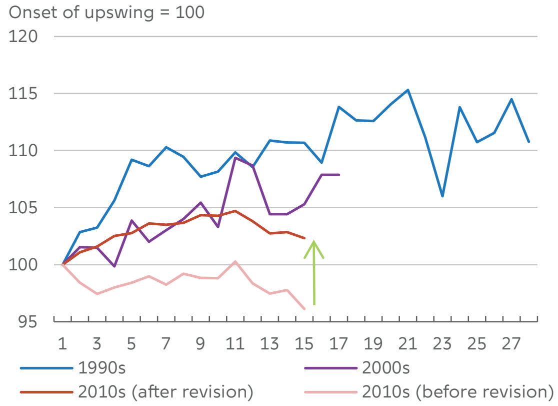
Particularly weak productivity growth before the revision also prompted considerations of whether employment growth was well-founded. An indicator of a potential imbalance is the wage share, indicating the ratio of payroll costs to corporate earnings, measured by nominal GVA. If the wage share increases sharply – and is relatively high – this could be an indication of substantial pressure on corporate profit margins, which will have to be adjusted sooner or later.

Before the revision, the wage share in the private non-primary sector in the 2nd quarter of 2016 was in line with the boom of 2007 and 2008[2], providing the impression that imbalance could be building up, cf. Chart 5. After the revision, the wage share in the 2nd quarter of 2016 is hovering around its historical average since 1990. This is consistent with Danmarks Nationalbank's assessment that employment is more or less at its structural level (a neutral employment gap) and that output and employment patterns during the upswing have been relatively balanced.

So far, the unemployment gap (the difference between actual and structural gross unemployment) has been estimated based on wage share developments,

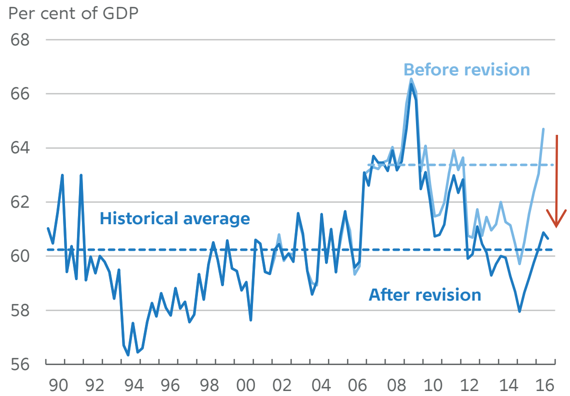
2 The wage share was even higher in 2009, but this was due to the sudden drop in GDP in connection with the financial crisis and the downturn in the Danish and international economy when employment had yet to adapt.

Productivity growth now follows the pattern of previous upswings Chart 4



Note: Hourly productivity, private non-primary sector. Upswing periods have been defined as periods with a predominantly increasing output gap, i.e. either less negative or more positive. Upswings have been defined as the following periods: the 1990s: from the 2nd quarter of 1993 to the 1st quarter of 2000; the 2000s: from the 4th quarter of 2003 to the 4th quarter of 2007; the 2010s from the 4th quarter of 2012 to the 2nd quarter of 2016.
Source: Statistics Denmark and own calculations.

Wage share for the private non-primary sector has been revised downwards Chart 5



Note: The wage share is calculated as payroll costs relative to GVA in the private non-primary sector. The light blue broken line indicates the average wage share during the boom of 2007-08.
Source: Statistics Denmark.

cf. Danielsen et al. (2017). Due to revisions – which may sometimes be quite substantial – the wage share is not always an appropriate indicator as, over time, it may provide ambiguous signals about developments in the labour market at a given point. Instead, structural gross unemployment is now estimated on the basis of developments in real wages.

The moderate wage share development also strengthens the impression that the competitiveness of Danish firms is good. This is expressed by an increase in the relative wage share in manufacturing, measuring the relationship between the wage share abroad and the wage share in Denmark, since the financial crisis, cf. Chart 6. After the revision of the national accounts, the increase in the relative wage share is slightly higher than previously calculated. This underpins Danmarks Nationalbank's assessment that the Danish economy has room for higher wage increases.

Slight strengthening of wage competitiveness indicator Chart 6

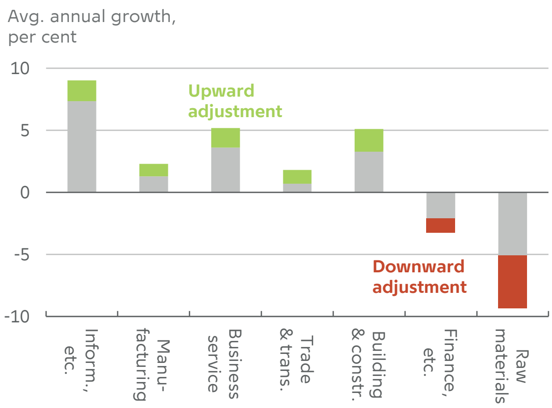
Note: The relative wage share is calculated as the trade-weighted wage share of Denmark's trading partners divided by the Danish wage share.
Source: Statistics Denmark and own calculations.

The recovery of the Danish economy is broad-based

In recent years, Danmarks Nationalbank has increased its focus on value creation in the sectors that are the primary drivers of labour market developments. This has contributed to qualifying the assessment of whether an imbalance existed between GDP and GVA growth relative to the recovery in the labour market. Danmarks Nationalbank's impression was that total value added in the private sector was curbed by declining GVA in particular sectors with relatively few employees, while most of the private sector was showing clear signs of recovery.

The revised figures have emphasised this impression. Thus, GVA has been revised upwards for sectors in recovery, but revised further downwards for sectors with already declining GVA, cf. Chart 7. The same applies when GVA is measured in value terms. The primary drivers are the information etc. and business service sectors.

After the revision, growth is revised upwards in sectors experiencing growth since the onset of the upswing Chart 7



Note: Average annual growth in real GVA, broken down by industry, for the period 4th quarter of 2012 – 2nd quarter of 2016.
Source: Statistics Denmark.

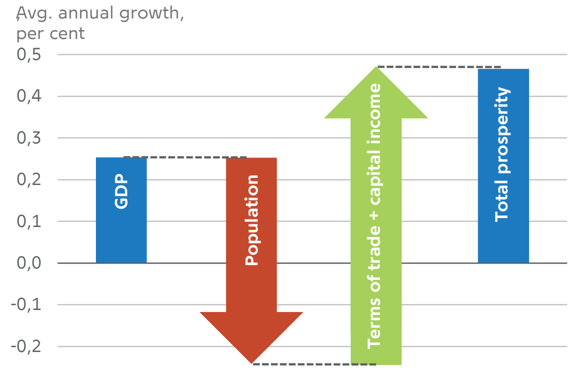
Danish prosperity growth is at the top end

Despite the upward GDP revision, the Danish economy has been growing only at a rate of just under 0.3 per cent per year since 2007, which is low compared with benchmark countries such as the USA, Germany and Sweden. GDP is a measure of the value creation within a country's borders, e.g. Denmark, but GDP does not measure the population's possibilities of consumption.

A broader measure of prosperity should, first and foremost, allow for the growing population, which, all else equal, renders the per capita value creation smaller. Moreover, prices of Danish exported goods and services have risen faster than prices of imported goods and services, resulting in improved terms of trade. This enables the population to purchase more imports for a given volume of exports and increases the possibilities of consumption. In addition, substantial net foreign assets generate capital income. These revisions provide a measure of prosperity (measured as real gross national income per capita), which has increased by an average of just under 0.5 per cent per year since 2007, cf. Chart 8.

Already before the revision, Danish prosperity growth matched that of comparable countries. The revision has reinforced the impression of a Danish recovery matching that of Sweden and the USA, cf. Chart 9. These two countries are often cited as examples of economies with strong GDP growth relative to Denmark. However, their population growth is higher than that of Denmark and their terms of trade have deteriorated. At the same time, Sweden's capital income from abroad has been decreasing since 2007. Thus, growth in prosperity in Sweden, the USA and Denmark is roughly the same, despite differences in GDP growth. In a longer-term perspective, Danish prosperity growth has also ranked at the top among comparable countries.

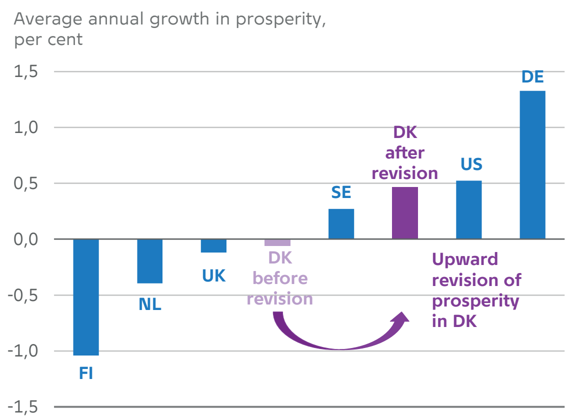
Growth in prosperity is driven primarily by improved terms of trade and capital income from abroad since 2007 Chart 8



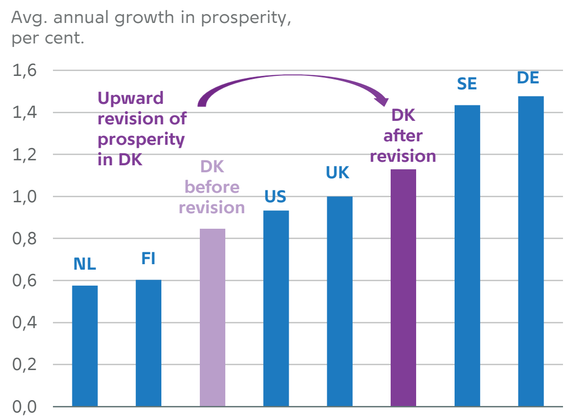
Note: Arrow sizes indicate the growth contribution to total prosperity. Prosperity is defined as real gross national income per capita, calculated based on the definition in Statistics Denmark, adjusted for terms of trade per construction.
Source: Statistics Denmark, Eurostat and own calculations.

Growth in prosperity matching that of Sweden and the USA after the revision Chart 9

Growth in prosperity in selected countries 2007-15



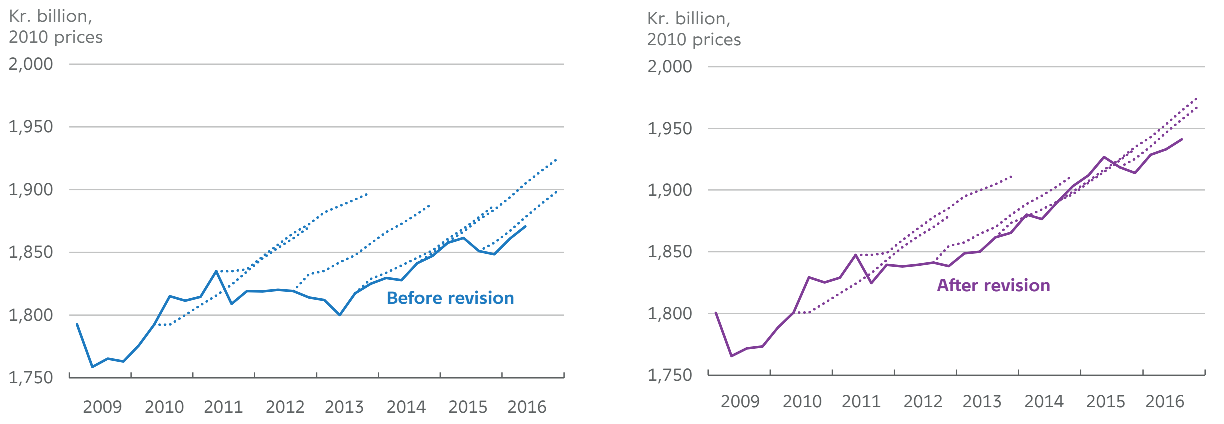
Growth in prosperity in selected countries 2000-15



Note: Prosperity is defined as real gross national income per capita.
Source: Statistics Denmark, Eurostat and own calculations.

Revised GDP growth has more or less matched Danmarks Nationalbank's forecasts since 2010

Chart 10



Note: The compiled GDP at a given time has been projected by Danmarks Nationalbank's growth forecast from the September projection in the period since 2010.
Source: Danmarks Nationalbank, Statistics Denmark and own calculations.

Danmarks Nationalbank's growth forecast has been accurate

Danmarks Nationalbank publishes its assessment of the Danish economy several times each year. The forecast takes stock of the Danish economy and presents a projection of economic developments in the next 2-3 years. The compilation of several of the figures upon which the projection is based is uncertain; a case in point is GDP, which is revised regularly. Consequently, assessments of the Danish economy cannot be based merely on GDP figures. Economic projections should be seen as an overall picture of developments in output, demand, labour market, etc. and not merely as an expression of the specific forecast of growth in GDP.

After the financial crisis, fiscal easing and an expansionary monetary policy buoyed up growth in 2010 and the first half of 2011. At the same time, the international organisations forecast growth for Denmark's trading partners, and low interest rates were expected to be reflected in slightly higher domestic consumption and investment ratios. Against that backdrop, Danmarks Nationalbank expected an impending upswing. However, the sovereign debt crisis in Southern Europe caused an unanticipated decline in demand around 2011, and the recovery was long in coming.

From 2013 onwards, employment increased and unemployment fell, but GDP growth remained low. Danmarks Nationalbank estimated that the Danish economy was in an upswing and that both employment and GDP would show fair growth. Up until the revision of the national accounts in November 2016, Danmarks Nationalbank's forecast of GDP growth was systematically higher than Statistics Denmark's compilation, cf. Chart 10, despite the fact that employment was growing at a relatively steady rate and faster than forecast by Danmarks Nationalbank in the period 2012-14.

With the revised figures, the GDP growth forecasts have, on average, largely matched the actual development in the Danish economy in 2013-15, cf. Chart 10. Danmarks Nationalbank's forecast and the actual GDP growth went from an average deviation of 0.7 percentage point to a deviation of just 0.2 percentage point after the revision, cf. Chart 11. The primary reason for the remaining modest overestimation is that Danmarks Nationalbank had not anticipated the scope of the sovereign debt crisis in Southern Europe and its delaying impact on the recovery. The numerical deviation between the forecasts and actual developments after the revision was 0.4 per cent, and thus also less than before the revision when the numerical deviation was 0.7 per cent. This should be seen in the context that the flash estimate of GDP growth, on which Danmarks Nationalbank's projection is based, is revised by an average of ±0.5 percentage point.

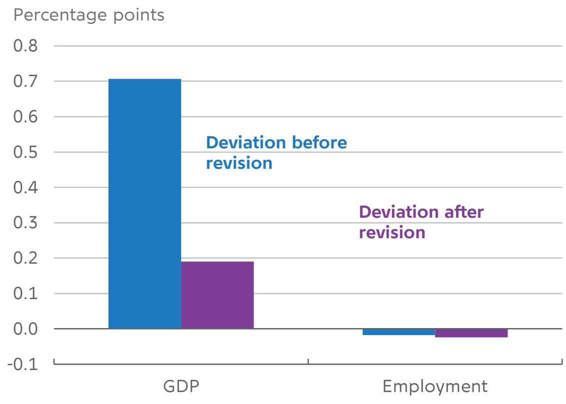
During the period 2010-14, the employment forecasts as a whole showed no systematic deviations from actual developments, although they were too high in 2010-12 and too low in 2012-14. The numerical deviation after the revision was approximately 0.3 per cent, or largely unchanged relative to before the revision.

Literature

Andersen, Asger Lau and Morten Hedegaard Rasmussen (2011), Potential output in Denmark, Danmarks Nationalbank, *Monetary Review,* 3rd Quarter, Part 2.

Danielsen, Troels Kromann, Rasmus Mose Jensen and Casper W. N. Jørgensen (2017), Revisiting Potential Output in Denmark, Danmarks Nationalbank, *Working Paper,* No. 111.

Average deviation in the projection has narrowed Chart 11



Note: Average deviation between forecast and actual annual growth in GDP and employment for current and coming years in the period 2010-14. The four annual projections of the years in question are used as the basis.
Source: Statistics Denmark and own calculations.

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