



# **BANK OF FINLAND BULLETIN**

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## EDITORIAL

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# Measures to strengthen the economy still needed

13 JUN 2017 11:00 AM • BANK OF FINLAND BULLETIN 3/2017 • EDITORIAL

Economic growth in Finland has accelerated following several years of weak performance, and growth is forecast to continue. Even so, the economy is still in a vulnerable condition. The industrial base has narrowed, the number of unemployed is high and general government finances are in deficit. Higher growth is now alleviating the problems in the economy but will not solve them. It is important to continue corrective measures that strengthen the economy.



The outlook for the Finnish economy has brightened. Economic growth has strengthened following several years of weak performance, and growth is forecast to continue.

Economic activity has become more balanced. Having witnessed a very subdued trend for a prolonged period, exports and machinery and equipment investment have been picking up since the end of 2016. At the same time, consumption and construction investment have continued to expand.

Exports are predicted to increase further. One important factor underlying the better export performance is the improved external environment. Global trade has grown, and the economies important for Finnish exports are growing. This is, in part, attributable to the very accommodative stance of monetary policy in many countries – including Finland, as a member of the euro area.

Growth prospects for exports are currently also being enhanced by improvements in Finland's cost-competitiveness. During a number of years, labour costs in Finland rose more rapidly than in the country's advanced trading partners, on average. This trend was not immediately reversed after Finnish exports and average labour productivity contracted to an exceptional degree following the onset of the international financial crisis. More moderate wage settlements in recent years have halted further deterioration in cost-competitiveness, and the Competitiveness Pact, effective since the beginning of 2017, is expected to improve the prospects for exports and export sector employment.

Even if the outlook for the Finnish economy is brighter, the economy is not yet strong. Compared with 2008, export earnings continue to be lower, the industrial base has narrowed, and there has been an exceptionally steep decline in the number of industrial jobs. Unemployment and long-term unemployment are both high.

Fiscal consolidation measures taken in recent years have succeeded in reducing the general government deficit, although the baby-boomer generation reaching retirement has had an opposing effect. In any case, public expenditure is still substantially higher than revenue, and no decisive change to this situation is forecast, despite stronger economic growth.

Notwithstanding the recent pick-up in growth, it is expected to remain markedly lower in the longer term than in past decades. This is due to both weaker demographic developments and a long-term weakening in labour productivity growth that has been widely experienced in the advanced economies. These trends weigh on the general government fiscal balance.

The pension reform decided in 2015 improved the long-term outlook for the public finances. Even so, their long-term sustainability has not yet been ensured. Expected public revenue will not be sufficient for financing expected expenditure without new measures to strengthen the fiscal outlook.

Consequently, the Finnish economy is now embarking on a growth path in a vulnerable condition. Many advanced economies have already been witnessing ongoing growth for several years. If the global economy were to take its next turn for the worse before Finnish exports, employment and public finances are materially stronger than at present, we could end up in an increasingly difficult situation. The outlook is in any case overshadowed by a growing need for care services for the ageing population in the 2020s.

In order to bring the economy back onto a sustainable and strengthening growth path, more steps will be needed to remedy the general government fiscal balance in the period ahead. Further measures will be required to improve the public finances over the long term.

With a view to boosting export earnings and export sector employment, cost-competitiveness will need to be enhanced even after the expiry of the Competitiveness Pact. For the immediate years ahead, this means a pace of increase in labour costs that, relative to productivity performance, is lower than the average of advanced trading partner countries. This will be equally necessary for both export sectors and home

market industries whose price developments crucially affect the costs of production for export.

After major difficulties extending over several years, the outlook for the Finnish economy is more favourable. Domestic corrective measures have played a key role in helping the economy cope with a series of adverse shocks. These measures should be continued.

Helsinki, 9 June 2017

Erkki Liikanen  
*Governor of the Bank of Finland*

## Tags

- [cost-competitiveness](#)
- [Finnish economy](#)

# Finland grows, and gathers more debt

TODAY 3:00 PM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK

The economic upswing in Finland has strengthened, and growth particularly in the first part of 2017 has been strong in the light of the statistical data. Economic growth in recent years has rested exclusively on domestic demand, but the base of growth is now broadening towards exports. The Bank of Finland forecasts GDP growth of 2.1%, 1.7% and 1.4% in 2017, 2018 and 2019, respectively.



Economic growth will, however, slow towards the end of the forecast horizon 2017–2019. This reflects weak structural factors present in the Finnish economy that weigh on potential growth. Inflation will gather pace, but will be slower than the rest of the euro area throughout the forecast horizon.

Despite the firming of exports, economic growth in the forecast period will mainly depend on private consumption and investment. Private consumption growth will be bolstered, in particular, by an improvement in the employment situation and rising purchasing power, but also by household debt accumulation. Saving by Finnish households has, in fact, already been at very low levels for an historically prolonged period. Looking to the immediate years ahead, the savings ratio will also remain exceptionally modest as the low level of interest rates and strong consumer confidence encourage households to consume.

The very accommodative stance of monetary policy will continue to keep loan interest rates low, not only for households but also for non-financial corporations, and support investment. Investments will still boost economic growth in the forecast period, although their rate of growth will decelerate slightly towards the end of the forecast horizon, with the bottoming out of the upward trend in construction.

Finnish exports will benefit from the strengthening of the export markets and from the composition of growth generally turning more favourable for Finland's exports, especially in the euro area. Finnish export prices will rise more slowly than those of competitor countries, and the economic situation in Russia will improve, with these factors, too, making a positive contribution to exports.

Despite economic growth, Finland's external indebtedness will continue to grow. The accumulated current account deficit in 2010–2016 already stands at more than EUR 14 billion, as both general government and household debt levels have been rising rapidly. The current account will remain in deficit in the forecast period against the backdrop of strong demand for imports and a weakening in the terms of trade, with the Competitiveness Pact keeping domestic price developments moderate.

The improved cyclical situation will not be sufficient to remedy the general government fiscal balance. Fiscal policy will be eased in 2017, on account of lower taxes and reductions in social insurance contributions relating to the Competitiveness Pact. In the later forecast years 2018–2019, fiscal policy will be tightened, but this will not suffice to repair the general government structural deficit. General government debt in the forecast years will grow to 66.8% relative to GDP.

Inflation will gather pace slightly in 2017, but will be slower than the euro area as a whole throughout the forecast horizon. Although moderate growth in labour costs as a consequence of the Competitiveness Pact will rein in upward pressures on consumer prices, the positive cyclical environment, greater aggregate demand and higher import prices will boost inflation to some extent.

The employment situation is expected to ameliorate further in the forecast period, driven by the cyclical trend, but employment growth will be restricted by labour market mismatch problems and constraints in labour supply. Demographic change will slow expansion of both the labour force and the number of employed in the forecast years. The emphasis of economic growth will also be shifting to less labour-intensive sectors as exports assume a greater role as the engine of growth. At the same time, however, productivity growth and corporate profitability will improve.

## **GDP: GDP finally larger than in 2008**

The Bank of Finland forecasts GDP growth of 2.1% in 2017. Finland has regained the growth rates of the rest of the euro area, and the recovery in the economy is strengthening. Growth in recent years has rested exclusively on domestic demand, but in the forecast period exports will also increase and support growth. Economic growth will slow towards its longer-term trend at the end of the forecast horizon. The economy will grow 1.7% in 2018 and 1.4% in 2019. In 2019, GDP will be larger than in 2008.

Table 1.

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## Forecast summary

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% change on previous year

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	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
<b>Gross domestic product</b>	2.1	1.7	1.4
Private consumption	1.3	1.3	1.2
Public consumption	-0.2	0.1	-0.2
Private fixed investment	5.2	3.0	2.8
Public fixed investment	2.4	0.2	-0.1
Exports	3.9	3.4	2.9
Imports	2.7	2.3	2.1

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	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
<b>Labour market</b>			
Hours worked	1.0	0.9	0.4
Number of employed	0.5	0.7	0.5
Eunemployment rate, %	8.6	8.2	8.1
<b>Unit labour costs</b>	-1.8	0.2	0.5
Labour compensation per employee	-0.3	1.1	1.4
Productivity	1.5	1.0	1.0

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	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
<b>Contributions to growth</b>			
Domestic demand	1.7	1.3	1.3
Net exports	0.4	0.4	0.4
Inventory change + statistical discrepancy	0.0	0.0	0.0

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## Forecast summary

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<b>Savings ratio, households, %</b>	-1.2	-1.4	-1.5
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<b>Current account balance, % of GDP</b>	-1.2	-0.9	-0.8
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<b>GDP, price index</b>	0.6	1.2	1.4
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Private consumption, price index	0.8	1.3	1.5
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<b>Harmonised index of consumer prices</b>	0.8	1.0	1.3
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Excl. Energy	0.4	0.9	1.2
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Energy	5.9	1.1	2.5
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f = forecast

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**Sources: Statistics Finland and Bank of Finland.**

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Despite the firming up of exports, economic growth in Finland in the forecast period will mainly depend on private consumption and investment (Chart 2). Private consumption will be bolstered by an improvement in the employment situation, rising purchasing power, stronger confidence and household debt accumulation. (See article '[Household saving at an historic low](#)'). The very accommodative stance of monetary policy will continue to keep interest rates on household and corporate loans low, which will sustain consumption and spur investment. The fastest phase of investment growth will occur at the beginning of the forecast period, with ongoing strong new-build construction.

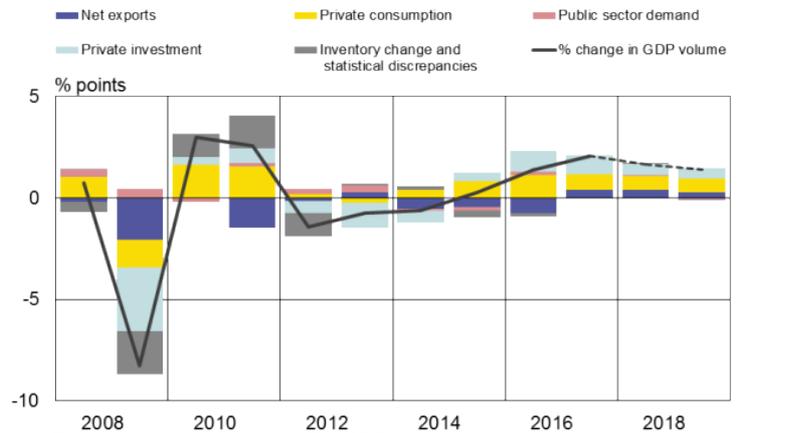
Chart 1.



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Chart 2.

### Economic growth to become more broadly based



The chart is merely indicative. The GDP growth contribution of each demand component has been calculated on the basis of its volume growth and its value share in the previous year. The figures for 2017–2019 are forecasts.

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Export growth will finally gain momentum. The Competitiveness Pact will improve cost competitiveness, and higher corporate fixed investment will boost the growth prospects for exports. The outlook for the global economy is also better than previously projected, and demand for Finnish exports will increase. The ongoing accommodative stance of monetary policy will strengthen euro area investment, thereby also structurally supporting Finnish exports. Even if picking up, export growth will remain lower than that of the export markets. (See article [‘Finland struggling to defend its market share in rapidly expanding markets’](#)).

Despite economic growth, the external indebtedness of the Finnish economy will continue to grow. The cumulative current account deficit in 2010–2016 already stands at more than EUR 14 billion. In 2017–2019, the current account deficit relative to GDP will stay around 1%, with well over EUR 6 billion in additional deficit accumulation. General government and household debt levels are rising rapidly (Chart 3). The widening of the current account deficit is also due to higher investment appetite among non-financial corporations.

Chart 3.



The forecast takes account of statistical data and other information available on 23 May 2017. On 1 June 2017, Statistics Finland released the latest data on the quarterly national accounts, and these have been discussed in more detail in a separate article (See article [‘National Accounts for the first quarter of 2017’](#)).

## Households: Employment gains bolster private spending

Employment growth and a pick-up in earnings towards the end of the forecast horizon 2017–2019 will underpin consumers’ purchasing power. While growth in private consumption will moderate from the level of 2016, consumption will still remain higher than disposable income. Consequently, the household saving ratio will remain negative and debt will continue to accumulate.

Consumer confidence strengthened further in the first half of 2017, with the value of the consumer confidence indicator in May recording the highest reading throughout its history. That said, consumers’ expectations for their own finances clearly fall short of their expectations for the Finnish economy. Of the components of the confidence indicator, the threat of unemployment is assessed to be lower than before, on the back of improvements in the labour market situation. Furthermore, conditions are also assessed to be more conducive to borrowing now than in the long term, on average.

The pick-up in economic growth notwithstanding, the increase in households' disposable income remains slow. In keeping with the Competitiveness Pact, the social partners will refrain from negotiated wage increases in 2017, while the upward impact of wage drift on earnings will be broadly the same as in 2016. Nominal wage earnings will rise 0.7% overall in 2017. With the pace of economic and productivity growth gaining momentum, demands for higher wages will grow stronger, pushing up the rate of increase in nominal wages to 1.8% by 2019. Capital income and public transfers will also add to households' aggregate income in the forecast period. An increase in public transfers may boost spending even more than an equivalent rise in earnings, reflecting the higher-than-average propensity of low-income earners to consume.

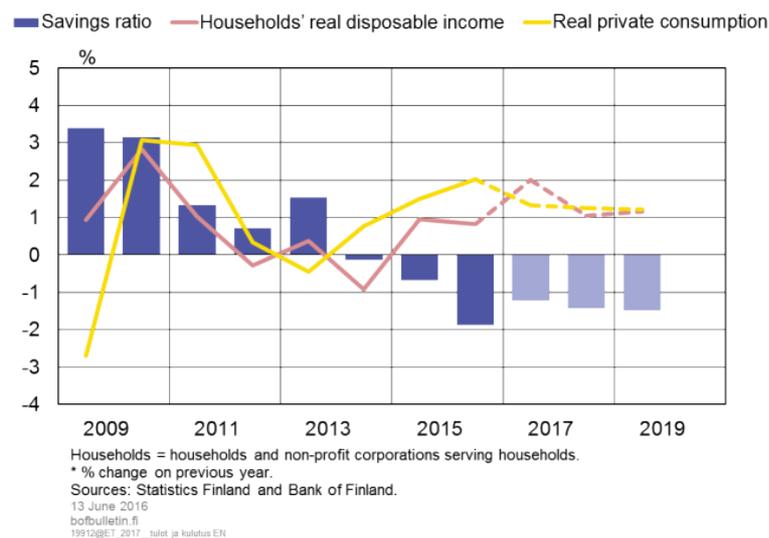
Higher social security contributions, together with the cut in public-sector holiday bonuses agreed as part of the Competitiveness Pact, will curtail households' purchasing power, but the effects of these measures on disposable income will be almost fully offset by the income tax cuts introduced in 2017. The Competitiveness Pact will, however, have consequences for income distribution between the private and public sectors. Disposable income will increase in the private sector as holiday bonuses remain intact and income taxation is eased.

In 2016, growth in households' purchasing power largely hinged on employment growth and most payroll growth will over the forecast years, too, be derived from gains in employment.

The purchasing power of households has, in recent years, been bolstered by low consumer price inflation, but, over the forecast years, the rate of inflation will gradually lift. In 2017, consumers' real purchasing power will increase by roughly 2%, overall, and then fall back to a full 1% per annum in 2018–2019 (Chart 4).

Chart 4.

### Households' spending higher than income



Over the forecast years 2017–2019, the rate of consumption growth will moderate from 2016, settling close to 1.3%. In response to subdued income growth and the low level of

interest rates, households have in recent years financed consumption by realising their assets or taking on more debt. The household savings ratio will remain negative in the forecast years, too, declining to around -1.5% of disposable net income. (See article [‘Household saving at an historic low’](#)).

Accommodative financing conditions have also helped sustain households’ purchasing power during the past few years. The reference rates for residential mortgages (home loans) have remained low, while interest margins on home loans narrowed further in the early part of 2017. Nominal interest rates are not expected to rise much over the forecast years, in addition to which accelerating inflation will push down real interest rates.

The low level of interest rates has provided more scope for consumption, notably for mortgage-indebted households, and speeded up repayment of mortgages, insofar as they are annuity loans. That said, the low interest rates have also encouraged households to take on more debt. At the end of 2016, the household debt-to-income ratio was 126.9%, or 2.5 percentage points higher than a year earlier. New drawdowns of home loans have increased slightly in the early part of the year, but growth in the stock of home loans has remained moderate compared with pre-2010 levels.

Growth in demand has, in fact, been stronger for consumer credit than for home loans. In March 2017, the volume of consumer credit increased by 13.7%, nearly twice as much as a year earlier. However, consumer credit accounts for just a small share of household borrowing. In addition to loans taken out in their own names, households are also burdened by loans taken out via housing companies, which are growing rapidly, not least because of the continued brisk pace of renovation work.

## **Non-financial corporations: Improvements in growth prospects and profitability support investment**

Investment will continue to fuel economic growth, although the rate of increase in investment will moderate slightly over the forecast horizon. Investment picked up 5.2% in 2016, driven by private investment. Behind the growth in investment lay better growth prospects and higher profitability, underpinned by an accommodative monetary policy. The favourable performance is reflected especially in residential and other construction investment, but a revival has also been seen in investment in machinery and equipment.

In the years since the financial crisis, the private sector investment rate – gross fixed capital formation relative to GDP – dropped by more than 4 percentage points, to around 16% in 2015. The strong rebound in investment will push up the private sector investment rate to 19% in the forecast period.

The current exceptionally fast growth in investment will moderate as the construction boom gradually matures. Private fixed investment will increase 5.2% in 2017 and then ease off to roughly 3% per annum towards the end of the forecast period 2017–2019, when growth will be derived mainly from investment in productive capacity (Chart 5).

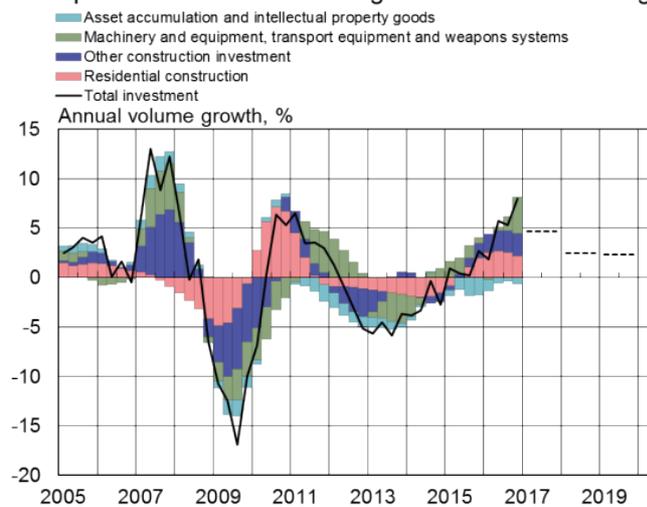
In 2016, investment in residential construction was up 9.1%, and productive investment by 4.6%. In fact, most of the revival in investment was due to an exceptional surge in residential construction. The forecast, however, projects growth in residential investment

to moderate to 2% in 2019. However, the annual growth rate of productive investment will still be above 3% at the end of the forecast period, offsetting the moderation in residential construction growth.

Approvals of construction permits and newly launched construction projects increased substantially in the early part of 2017, portending that construction activity will still remain brisk this year and in 2018. The exceptional surge in new-build construction is, however, mainly related to the protracted downturn in the construction sector and the unravelling, since 2016, of accumulated demand for housing construction, and growth is not expected to remain as brisk in the immediate years ahead. By contrast, demand for renovation work will remain unchanged in the face of the ageing of the housing stock.

Chart 5.

### Exceptional rate of investment growth will moderate slightly



Corporate confidence in the economy has improved broadly across different sectors. Growth prospects for non-financial corporations notably in the services sector and manufacturing are now much brighter than a year earlier. In manufacturing, output and employment expectations have improved, with an increase in new orders recorded particularly in the metal industry. Business confidence also strengthened in other advanced economies over the course of 2016.

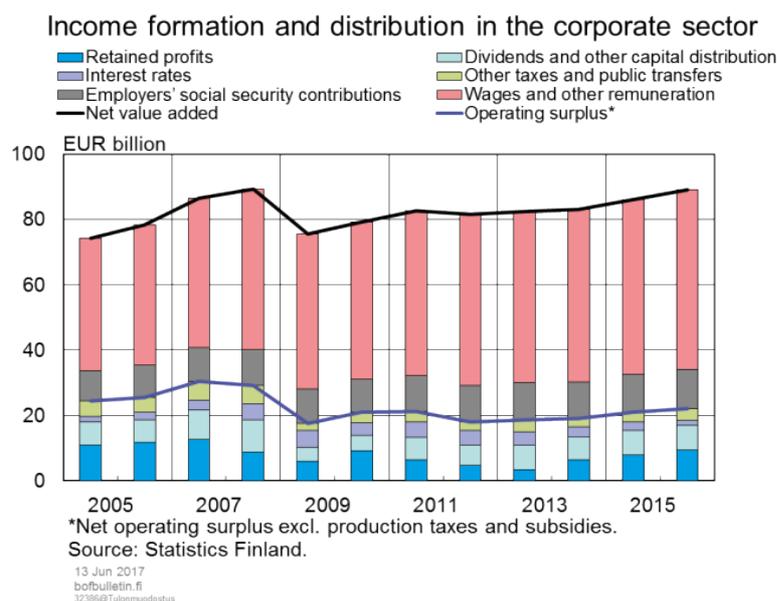
Financing conditions for non-financial corporations will remain highly favourable, with exceptional monetary accommodation keeping lending rates down. The low rate of investment growth witnessed in recent years has, in fact, been due to lacklustre export demand and slow productivity growth, rather than poor access to funding. Better prospects for global and euro area growth and stronger business confidence, together with the Competitiveness Pact, bolster corporate appetite for investment, notably in the export sectors and manufacturing. Buttressing exports, the rebound in productive investment will support economic growth in the years ahead.

Profitability in the corporate sector has remained modest in the years since the financial crisis, despite an upturn in operating surplus over the past few years. In the National

Accounts, operating surplus equals operating profits in the financial statements of non-financial corporations. In 2016, however, a tangible reduction in interest payments boosted average return on equity in the corporate sector. In response to lower interest payments, both retained corporate profits and dividends and other capital distribution to other sectors increased (Chart 6).

Over the forecast period, corporate sector profitability will improve, as output growth continues and the share of value added taken by the operating surplus rises on the back of the Competitiveness Pact. The improvement in profitability also enables corporate growth and, hence, fosters employment (See ‘Profitable companies generate employment and pay higher wages’).

Chart 6.



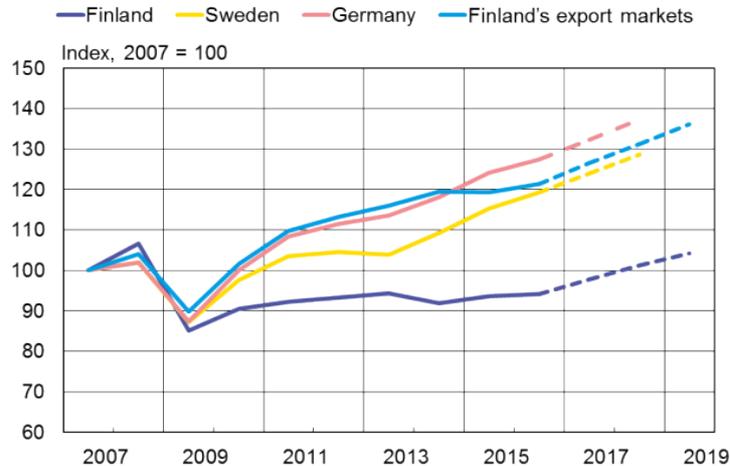
## Foreign trade: Exports firming up, current account remains in deficit

Finnish exports are projected to return to a pronounced growth path, after several years of weak performance. Over the years 2017–2019, exports will increase at an average rate of a full 3%, with strengthening external demand and improvements in cost-competitiveness. Finnish exports will be underpinned by the growth in the export markets and the pick-up in euro area investment.

Finnish exports have long been struggling. Export growth has been modest, and loss of export markets considerable. While the export markets have expanded by 17% since 2008, Finnish exports still remain 12% below 2008 levels (Chart 7). The volume of Finnish exports grew in 2016 by only ½%. Goods exports increased slightly, while services exports remained practically unchanged from the year before. Especially non-euro area exports – including to Russia – remained subdued. By contrast, exports to the euro area have grown, with the euro area having gained in importance for Finnish exports in recent years (Chart 8).

Chart 7.

### Finnish exports have lagged behind



Sources: Bank of Finland and European Commission.

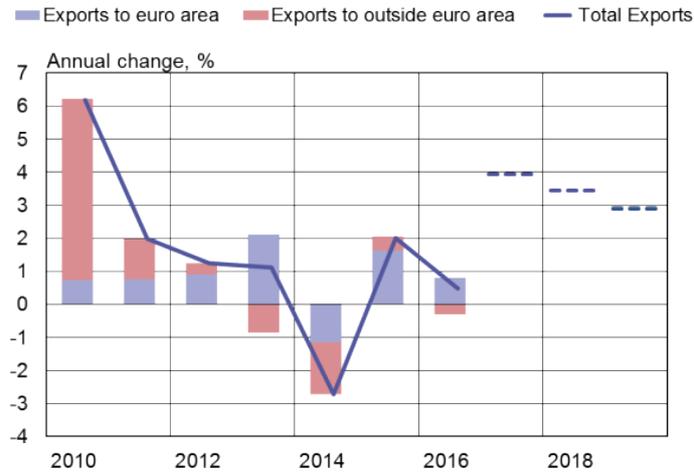
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There is a notable turnaround in export performance currently underway. The rate of export growth will climb close to 4% in 2017, falling back to around 3% in 2018 and 2019. In 2019, export volume will amount to EUR 8 billion, up by around 10% from 2016. Exports are underpinned by stronger export market performance and a shift in the structure of export demand favourable to Finnish exports. Finnish exports are also currently driven by a slower rise in export prices compared with competitor countries. Moreover, Russia's economic situation is expected to gradually improve.

The accommodative monetary policy will sustain a rebound in investment in the euro area, thereby buttressing Finnish exports. In the euro area, the capacity utilisation rate has already risen steadily above its long-term average and investment growth is expected to continue. Domestic investment, in turn, will stimulate export capacity and export growth prospects in the immediate years ahead.

Chart 8.

### Changes in Finnish exports to euro area and beyond



Sources: Statistics Finland and Bank of Finland.

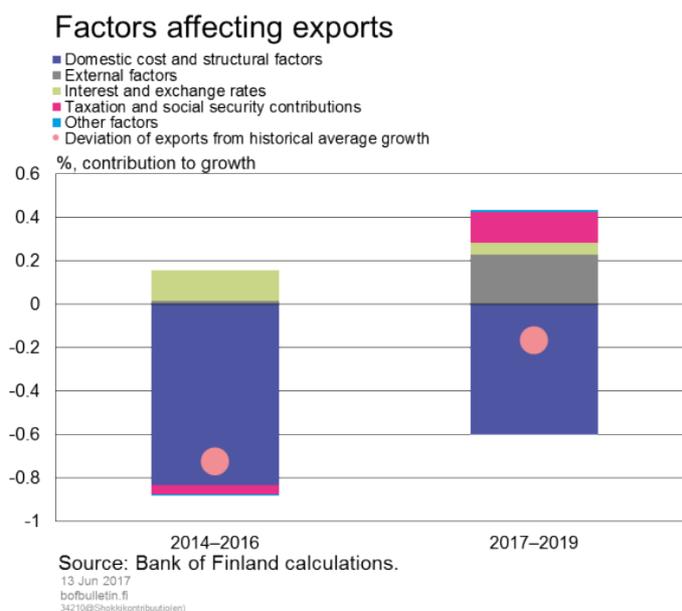
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The contribution of net exports to economic growth will strengthen over the forecast horizon 2017–2019. Rising domestic demand will sustain imports, but due to moderate domestic cost developments, a proportion of imports will be replaced by domestic production.

The revival in exports notwithstanding, export growth will be more sluggish than normal in the forecast period (Chart 9). In 1996–2014, the rate of export growth averaged 4.7%. The slower-than-average increase in exports still reflects domestic cost and structural factors, such as weak productivity and a low level of competition on the domestic market. Finland continues to lose export market shares.<sup>[1]</sup>

1. For a more detailed examination of changes in export market shares, see [‘Finland struggling to defend its market share on rapidly expanding markets’](#). Bank of Finland Bulletin 3/2017.

Chart 9.



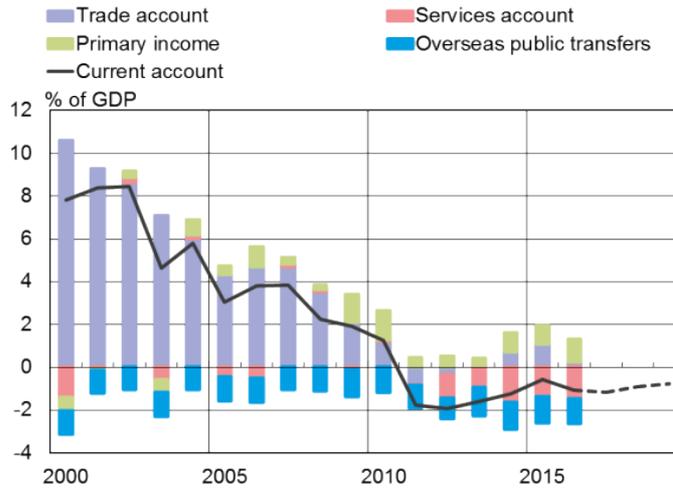
In 2016, the current account deficit deepened further, to 1.1% of GDP. The deficit of a little over EUR 2 billion accrued from trade in services and public transfers paid abroad. The balance on goods and services posted a deficit of nearly EUR 2.7 billion, with domestic demand sustaining imports and the terms of trade deteriorating upon a reversal of the decline in oil and other commodity prices. The primary income account, which includes earnings and capital income from abroad, posted a surplus, as in previous years.

Export and, notably, import prices are posting brisk growth in 2017. Towards the end of the forecast horizon, the rate of increase in foreign trade prices will taper off, mirroring developments in oil prices and other world market prices.

The terms of trade will deteriorate as the Competitiveness Pact subdues the increase in export prices. This will erode part of the increase in the value of exports. At the same time, domestic demand will improve, fuelling rapid import growth. On the back of these factors, the current account will remain in deficit also in 2017–2019 (Chart 10). The current account deficit relative to GDP will continue to hover around 1%.

Chart 10.

### Current account still in deficit



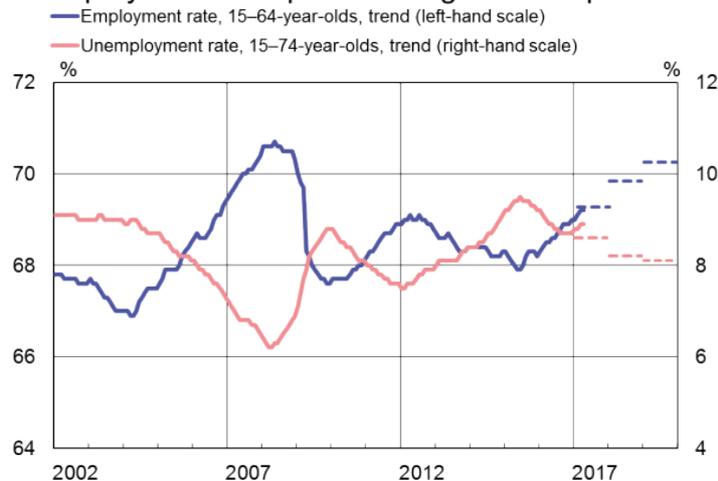
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## Labour market: Improvements in employment slowed by mismatch problems

The strengthening of the Finnish economy has been reflected as improvements in employment. The employment situation is expected to improve further, driven by the cyclical trend, but employment growth will be restricted by frictions associated with recruitment and constraints on labour supply. According to the forecast, the number of employed will increase by some 1.7% in 2017–2019, while the employment rate will rise to 70.3%. The unemployment rate will remain close to 8.1% in 2019. The labour force (15–74-year-olds) will grow slightly in the forecast period (Chart 11).

Chart 11.

### Employment to improve during forecast period



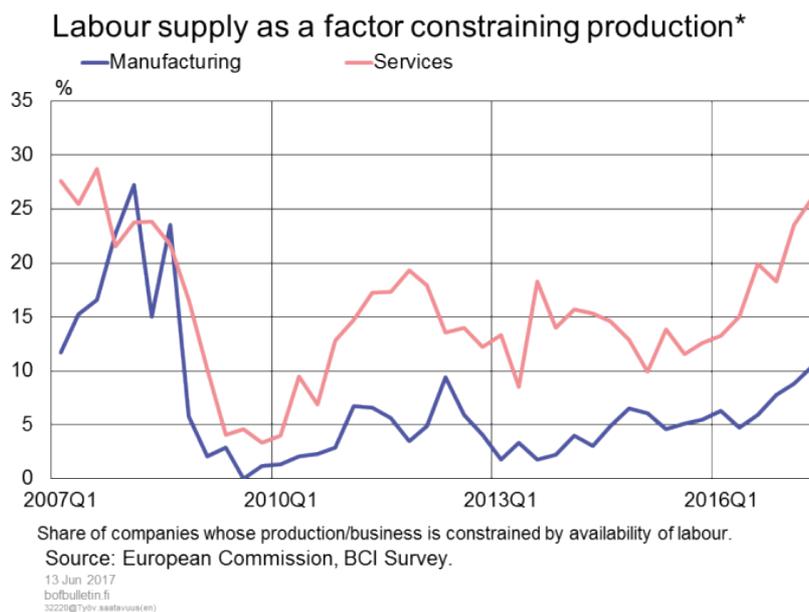
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Positive developments in employment have thus far been based on growth in labour-intensive industries, such as construction and services. During the forecast period 2017–2019, the composition of economic growth will change. The emphasis will shift to less labour-intensive sectors, as the share of exports in aggregate demand increases. Economic resources are increasingly being allocated to manufacturing and the private sector, where productivity growth is higher than in services and the public sector. The higher productivity will generate additional revenue in the economy and also gradually boost employment.

Improvements in employment are being slowed by mismatch problems on the labour market. The shortage of suitable employees will become an increasingly significant challenge for companies, as the more easily employed persons have already landed a job (Chart 12). In addition to mismatch problems between professions, the decline in unemployment is slowed by low regional mobility and weak incentives to accept work.

For many, very long spells of unemployment have an effect on their likelihood of finding employment. Active job-seeking may decrease as unemployment becomes protracted, and skills may erode. In addition, employers may be reluctant to employ applicants who have been unemployed for a long time, even when their characteristics are not actually different from persons with shorter spells of unemployment (See article '[Estimation of structural unemployment important, but complicated](#)').

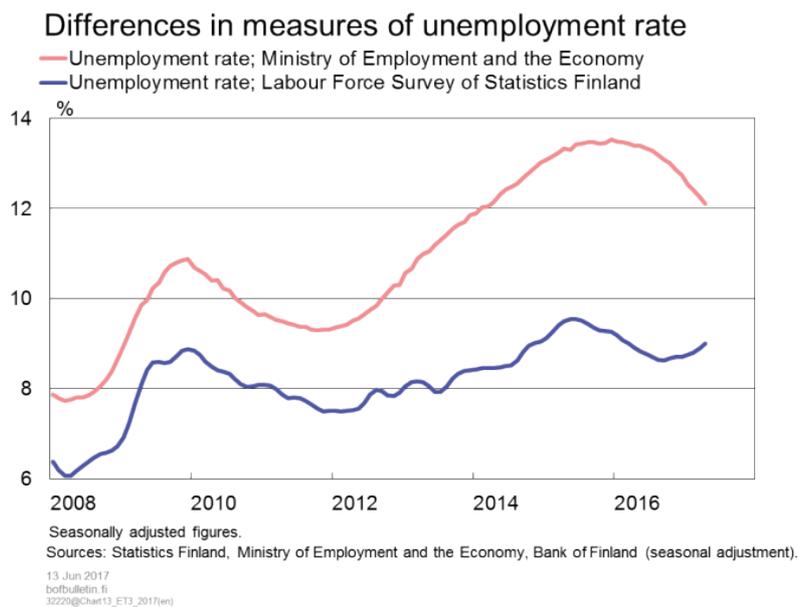
Chart 12.



In recent months, improvements in employment have been reflected as a rapid decrease in unemployment as measured by the Ministry of Employment and the Economy and including all unemployed persons who receive unemployment benefits. In addition, the recent rapid decline in unemployment according to this measure is due to the introduction of interviews conducted at fixed intervals, as a result of which some of the persons who have actually already found work have been sifted out of the unemployment statistics. In contrast, unemployment as measured by the Labour Force Survey of Statistics Finland and including only those unemployed persons who are actively seeking

work has increased slightly. This may be an indication of an increase in the number of unemployed who had given up job-seeking but have now returned to the labour market (Chart 13). The number of hidden unemployed outside the labour force has, in fact, decreased in recent months.

Chart 13.

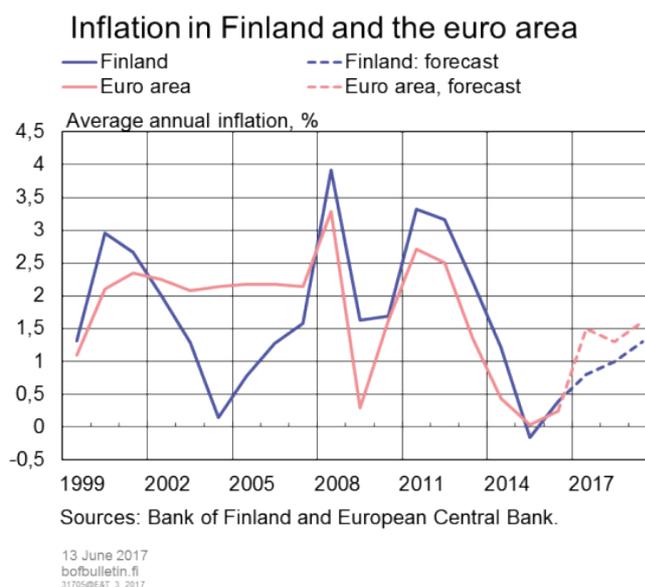


Population ageing will constrain labour supply, which will increase the challenges related to employment growth. Demographic change will weigh on the participation rate and slow expansion of both the labour force and the number of employed in the forecast years. Improvements in the participation rate by age cohorts will, however, continue and will compensate the decrease in the working-age population; accordingly, the labour force will not contract.

## Wages and prices: Moderate rise in wages and prices

Inflation will pick up slightly in 2017, but will remain slow until the end of the forecast horizon 2017–2019. Inflation according to the harmonised index of consumer prices (HICP inflation) will accelerate to 0.8%, driven by energy prices. Inflation will rise to 1% in 2018 and 1.3% in 2019.

Chart 14.



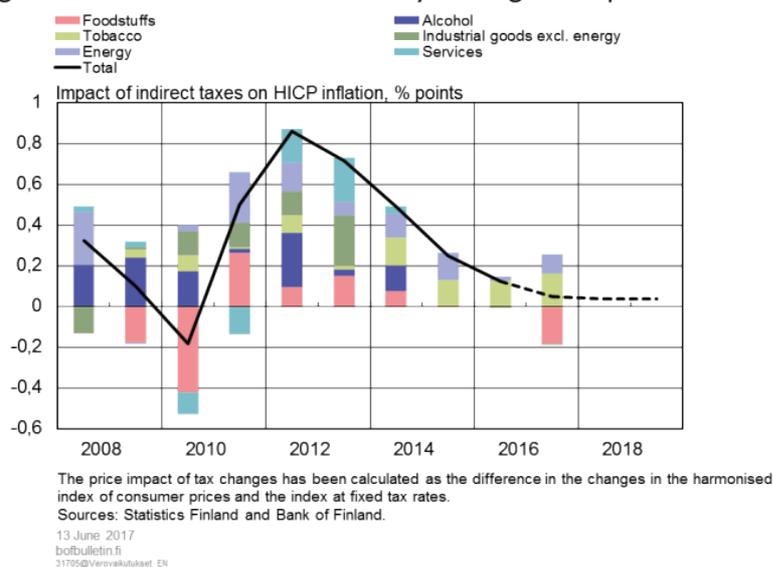
The recovery in the prices of crude oil and other commodities has fuelled inflation in early 2017. The effect of these components will, however, be temporary. The upward trend in services prices slowed in early 2017 and will remain more subdued during the forecast period. The impact of the hikes in customer fees on social and welfare services will be smaller in 2017 than in the previous year. Moderate pay agreements and the Competitiveness Pact will also slow the upward trend in services prices.

Although the moderate growth in labour costs will rein in upward pressures on consumer prices, greater aggregate demand and higher import prices will boost inflation slightly. Towards the end of the forecast period, inflation will accelerate slightly, due to a gradual rise in import prices and wages. Inflation in Finland is slower than in the other euro area countries, and thus the high level of prices in Finland will just slowly approach the average level in the euro area.

The impact on the HICP of changes in indirect taxes will be close to zero in 2017. The effects of the increase in excise duties on tobacco products and fuel and of the removal of taxes on sweets will more or less offset each other (Chart 15).

Chart 15.

### Changes in indirect taxes will have only a marginal impact on inflation



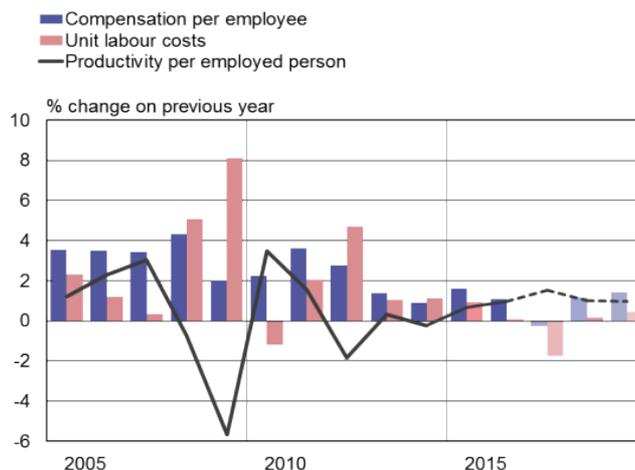
The Competitiveness Pact will slow the rise in wage and salary earnings in 2017. Nominal earnings according to the index of wage and salary earnings will grow by 0.7% in 2017, which is almost entirely due to wage drift as negotiated pay rises will remain at zero. Growth in real earnings will also remain close to zero, due to the pick-up in consumer price inflation. In the forecast period, earnings growth is expected to be slightly higher than envisaged in the Bank of Finland forecast in March, as both economic growth and productivity growth will pick up. In 2018 earnings will grow by 1.5%, and in 2019 by 1.8%, according to the index of wage and salary earnings. Negotiated wage increases will be on average 1% in both 2018 and 2019, and the extent of wage drift will remain unchanged from previous years.

Improvements in employment will support the growth in the wage bill during the forecast period. Wage bill-based average earnings will rise at a slightly higher pace than the index of wage and salary earnings, because in a cyclical upswing that has gained momentum total hours worked increase more rapidly than the number of employed. The increase in hours worked is only partly reflected in the wage bill, as part of it is the result of unpaid longer working hours in accordance with the Competitiveness Pact.

Compensation per employee will decrease in 2017, due to significant cuts in employers' social security contributions. The lower cost of labour will support Finland's cost-competitiveness. Unit labour costs will decrease significantly in 2017, reflecting lower labour costs and higher productivity growth. Productivity growth will remain close to 1% in 2018–2019, and at the same time, labour costs will begin to grow again. Unit labour costs will thus begin to increase moderately in 2018–2019 (Chart 16).

Chart 16.

### Slower growth in unit labour costs



Sources: Statistics Finland and Bank of Finland.

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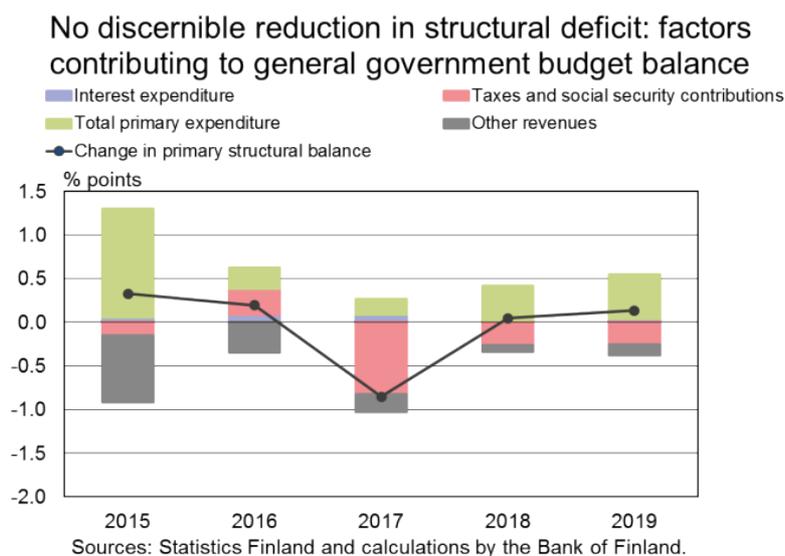
## Public finances: Public finances in structural deficit

The improvement in cyclical conditions will not be sufficient to bring about a material correction in the general government financial balance. Fiscal policy will ease in 2017 as a result of the cuts in taxes and social security contributions decided in connection with the Competitiveness Pact. In the latter forecast years 2018–2019, fiscal policy will tighten again, but this will not be sufficient to correct the structural deficit in the public finances.

Public expenditure relative to GDP will decrease during the forecast years 2017–2019. The volume of public consumption will contract slightly in the forecast period, on the back of the Government’s savings measures and lower labour costs, the latter stemming from the Competitiveness Pact and the contraction in public sector employment. A decline in the number of asylum seekers coming to Finland will also reduce public expenditure. On the other hand, temporary key government projects will still fuel public consumption in 2017–2018. The action plan to reduce the maintenance backlog of transport infrastructure will continue to fuel public investment both this year and next.

The total tax ratio will fall by almost 1 percentage point, to stand at 43.2% in 2017. The decline will continue in 2018–2019, but at a slower pace. The cuts in taxes and employers’ social security contributions agreed in the Competitiveness Pact will directly weaken the general government budget balance. This is due to the fact that the savings generated by lower employers’ contributions and the temporary reduction in public sector holiday bonuses fall short of funding the gap from cuts in taxes and social security contributions. Therefore, measured in terms of the structural primary balance, fiscal policy will ease in 2017 (Chart 17). In 2018, fiscal policy will be neutral, but in 2019 it will tighten noticeably, when the funding for key government projects runs out.

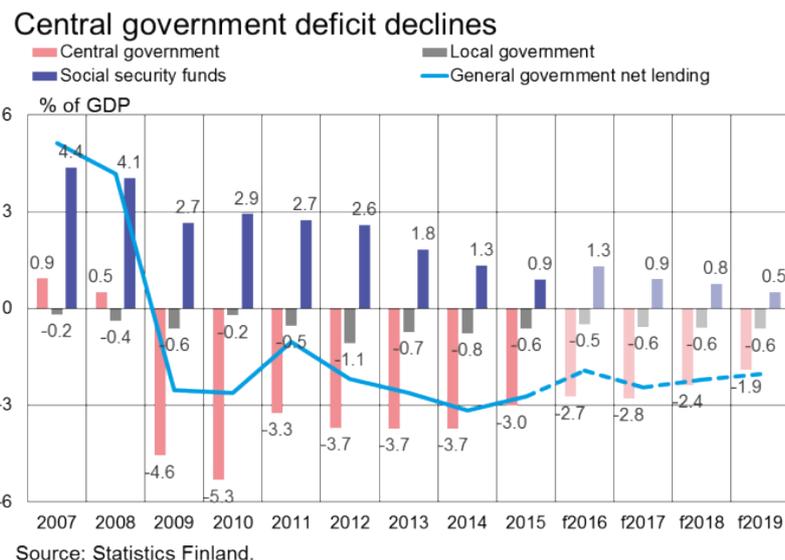
Chart 17.



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Growth in central government tax revenues will remain slow in 2017 on account of the reduction in income tax. However, higher private consumption will support growth in indirect taxes. Central government consumption expenditure will fall in 2017, due to e.g. lower compensation for employees and immigration-related costs. The central government deficit as recorded in the National Accounts will grow to 2.8% in 2017, but will decline in the next few years, to below 2% in 2019 (Chart 18).

Chart 18.



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The local government deficit will remain unchanged at around 0.6% of GDP. The Competitiveness Pact and public sector savings will rein in spending by municipalities and joint municipal authorities, but at the same time municipal tax revenues will also

decline. The changes in revenues and expenditure will be largely compensated by central government transfers to local government. These transfers will fall overall in 2017. The social and health care reform to be launched towards the end of the forecast period will transfer responsibility for the organisation of these services away from municipalities. At present, the organisation of these services accounts roughly for about half of municipal expenditure. This forecast does not yet include an assessment of the effects of the regional government reform on the local government financial balance, nor does it take into account any related short-term costs that are yet to be specified.

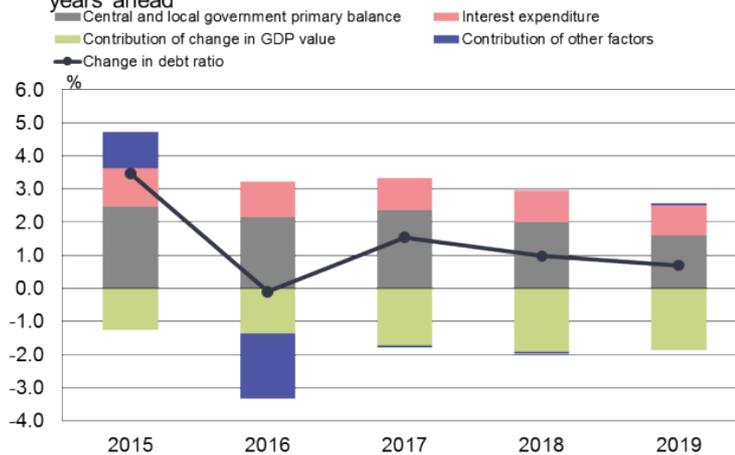
Pension expenditure will continue to grow during the forecast period in step with a further increase in the number of pension recipients. Pension insurance contributions will be raised in 2017 in accordance with the agreed pension reform, while the financial burden will increasingly be shifted towards the insured. However, low interest rates will push down growth in the asset income of earnings-related pension funds, and the surplus on the funds relative to GDP will erode.

The budget balance of other social security funds will remain slightly positive in 2017–2019. Benefits paid by the Social Insurance Institution will decline in 2017, since the national pension index will be cut by 0.85% from the level of 2016. The level of the index has been frozen for 2018–2019. Expenditure on unemployment benefits begun to shrink in 2016, and the trend will continue also during the forecast years. The social security funds will also be strengthened by, for example, the cuts in the maximum duration and the supplementary parts of paid unemployment allowances as well as the extension of waiting periods.

Public debt will continue to grow. Even though interest expenditure on public debt will decrease relative to GDP, the continued central and local government deficits will fuel growth in the debt-to-GDP ratio throughout the forecast period. Consequently, the debt ratio will grow to 66.8% of GDP in 2019 (Chart 19). The strengthening of economic growth will restrain growth in the debt ratio, but will not be sufficient to bring the debt ratio onto a downward trajectory in the forecast years.

Chart 19.

Stronger economic growth will restrain growth in the debt ratio, but be insufficient to bring the ratio onto a downward trajectory in the immediate years ahead



Statistics Finland and calculations by the Bank of Finland.

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## Risk assessment: Risks to economic developments balanced

Through the forecast years 2017–2019, Finnish economic growth will be more broadly based than heretofore. As growth will no longer hinge solely on domestic demand, and global cyclical conditions have improved, the risks to economic developments are balanced overall. In the short term, risks to the economy are on the upside, because both export demand and investment growth may turn out to be stronger than expected. Towards the end of the forecast period, however, there is an increasing risk that the export market cycle will mature.

Political uncertainty will continue, perpetuating the risks to global economic developments. The impact of Brexit on economic growth in the United Kingdom and the euro area have so far remained modest. However, if the exit negotiations turn out to be longer and more difficult than anticipated, the impacts on trade, investments and corporate confidence in EU countries may be more negative than expected.

Economic growth in the euro area has got off to a good start, but the banking sector is still vulnerable in some respects. In particular, the large volume of banks' nonperforming loans in many euro area countries poses a significant problem.

The aspirations of the new US administration related to infrastructure investments, tax reforms and deregulation may fuel the country's economic growth more than expected in the short term. At the same time, however, developments in the USA have increased the probability of protectionist measures, and such a move would slow global economic growth.

Economic growth in China is expected to slow in a controlled manner, to about 5% per annum during the forecast years. Nevertheless, the risks to the Chinese economy

continue to be tilted on the downside. In particular, the Chinese economy is increasingly exposed to financial market disruptions, as the protracted debt accumulation has increased the vulnerability of the Chinese financial sector.

Global economic developments are also subject to upside risks. Growth in the global economy and world trade may turn out to be stronger and more protracted than anticipated, which would push up Finnish exports. Since the Finnish export structure is focused on capital and intermediate goods, it would be particularly advantageous for Finnish export developments if investments in the advanced economies continue to recover. In fact, there is increasing upwards pressure on investment because investment rates in the advanced economies have long been low. This has eroded the capital stock in these countries.

The cost-competitiveness of Finnish exports is expected to improve further during the forecast period, with the level of earnings growing faster in the competitor countries than in Finland. The improvement in competitiveness in 2017 is explained by the Competitiveness Pact signed in 2016 and the fact that, in the competitor countries, the economic upturn occurred at an earlier phase than in Finland. After the current wage settlement period extending from 2017 to early 2018, wage and salary earners may require higher-than-anticipated wage increases as compensation for previous years' low pay rises. This has happened before. The risk is even greater, the looser the coordination of future wage negotiations turns out to be.

The Finnish financial system is stable. The capital adequacy and profitability of banks operating in Finland is good, but the concentration of the Nordic banking sector, its large size and strong interlinkages between banks amplify the risks of the Finnish banking sector, too.

Housing construction, which is highly cyclical in nature, will grow strongly, especially at the beginning of the forecast period. New housing starts typically decline rapidly if the demand for housing does not meet expectations. On the other hand, the demand for new housing is now more broadly based than before. In recent years, new housing demand has been mostly supported by strong investor demand, but with the economic recovery, new home sales to households have also picked up from the beginning of the year. The housing construction boom may turn out to be even stronger than expected.

The household savings ratio will remain negative through the forecast years 2017–2019. The level of household debt relative to disposable income is at a record high, and debt continues to accumulate. The number of heavily indebted households, in particular, has increased.

The risks to financial market stability stemming from household indebtedness are still small. However, high debt levels may intensify cyclical fluctuations, since heavily indebted households are prone to reduce consumption in the event of e.g. a higher unemployment risk or rapid rises in interest rates. These risks are discussed in more detail in the financial stability assessment (see [Nordic interconnectedness and indebted households pose a risk to financial stability](#)).

## FORECAST ASSUMPTIONS

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# Global economic environment favours growth

TODAY 3:00 PM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK

The uncertainty surrounding the outlook for the global economy has decreased, and the global economy is forecast to grow by over 3% in 2017–2019, i.e. somewhat faster than in 2016. Global trade, in turn, is expected to pick up slightly over the forecast period, following lacklustre developments in 2016.



Political uncertainty in both the euro area and the United States has eased since the recent elections, which provides a firm foundation for continued economic expansion. However, economic growth has not improved as rapidly as the positive sentiment on the financial markets. The latter is largely related to the optimistic expectations about a swift implementation of the fiscal stimulus measures envisaged by the new US administration. It would seem, however, that these measures will be postponed. Overall, the risks to the global economy are not as negative as before.

Economic growth in the United States will pick up moderately. The fiscal stimulus measures envisaged by the new US administration, if carried out, can fuel growth at least temporarily. However, any assessment of the impact of these measures is still subject to considerable uncertainty. Moreover, in Europe, some degree of uncertainty still surrounds Brexit. The substantial debt levels accumulated by euro area general government and banks are still reining in the economic recovery. Nevertheless, the euro area economy has shown signs of improvement. In China, the debt-driven growth cycle of the economy continues, sustaining global economic growth.

The ECB's macroeconomic projections foresee the euro area economy growing smoothly at a pace of just under 2% in 2017–2019, driven by domestic demand. Growth will be supported by an accommodative monetary policy and relatively neutral fiscal policy. Employment is expected to improve slowly in the forecast period. Euro area inflation will edge up in 2017, spurred by temporary factors, i.e. rises in oil and fresh food prices. However, the oil price is projected to remain at its present level for an extended period. Labour costs will continue to grow moderately, and inflation is expected to remain slightly below the inflation target at the end of the forecast horizon.

Following the dip in 2016, economic growth in the United States is forecast to accelerate, with the recent improvements in confidence boosting growth in the short term. Hence, the US economy will continue to grow at a solid pace over the forecast period, lending support to favourable developments in the global economy. Inflation in the United States is expected to pick up notably, to over 2%, as output exceeds its potential level in the short term. The fiscal stimulus measures envisaged by the new US administration, if carried out, can fuel economic growth at least throughout the forecast period. The Federal Reserve is expected to generally continue the gradual normalisation of monetary policy, which is assessed to keep economic growth on an even keel.

Developments in the emerging economies will remain stable. Chinese economic growth will weaken as expected. Nevertheless, China continues to significantly sustain global economic growth. The moderation in Chinese growth stems from the gradual shift of the economic structure to rest increasingly on domestic consumption. However, the gradual weakening of Chinese growth means that global growth will not accelerate markedly over the forecast horizon.

According to market expectations, major central banks will keep their respective monetary policies accommodative for a prolonged period. Interest rates in the United States are expected to rise gradually. The euro area price outlook is stable but muted. In line with the decision taken by the Governing Council of the ECB in December 2016, the asset purchase programme will continue at least until the end of 2017, and since April 2017 the purchases have been made at a monthly pace of EUR 60 billion.

The interest rate assumptions in the forecast have been derived from financial market prices, and interest rates will rise very slowly over the forecast horizon. According to market expectations, the 3-month Euribor will remain exceptionally low, i.e. slightly negative almost throughout the forecast period. The yield on Finnish 10-year government bonds will also remain unusually low, rising gradually by about 1 percentage point in 2018–2019. The exchange rate of the euro relative to the US dollar is assumed to remain stable throughout the forecast period. Finland's nominal competitiveness indicator, i.e. the trade-weighted exchange rate, will also be almost unchanged over the forecast horizon. The gradual recovery in the global economy is assumed to push up euro-denominated import prices in countries to which Finland exports.

Table.

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## Forecast assumptions

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	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
Finland's export markets <sup>1</sup> , % change	-0.2	1.9	4.2	3.7	3.7
Oil price, USD/barrel	52.4	44	51.6	51.4	51.5
Euro export prices of Finland's trading partners, % change	0.3	-4.8	5.8	2.3	2.3
3-month Euribor, %	0	-0.3	-0.3	-0.2	0
Yield on Finnish 10-year government bonds, %	0.7	0.4	0.6	0.9	1.1
Finland's nominal competitiveness indicator <sup>2</sup>	102.8	105.6	103.9	104.3	104.3
US dollar value of one euro	1.11	1.11	1.08	1.09	1.09

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<sup>1</sup>Growth in Finland's export markets equals growth in imports by countries to which Finland exports, on average, weighted by their respective shares of Finnish exports.

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<sup>2</sup>Broad nominal effective exchange rate.

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**Sources: Eurosystem and Bank of Finland.**

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## Tags

- [economic growth](#)
- [Finland](#)
- [forecast](#)

## ALTERNATIVE SCENARIO

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# What if growth in exports and productivity were actually higher?

TODAY 3:00 PM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK

Finland's export performance has been weak in the 2010s and has lagged behind growth in the export markets. Structural change in manufacturing, subdued demand for capital goods and intermediate goods in the global economy and the geographical composition of Finnish exports have weakened the trend in exports in structural terms. In addition, as investment in new products and production capacity remained low in the recession that followed the financial crisis and costs rose at a rapid pace, Finland's cost-competitiveness weakened notably.



## In the immediate years ahead, export growth may surprise on the upside

Overall, the trend in Finnish exports has been fairly sluggish since the drop witnessed in 2009. The weakness of exports in recent years is illustrated by the fact that the volume of exports in 2016 was only some EUR 3 billion larger than in 2010. As a result of subdued developments in the export sector and the protracted recession, Finland's current account has turned negative. The situation has been facilitated by the fact that economic growth has been based on brisk domestic demand, which has boosted imports. Both household and general government debt levels have been rising rapidly.

Moderate performance on the export markets combined with strong domestic private demand and the significant imported inputs required by exports have sustained the

weakness in net exports. Exports have, however, started to pick up slowly since 2015. The favourable trend in exports continued in 2016, reflecting the gradual improvement in the outlook for the international economy and the pick-up in global trade. Export growth remained strong in early 2017.

The accommodative stance of monetary policy will boost the recovery in investment demand both in the euro area and globally. The acceleration in exports has also been supported by the moderate developments in costs in recent years. In the immediate years ahead, export growth may therefore be significantly higher than envisaged in the baseline forecast. Particularly in the short term, and on the basis of recent actual performance, export growth is subject to a notable upside risk.

This alternative scenario assesses the effects of exports on the Finnish economy in a situation where export growth is considerably higher than in the baseline forecast. In the scenario, export growth accelerates considerably and exceeds the growth rate in the export markets. The downward trend in export market share comes to an end and Finnish exports gain market share. The alternative scenario has been prepared using the Bank of Finland's dynamic general equilibrium model (Aino) and covers the years 2017–2019.

Export growth may pick up if firms operating in the export sector manage to increase their market share. A favourable trend in market share, in turn, may be the result of a number of factors. The improvements in Finland's cost-competitiveness may support these developments. Export demand may also begin to favour the composition of Finnish goods exports if global demand for capital goods and intermediate goods strengthens further.

Brisk growth in exports has historically been linked also with rapid improvements in productivity. The increasing importance of the export sector to the economy has been accompanied by a pick-up in productivity growth. The opening of new export markets boosts companies' production outlook and profit expectations, which may encourage investment. Investment in research and development and new means of production, in turn, improve corporate productivity. The alternative scenario thus assumes that an increase in export market share is accompanied by slightly higher productivity growth compared with the baseline scenario.

## **Increase in market share makes the structure of the economy healthier**

The alternative scenario assumes a stable and higher growth in both export market share and productivity in 2017–2019 compared with the baseline. At the same time, however, growth in the export markets is assumed to remain as foreseen in the baseline. This means that export countries important for Finland do not increase their volume of total imports, but goods and services provided by Finnish export companies better meet demand in export countries. The scenario envisages that the trend in costs and earnings is determined based on the dynamics of the model.

The increase in export market share is by nature a positive shock to demand, which typically pushes up costs and prices. In contrast, higher productivity boosts supply by increasing the efficiency of production. This, in turn initially slows the rise in costs and prices. However, stronger export demand gradually begins to push up costs and prices, despite the pick-up in productivity growth. The alternative scenario assesses two separate factors and their combined effect on the Finnish economy: higher than expected growth in export demand and in productivity compared with the baseline scenario.

The alternative scenario envisages exports starting to grow as a result of increased market share. Export growth is on average 2 percentage points higher than the baseline, and notably stronger than growth in the export markets (Chart 2). The export volume envisaged in the scenario for 2019 is nearly EUR 5 billion larger (Table 1). Both in the alternative scenario and the baseline scenario, export growth is supported by improvements in cost-competitiveness. Given that not only domestic inputs but also imported goods are used in export production, imports also grow. However, growth in net exports accelerates notably.

The stronger export and productivity performance gradually start to boost investment, too. Greater aggregate demand leads to higher demand for labour input, and wages begin to edge up. Improved productivity, however, dampens wage growth, as the same volume of production now requires a smaller labour input. The pace of rise in real wages remains initially slow, while at the same time productivity growth moderates the increase in hours worked. The rise in real wages is dampened by the slow response of nominal wages to changes in export demand.

However, total hours worked increases, reflecting the pick-up in output. Growth in private consumption also accelerates gradually, albeit at a moderate pace.<sup>[1]</sup> The structure of the economy becomes more sustainable: the share of exports in GDP increases and the historically large share of consumption decreases slightly.

## Strong export growth will not resolve fiscal problems

Overall, the composition of GDP growth is gradually shifting towards exports. The alternative scenario foresees GDP growth that is, on average, 0.5 percentage points higher than the baseline (Chart 1). Overall, GDP is 1.5% higher in 2019. In other words, GDP volume is more than EUR 3 billion higher than the baseline.

The rise in prices and costs remains moderate in the scenario, as a result of higher growth in productivity. The imbalances in the economy begin to fade over time, amid an increase in income and moderate private consumption, accompanied by slow inflation. The household savings ratio rises and the current account deficit gradually melts.

Without the assumption of a pick-up in productivity growth, favourable export performance would boost the upward trend in domestic prices and the effect of changes

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1. The scenario probably underestimates the growth in private consumption to some extent, because for technical reasons the Aino model does not include 'hand-to-mouth consumers'.

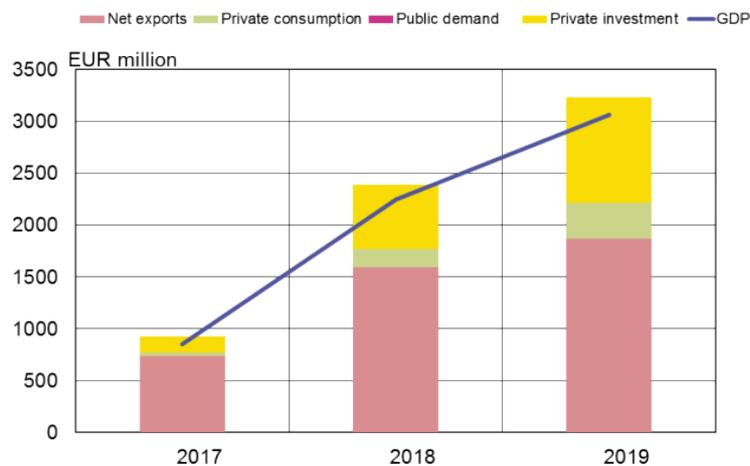
in demand on the real economy would remain very small. This reflects the sensitivity of Finnish inflation to external demand shocks. It should also be stressed that a more favourable trend in exports than envisaged in the forecast is conditional on wage moderation. Higher growth in wages would weaken cost-competitiveness and thus cut part of the increase in wellbeing resulting from the pick-up in export growth.

Despite the upturn in exports, and even if exports were to grow in the immediate years ahead as assumed in the alternative scenario, i.e. at a notably higher rate than the baseline, this would not suffice to resolve the fiscal sustainability problems. The alternative scenario envisages that the general government deficit remains considerable and that the debt ratio grows at broadly the same pace as in the baseline scenario. In the alternative scenario, general government debt relative to GDP is 65.9% in 2019, i.e. approximately 0.8 percentage points lower than the baseline.

The general government structural deficit remains the same as in the baseline scenario, even though the composition of economic growth becomes healthier as exports serve as the engine of growth. Structural problems thus require the strengthening of supply-side factors in the economy because even a significant temporary improvement in the cyclical situation will not suffice to solve them. In addition, general government expenditure is largely dependent on economic policy decision-making.

Chart 1.

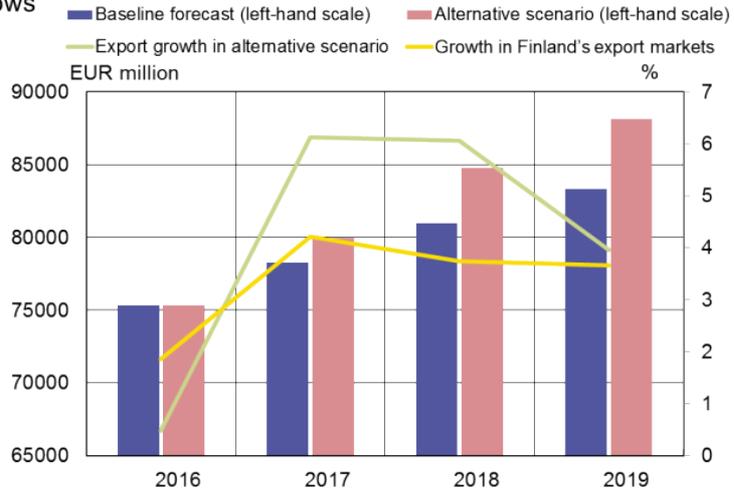
### Contribution of net exports to GDP larger in alternative scenario



Source: Bank of Finland.  
bofbulletin.fi  
13 June 2017

Chart 2.

Developments in exports and export markets when export demand grows



Sources: Statistics Finland and Bank of Finland.  
 bofbulletin.fi  
 13 June 2017

Table.

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## Supply and demand 2017–2019 at 2010 prices

		2016	2017	2018	2019	2019 deviation, %
<b>% change on previous year</b>						
GDP	Baseline forecast	1.4	2.1	1.7	1.4	199,571
	Alternative scenario	1.4	2.5	2.4	1.8	202,631
	Deviation	<b>0.0</b>	<b>0.4</b>	<b>0.7</b>	<b>0.4</b>	<b>1.5</b>
Imports	Baseline forecast	2.5	2.7	2.3	2.1	84,778
	Alternative scenario	2.5	3.9	3.8	2.9	87,719
	Deviation	<b>0.0</b>	<b>1.2</b>	<b>1.5</b>	<b>0.8</b>	<b>3.5</b>
Exports	Baseline forecast	0.5	3.9	3.4	2.9	83,326
	Alternative scenario	0.5	6.1	6.1	4.0	88,138
	Deviation	<b>0.0</b>	<b>2.2</b>	<b>2.6</b>	<b>1.1</b>	<b>5.8</b>
Private consumption	Baseline forecast	2.0	1.3	1.3	1.2	110,878
	Alternative scenario	2.0	1.4	1.4	1.4	111,222
	Deviation	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>
Private investment	Baseline forecast	6.1	5.2	3.0	2.8	37,444
	Alternative scenario	6.1	5.6	4.3	3.8	38,459
	Deviation	<b>0.0</b>	<b>0.4</b>	<b>1.3</b>	<b>1.0</b>	<b>2.7</b>
Private sector output price	Baseline forecast	0.8	0.5	1.2	1.3	115.1

## Supply and demand 2017–2019 at 2010 prices

	Alternative scenario	0.8	0.4	1.1	1.4	115.1
	Deviation	<b>0.0</b>	<b>-0.1</b>	<b>-0.1</b>	<b>0.1</b>	<b>0.0</b>
Real average wages ( Private consumption deflator)	<i>Baseline forecast</i>	0.1	-1.6	-0.4	0.0	22.2
	<i>Alternative scenario</i>	0.1	-1.6	-0.4	0.2	22.2
	<i>Deviation</i>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.2</b>
Hours worked	Baseline forecast	1.0	1.0	0.9	0.4	4,241
	Alternative scenario	1.0	1.4	1.4	0.6	4,288
	Deviation	<b>0.0</b>	<b>0.4</b>	<b>0.6</b>	<b>0.2</b>	<b>1.1</b>
Average labour productivity	<i>Baseline forecast</i>	1.0	1.5	1.0	1.0	20.0
	<i>Alternative scenario</i>	1.0	1.7	1.1	1.1	20.1
	<i>Deviation</i>	<b>0.0</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.5</b>
Real disposable household income	Baseline forecast	0.8	2.0	1.0	1.2	27,314
	Alternative scenario	0.8	2.4	1.7	1.6	27,713
	Deviation	<b>0.0</b>	<b>0.4</b>	<b>0.7</b>	<b>0.4</b>	<b>1.5</b>
Current account	Baseline forecast	-1.1	-1.2	-0.9	-0.8	-1,820
	Alternative scenario	-1.1	-0.8	-0.2	0.1	166
	Deviation	<b>0.0</b>	<b>0.3</b>	<b>0.7</b>	<b>0.9</b>	<b>0.9</b>
Household savings ratio	Baseline forecast	-1.9	-1.2	-1.4	-1.5	-1.5
	Alternative scenario	-1.9	-0.8	-0.5	-0.3	-0.3

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## Supply and demand 2017–2019 at 2010 prices

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	Deviation	0.0	0.4	0.9	1.2	1.2
General government debt	Baseline forecast	63.6	65.1	66.1	66.8	66.8
	Alternative scenario	63.6	64.9	65.5	65.9	65.9
	Deviation	0.0	-0.2	-0.6	-0.8	-0.8
General government net lending	Baseline forecast	-1.9	-2.4	-2.2	-2.0	-2.0
	Alternative scenario	-1.9	-2.4	-2.1	-1.9	-1.9
	Deviation	0.0	0.0	0.1	0.2	0.2

Source: Bank of Finland.

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### Tags

- [alternative scenario](#)
- [gross domestic product](#)
- [public finances](#)

## NATIONAL ACCOUNTS FOR THE FIRST QUARTER OF 2017

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# Finland's economic growth becoming export-driven

TODAY 3:00 PM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK

According to the most recent quarterly national accounts, Finland's GDP in the first quarter of 2017 grew 1.2% quarter on quarter and 2.7% year on year. The data signal similar economic developments for early 2017 as previously estimated, i.e. economic growth is becoming more broadly based. Net exports, in particular, increased, fuelled by a tangible increase in exports. However, GDP growth in the first quarter of 2017 was slightly weaker than suggested by the flash estimate published in May, while GDP figures for the fourth quarter of 2016 were revised upwards. Nevertheless, the Finnish economy has now grown for three consecutive quarters.



On 1 June 2017, Statistics Finland published preliminary quarterly national accounts containing the latest statistical data on Finnish economic developments in the first quarter of 2017 and revised data on quarterly developments in 2016.

The Bank of Finland's June 2017 macroeconomic forecast is based on the quarterly national accounts published by Statistics Finland in March, a flash estimate for the first quarter released in May and extensive indicator data on economic developments.

According to the most recent quarterly national accounts, GDP in the first quarter of 2017 grew 1.2% quarter on quarter and 2.7% year on year. In the flash estimate published

in May, the increase in GDP in the first quarter was 1.6% quarter on quarter and 1.3% year on year.

GDP growth figures for the fourth quarter of 2016 were revised up notably, i.e. by 0.5 of a percentage point. Hence, GDP in the fourth quarter of 2016 grew 0.6% on the previous quarter. GDP growth for 2016 as a whole was also revised up by 0.1 of a percentage point, to 1.5%.

## **Net exports increased in particular, supported by private consumption and investment**

Finnish exports grew robustly, which was in line with the indicator data published earlier in spring. The volume of exports grew in the first quarter of 2017 by 5% on the previous quarter. Since imports contracted 1% over the same period, the contribution from net exports to economic growth increased to 2.2% relative to the previous quarter. Goods exports were 12.7% up on the previous quarter, while services exports increased 0.5%.

Growth in early 2017 stemmed from private demand. Private consumption in the first quarter increased 1.5% on the previous quarter and 3.3% on a year earlier. Private investment was 5.2% up quarter on quarter and 11.4% up year on year. In particular, the volume of investment in machinery, equipment and transport equipment grew 16.2% during the year.

The contribution from private consumption and private investment to GDP growth was 1.7 percentage points relative to the previous quarter. Public consumption, in turn, was 0.1% down and public investment was 1.5% down on the previous year.

## **Notable turn in the manufacturing industries**

The volume of manufacturing value added grew 5.3% quarter on quarter. Growth was pronounced across all main industrial groupings. The metal industry was 4.8% up quarter on quarter, and output increased 14.0% on a year earlier. Electrical engineering and electronics also witnessed significant growth, with the volume of value added increasing 14.5% on the previous quarter and 5.2% on the previous year. The chemical industry grew notably as well.

Construction, too, continues to support growth. Construction value added continued to grow at a rapid pace in the first quarter of 2017. Construction was 2.0% up quarter on quarter and 7.5% up year on year.

Of the services industries, the value added in private services grew 4.1% on the previous year, while public services value added declined 0.8%. Growth in the services industries was broadly based. It was supported e.g. by growth in the volume of trade, which was fuelled by car sales.

Labour input increased in early 2017. According to the national accounts, the number of persons employed rose in the first quarter of 2017 by 0.4% and the number of hours

worked increased 0.8% on the previous year. Growth in the wage bill picked up to 1.5% year on year.

The latest quarterly national accounts data signal similar economic developments for early 2017 as estimated on the basis of the previously published statistical and indicator data, i.e. economic growth is clearly gathering pace, supported now notably by exports. Growth is also sustained by private investment and private consumption. In this respect, the composition of economic growth is shifting onto a sounder footing.

Quarterly GDP growth was slightly weaker than suggested by the flash estimate published in May. Quarterly GDP growth for the end of 2016, in turn, was revised up markedly, which increases the carry-over effect for 2017 to 0.9 of a percentage point.

## Tags

- [exports](#)
- [gross domestic product](#)
- [private consumption](#)
- [quarterly national accounts](#)

# Household savings historically low

TODAY 3:00 PM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK

Saving by Finnish households has been at very low levels for an historically long time. Since autumn 2014, the savings ratio has actually been negative. Underlying contributory factors include the low level of interest rates and consumer confidence, which has strengthened in recent years. Both factors encourage households to increase consumption and reduce saving, which has also been reflected in strong private consumption growth. Households' continued accumulation of debt does, however, entail risks for the economy.



## Household savings ratio exceptionally low

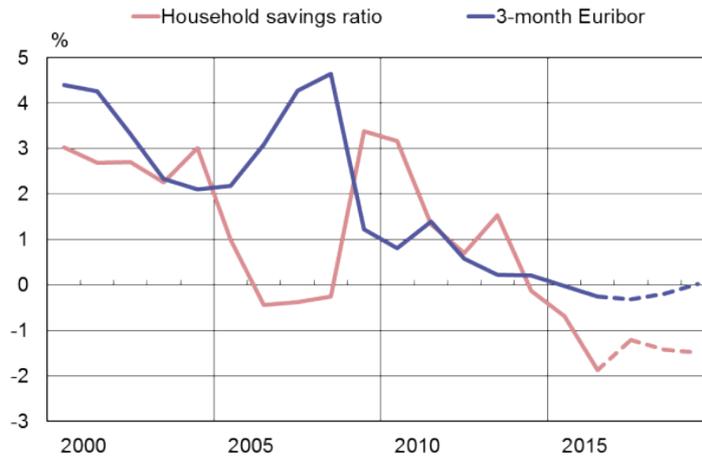
The savings ratio<sup>[1]</sup> of Finnish households has been negative since autumn 2014. It embarked on a downward trajectory as early as 2010 (Chart 1). If households consume as much as their disposable income, the savings ratio will be zero. Thus, a negative savings ratio means that households consume more than the amount of their income, i.e. they either realise their financial assets or borrow to finance their consumption. Household indebtedness has, in fact, continued to grow at the same time (Chart 2).

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1. The savings ratio is defined as the ratio of household sector savings to disposable net income. Savings represent the difference between disposable net income and consumption expenditure and can be positive or negative.

Chart 1.

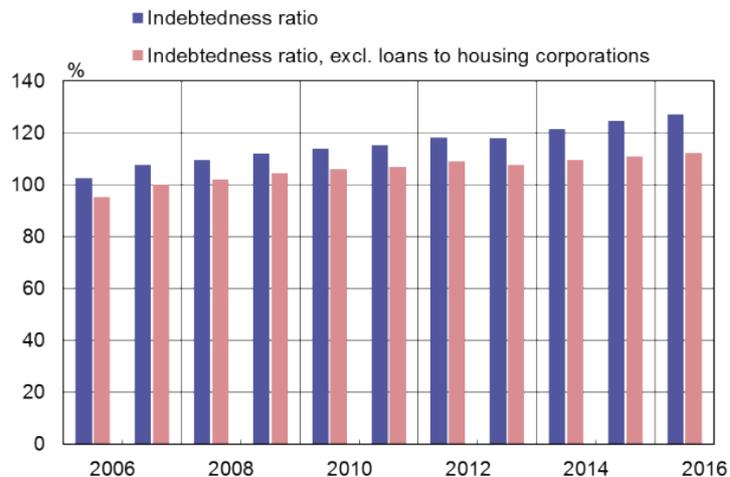
### Household savings ratio and 3-month Euribor



Source: Bank of Finland.  
bofbulletin.fi  
13 March 2017

Chart 2.

### Household indebtedness ratio in Finland, 2006-2016



Source: Statistics Finland.  
bofbulletin.fi  
13 June 2017

The total household sector savings ratio remaining negative for such a long time is historically exceptional. In 2016 the savings ratio was  $-1.9\%$ . Prior to the current period, Finland had last witnessed a negative savings ratio in 2006–2008, when it fluctuated between  $-0.25\%$  and  $-0.5\%$  (Chart 1). Based on the Bank of Finland forecast, the savings ratio is not expected to enter positive territory in the immediate years ahead. This phenomenon reflects, in particular, the low level of interest rates and households' strong confidence in the future performance of the economy.

## Savings reduced by low interest rates and strong consumer confidence

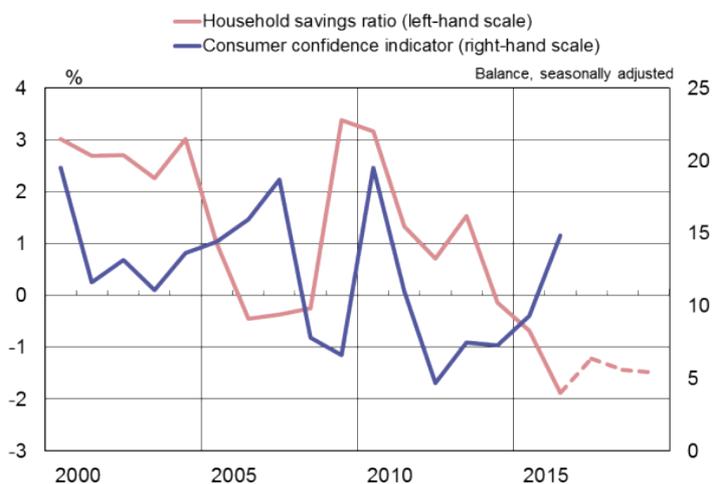
The three-month Euribor and other market interest rates turned strongly downwards in autumn 2008, as the financial crisis broke out and the European Central Bank began to ease its monetary policy (Chart 1). Low interest rates encourage households to consume and borrow rather than save. Supporting private consumption is, in fact, one of the purposes of an accommodative monetary policy.

In Finland, private consumption in the post-financial crisis years has grown much faster, on average, than disposable income. Income growth has been slowed by moderate wage developments, among other things. Household debt accumulation has increased notably via new home loans and loans to housing corporations, but recourse to consumer credit has also become more widespread.

On the other hand, on the basis of the consumer confidence indicator in Statistics Finland's Consumer Survey, households' confidence in the development of the economy began to strengthen in 2015 and 2016 (Chart 3), and the indicator has risen to record highs in early 2017. The strengthening of the confidence indicator is accounted for most by consumers' optimistic views of the outlook for the Finnish economy at large, as the expectations of households that responded to the survey regarding their own finances have remained fairly stable. The exceptional strengthening of the consumer confidence indicator is thus likely to reflect the economic recovery that commenced in 2015, and particularly the many positive news reports on the economy in the early months of 2017.

Chart 3.

### Household savings ratio and consumer confidence



Sources: Bank of Finland and Statistics Finland.  
bofbulletin.fi  
13 June 2017

The link between consumer confidence and saving is not unambiguous. The confidence indicator does, however, correlate with the business cycle in the economy. Strong confidence can therefore correlate with households' risk appetite and manifest itself as indebtedness amid good economic prospects. Meanwhile, a low confidence indicator may

be an indication of households' willingness to prepare for a rainy day by increasing savings and repaying their debts.

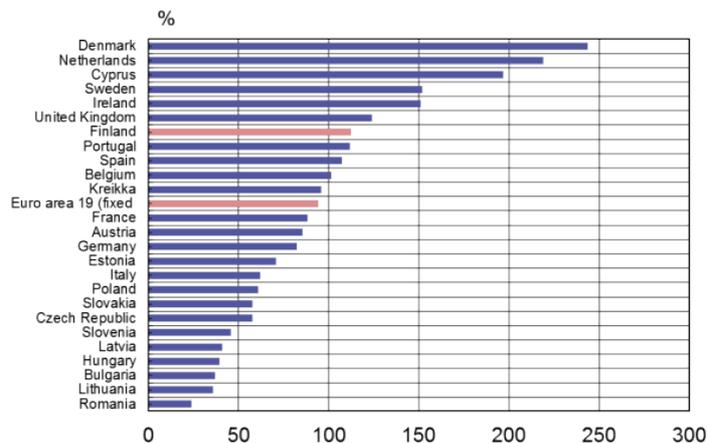
Accordingly, a low level of interest rates and strong consumer confidence both contribute positively to private consumption and negatively to the savings ratio. The savings ratio cannot, however, remain sustainable and negative in the long term. Both a strengthening and a slowing of economic growth may before long lead to the savings ratio entering positive territory, but for different reasons.

## Protracted household indebtedness a source of risks

If the business cycle were to remain favourable, a negative savings ratio would not necessarily pose immediate problems for the economy. Interest rates are currently expected to remain low for an extended period of time, and the ongoing strength of private consumption will bolster economic growth. In addition, despite showing a record high ratio of indebtedness, Finnish households are not among the most indebted households in international comparison (Chart 4). Nor can, for example, any overheating on the housing market be identified for the time being, as house prices relative to disposable household income have developed moderately.<sup>[2]</sup>

Chart 4.

Household indebtedness ratio in selected countries in 2015



Source : ECB.

bofbulletin.fi  
13 March 2017

Even so, with ongoing economic growth, interest rates are set to begin to rise before long, prompting households' debt-servicing expenditures to increase and financial leeway to diminish. This will act as a constraint on the position of the most indebted households, in particular. On one hand, higher interest rates will also encourage households to reduce borrowing and to save, which will also cause the savings ratio to rise. On the other hand,

2. See: 'Risks in long-term and large housing loans – Sweden's worry is also ours'. Bank of Finland Bulletin 2/2017.

at the end of 2016, about 11% of total household debt comprised housing corporation loans, which significantly raise the ratio of household indebtedness (Chart 2). The bulk of Finland's housing stock was built in 1960–1980. Given that there will be a considerable need for renovation in the coming decades irrespective of the business cycle, drawdowns of housing corporation loans are not likely to decline going forward.

Household debt accumulation would also be a risk if economic growth were to slow and disposable household income were to decline, for example, as a result of lay-offs or loss of jobs. In such a situation, households may even have to cut back their consumption strongly – especially if their debt burden is heavy relative to their income. The savings ratio could then begin to rise, as expenditures are reduced and savings relative to disposable income increase. But lower private consumption would further impair the economic situation. The household sector's broad-based indebtedness could therefore in the worst case amplify the cyclical turn and lead to recession.

The amount of unsecured consumer credit, in particular, has grown rapidly in the early part of 2017. A significant proportion of households' bad credit records is generally due to non-performing consumer loans.<sup>[3]</sup> Strong growth in the stock of unsecured consumer credit may pose a significant risk for both households themselves and the financial institutions that have granted such financing, if the business cycle turns and households' debt-servicing ability weakens, as the financial sector incurs larger losses from non-performing unsecured credit than secured credit.

Consequently, a protracted period of household indebtedness will create risks in the economy irrespective of whether economic growth remains favourable or not. Debt repayment will be sluggish, and turning the trend in the indebtedness ratio will take time. It is therefore advisable to take a long-term approach to reining in household debt accumulation.<sup>[4]</sup>

## Tags

- [consumer confidence](#)
- [household indebtedness](#)
- [indebtedness ratio](#)
- [savings ratio](#)

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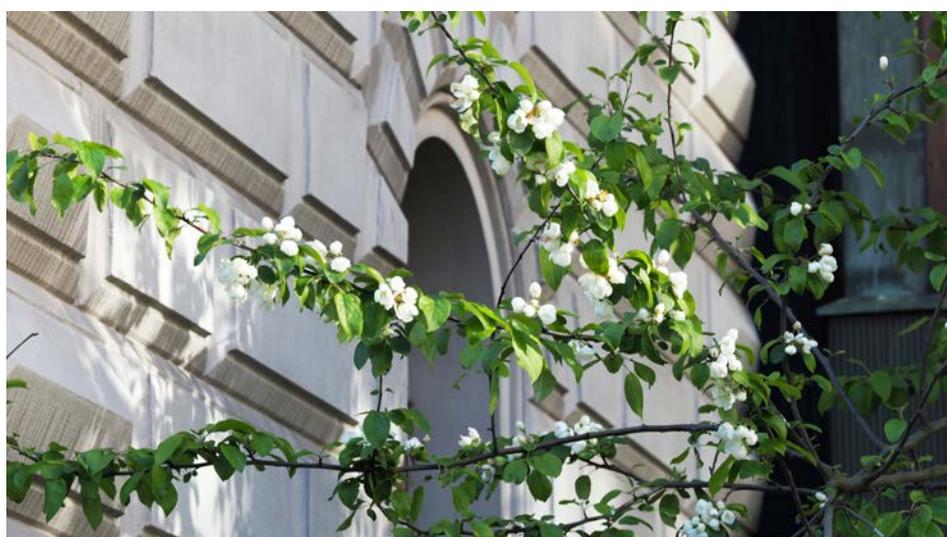
3. See 'The overall picture of debt accumulation gets blurred as provision of consumer credit becomes diversified'. Bank of Finland Bulletin 2/2017.

4. Effective macroprudential tools for reining in household indebtedness are discussed in greater detail in the article 'Nordic interconnectedness and indebted households pose a risk to financial stability'. Bank of Finland Bulletin 2/2017.

# Lack of investment weighed on Finnish exports

TODAY 3:00 PM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK

Finnish exports have lost market share in world trade continually since the financial crisis. This partly reflects a general trend in the advanced economies. The export shares of advanced economies have contracted as emerging economies have gained a stronger foothold in the global economy. The dwindling demand for Finnish exports may also be related to the current low level of investment in the advanced economies, especially in Europe.



In recent years, capital (investment) goods have contributed roughly a third of the value of Finnish goods exports. In addition, Finland is a large exporter of intermediate goods, demand for which depends on investment. Another unfavourable feature of Finnish exports is their concentration on European countries, where the deceleration in economic growth and investment demand was stronger, on average, than in other advanced economies in the aftermath of the financial and sovereign debt crises.

Here, we explore to what extent the contraction in market share of Finnish exports during and after the global financial crisis can be explained by the weakness of investment demand notably in European countries. Finnish exports have been decomposed into four components: first by destination market into Europe and other export markets, with these two trade flows decomposed further by product structure into capital goods and other export goods.<sup>[1]</sup>

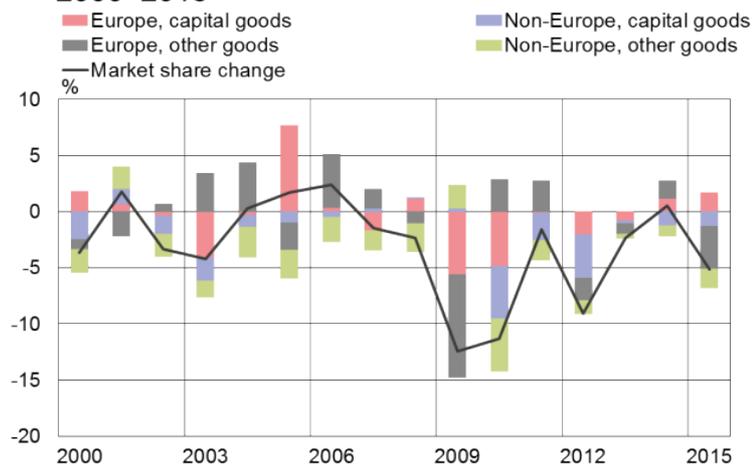
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1. A breakdown by product structure is not totally unambiguous, as some of the products may serve as either consumer goods or capital goods. The most important of such product groups are mobile phones, here classified as capital goods. Whereas mobile phones, telecommunication networks and other equipment still accounted for roughly 15%, on average, of goods exports prior to the financial crisis, their share has since dropped, standing at

The change in market share (Chart 1) portrays the evolution in the value of Finnish exports relative to world trade growth, beginning from the turn of the millennium. The change is positive in years when Finnish exports have increased faster than world trade and, conversely, negative when growth in exports has been slower than world trade growth.

Chart 1.

### Changes in market shares of Finnish exports, 2000–2015



Sources: Comtrade and calculations by the Bank of Finland.

13 Jun 2017  
bofbulletin.fi  
34214@Kshikko(en)

In the early post-millennium years, until the eve of the global financial crisis, Finnish exports almost kept pace with world trade growth. Following the onset of the international financial crisis, the performance of Finnish exports has, however, been exceptionally feeble. During the economic crisis that followed in the wake of the financial crisis, in 2009–2010, the market share of Finnish exports was down by as much as a quarter, continuing to shrink until the end of the reference period in 2015, albeit at a more subdued rate.

The importance of each export component for Finnish exports can be illustrated with the help of a chart (overlapping bars in Chart 1), with exports expressed relative to world trade. If one of the four export components has grown faster than world trade, it has supported Finnish export growth relative to world trade. Conversely, if some component has increased more slowly than world trade, its contribution to Finnish export growth has been negative.

The years of the financial crisis and the European sovereign debt crisis saw a marked turnaround on Finland's export markets both inside and outside of Europe. The contraction in the market share of Finnish exports was especially sharp during the economic crisis years of 2009–2010, and was, for the major part, due expressly to the weak performance of Finland's Europe-bound exports. While world trade growth slowed

1–2 % in recent years. The share of other capital goods in goods exports has remained broadly unchanged in the reference period.

overall during the economic crisis, Finland's exports to European countries were down even more.

Most of the contraction in market share in Europe over these years was related specifically to capital goods exports. Europe-bound exports of capital goods stayed muted also in 2010, but declining exports to the rest of the world then weighed even more on the market share of Finnish exports.

Finnish exports have continued to lose market share since 2010, but at a more moderate pace. The market share of Finnish capital goods has faded most noticeably outside Europe, where market shares declined continually in the course of 2010–2015. While capital goods exports to European countries eroded growth in the market share until 2013, their contribution to Finland's market share was, in fact, marginally positive in 2014–2015.

Over the forecast years 2017–2019, export markets are expected to develop more favourably in terms of the Finnish export structure than in recent years, with economic growth and investment demand gathering momentum in both Europe and other advanced economies.

## Tags

- [Europe](#)
- [exports](#)
- [investment](#)
- [market share](#)

# Estimation of structural unemployment important, but complicated

TODAY 3:00 PM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK •

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After the recession following the financial crisis, the US economy has already been growing for 7 years at an average pace of 2%, and the euro area, too, is witnessing a fourth consecutive year of growth. In both regions, the gradual acceleration of economic growth and the strengthening of the labour market have, however, taken place without the build-up of significant price and wage pressures. This raises the question as to how far the economy can still be from its potential output, thus highlighting the need to critically review estimates of the extent of spare capacity in the economy and on the labour market.



## Structural unemployment an important yardstick for economic policy

Unused labour market resources are traditionally evaluated through structural unemployment, which reflects the structures of the economy and the labour market. If unemployment is higher than structural unemployment, a decline in unemployment brought about by economic growth will not lead to wage pressures jeopardising a balanced development of the economy. For example, in the euro area, where unemployment has been falling uninterrupted since 2013, wage growth is, however,

still very slow. In Germany, in particular, where unemployment has declined to historic lows, the sluggishness of earnings growth has repeatedly taken experts by surprise.

It is important to identify labour market slack, as the extent of slack gives a direction for governments' economic and employment policies, guides – to a greater or lesser degree – monetary policy and provides an important anchor for wage formation. If the unemployment gap is positive, fiscal or monetary stimulus such as higher public expenditure or lower interest rates can, in principle, reduce unemployment without any significant acceleration in price and wage increases. If, by contrast, the gap has already been closed, the structures of the labour market need to be addressed for reducing unemployment.

There has recently been debate in Finland, too, as to how much employment can improve and unemployment fall now that economic growth has finally taken off. However, if only GDP or the unemployment rate is monitored, it will be difficult to judge whether the resources of the economy are clearly underutilised or perhaps close to the normal state of the economy. A real-time view of structural unemployment would facilitate assessment of the extent of spare capacity in the economy. Such an assessment could then be used in estimating the intensity of price or wage pressures in the context of the current unemployment rate.

According to the Economic Policy Council,<sup>[1]</sup> the improved cyclical situation gives cause to expect the number of people in employment to rise by only 20,000 to 30,000. The Government's 72% employment rate objective would, however, require growth in the number of employed by about 110,000. The Economic Policy Council thus sees the unemployment as being structural to a significant extent. The Council therefore deems it very unlikely that the employment target could be reached unless there are structural reforms on the labour market to increase labour force participation.

Structural unemployment is an important yardstick for economic and labour market policy decisions, but its quantitative estimation is difficult and may have become even more complicated on the back of developments in recent years. The following analysis draws on the statistical evidence to answer the question of why estimation of structural unemployment at this very moment is increasingly difficult, and presents both a measurement of structural unemployment based on time series methods and an additional way of determining the direction of structural unemployment.

## **Changes in the labour force participation rate complicate estimation of structural unemployment**

International debate on measures of labour market slack has surfaced in recent years, in part, because of contradictory information provided by generally applied indicators. This debate has been particularly lively in the United States, where, according to the Fed's mandate, monetary policy is crucially affected by unemployment as well as inflation.

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1. Economic Policy Council Report 2016.

In the United States, there has been an exceptional increase in the lengthening of unemployment periods. Moreover, a decline in the official unemployment rate has not led to equal growth in the number of employed; instead, the labour force participation rate<sup>[2]</sup> has continued to fall. Such a decline in the participation rate is, on the whole, a fairly new phenomenon in both the United States and some other advanced economies, and there is as yet no common understanding of the root causes of the decline. In Finland, too, in some recent years the labour force participation rate has been found to have decreased at the same time as the unemployment rate. Accordingly, lower unemployment has not been channelled in full into employment; instead, labour market participation has weakened despite the cyclical improvement.

The declining participation rate makes estimation of structural unemployment and, by extension, price and wage pressures more difficult. For example, in the United States, from the significant drop in unemployment alone a conclusion could be drawn that there is barely any slack on the labour market, which would in turn point to the need for more restrictive monetary policy in the near future. Meanwhile, based on the labour force participation rate, it would appear that there are more unused resources outside the labour force than suggested by the unemployment rate, and there is no need yet to be concerned about price or wage pressures.

For estimates of structural unemployment and spare capacity, it is important to distinguish which part of the reduction in the labour force participation rate is due to business cycles and which part is structural. Making this distinction is, however, impeded by the deep economic recession and structural changes on the labour market.

Labour markets in the advanced economies have long been shaped by trends that may have led to an increase in the proportion of the population remaining outside the labour market. Technological advances and outsourcing have long been causing a trend decline in middle income jobs in these economies. Population ageing in the advanced economies may be another factor structurally reducing the participation rate.<sup>[3]</sup> On the other hand, the recession following the financial crisis has also destroyed middle income employment, such as industrial jobs. In addition, the long duration of the post-crisis recession may have resulted in a higher number of discouraged jobseekers than in previous recessions.

It is also possible that originally cyclical unemployment translates into structural unemployment as a consequence of a deep recession. Deep and protracted recessions may increase structural unemployment if, with the prolongation of unemployment, jobseekers' skills are eroded and job-seeking activity weakens. As a result, vacancies are filled more slowly, less new jobs are created and structural unemployment rises. This is known as labour market hysteresis.<sup>[4]</sup> The hysteresis phenomenon reflects well the

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2. Labour force participation rate = (unemployed + employed) / population.

3. E.g. Fujita (2014): 'On the Causes of Declines in the Labor Force Participation Rate' deals with the causes of declines in the labour force participation rate in the United States.

4. Blanchard and Summers (1986) paid attention to the hysteresis phenomenon. This means that an increase in the observed unemployment rate also leads to an increase in the structural unemployment rate. Blanchard O., Summers L., 'Hysteresis and the European Unemployment Problem', NBER Macroeconomics Annual 1986, Volume 1.

difficulties associated with disentangling cyclical unemployment from structural unemployment. There is no unambiguous way of assessing at precisely which stage cyclical unemployment develops into structural unemployment.

## Who remain outside the labour market?

It is very hard to estimate how large a proportion of those who have lost their jobs because of recession or structural change will find new employment as the economy recovers. What is the job-finding probability for those, in particular, who have already been long unemployed or entirely crowded out of the labour market? This could be evaluated by examining not only developments in the size of the labour force, but also its quality.

Are the background factors of the long-term unemployed and those outside the labour force similar to the short-term unemployed in terms of education, profession, sector, region or gender? On the basis of previous research, we know that the likelihood of finding employment is weaker for those with a low level of education than for those with a high level of education, for elderly people than for the middle-aged etc. The duration of unemployment or the time outside the labour market also has an impact on the likelihood of finding employment. As unemployment drags on, active job-seeking may decline and skills may be eroded (hysteresis). Employers may also develop an aversion towards the long-term unemployed, even when their background factors do not differ in reality from those of the short-term unemployed.

Labour market statistics and economic methods offer tools for analysing job-finding probabilities for those remaining outside the labour market, but such work has not been done with a view to estimating structural unemployment and labour market slack, at least not in Finland.

## Is the unemployment rate a good measure of labour market slack?

Observations that the official unemployment rate does not describe labour market slack sufficiently broadly have led to the development of broadened measures of unemployment. These types of measures are regularly used, at least in the United States,<sup>[5]</sup> and have also occasionally been explored by the ECB.<sup>[6]</sup> Such measures seek to include, in addition to people counted as officially unemployed, also those outside the labour force who could find work if only economic growth were to accelerate, rather than those who are outside the labour force for structural reasons.

Below, we present a review of broad measures of unemployment based on Finnish labour market statistics. Indicators based on Statistics Finland's Labour Force Survey include, besides the unemployed, also those who are classified as part of hidden unemployment<sup>[7]</sup>

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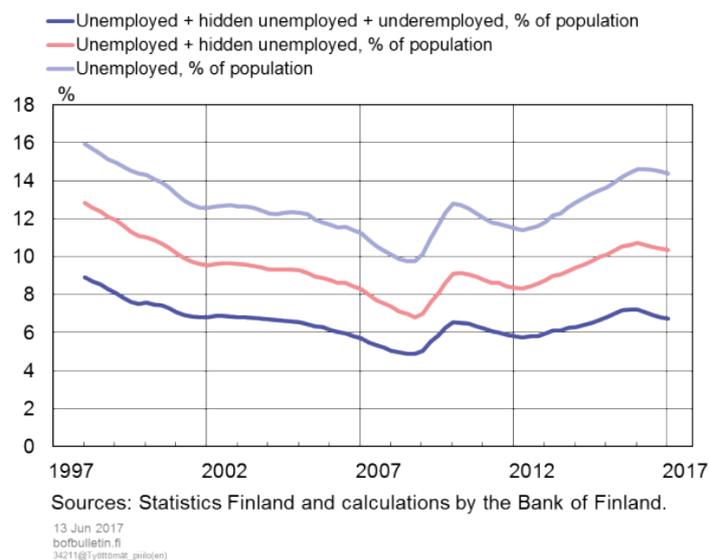
5. Bureau of Labor Statistics / Alternative Measures of Labor Underutilization.

6. E.g. Task Force of the Monetary Policy Committee of the European System of Central Banks, 2012: Euro area labour markets and the crisis. Occasional Paper Series 138, European Central Bank; and ECB Economic Bulletin, Issue 3/2017.

and the underemployed<sup>[8]</sup> (Chart 1). These broader measures show that there are more persons for whom economic growth could help find employment than would be inferred merely from the official unemployment data. It is not surprising that these less stringent criteria indicate there is a larger number of unemployed. It is, however, worth noting that, if broad unemployment is only higher than official unemployment in terms of its level, this will only revise upwards the estimated level of structural unemployment. The estimate of the extent of slack will not change directly. This signals that the need for structural policy to improve employment is increasingly apparent, but the choice of how unemployment is measured has no relevance for counter-cyclical policy.

Chart 1.

### Broad unemployment according to Statistics Finland



It would be meaningful for counter-cyclical policy if different measures of unemployment behaved differently in business cycles, as this would also change the estimate of the extent of slack. Visual assessment of Chart 1 does not allow us to say much on this matter. It would be easy to assume that there is a considerable degree of slack in the economy in a situation where there is a large proportion of underemployed. Economic recovery and higher demand could then reduce the number of underemployed. Unfortunately, Chart 1 would suggest this does not seem to be the case, with the number of underemployed remaining fairly constant. In recent years, however, unemployment gauged in terms of the broadest measure would appear to have risen by slightly more than the official unemployment rate suggests, and it has not yet moved on to an equally pronounced decline.

7. A person outside the labour force who would like to have gainful work and would be available for work within two weeks, but has not looked for work in the past four weeks. Reasons for hidden unemployment include giving up searching for a job or other reasons, such as studies, caring for children or health reasons.

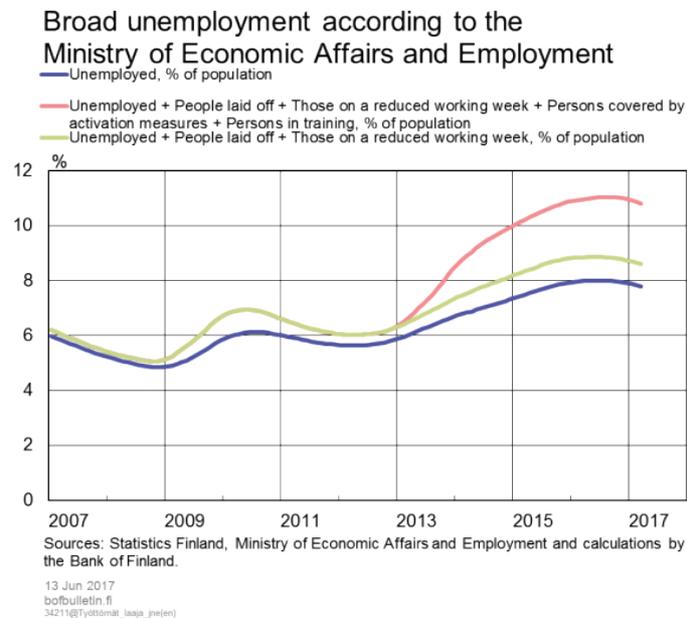
8. An employed person who is engaged in part-time work because full-time work is not available, or whose working week has been cut back by the employer, or who has had no work due to shortage of orders or customers or because of having been laid off. Thus, underemployed refers to an employed person who would like to do more work.

Simple statistical analysis of time series shows that cyclical behaviour across different measures is very similar, except for major turnarounds in the economy. In such situations, the broadest measure in Chart 1 appears to react more strongly than the other measures.<sup>[9]</sup> The proportion of underemployed, i.e. those involuntarily engaged in part-time work, decreased very much in the strong economic upswing preceding the financial crisis and increased in the steep downturn in 2009 and 2010. After this, the cyclical behaviour of the different indicators does not differ significantly. The widespread use of lay-offs as an element of elasticity when Finland was in deep recession is likely to explain this phenomenon, as those working less than normal because of lay-offs are included in the underemployed.

In a situation where the economy is recovering from a deep recession, labour market slack can thus be underestimated if official unemployment statistics alone are used for estimation. In Finland's case, it would appear to be important to pay particular attention to the number of workers laid off. Visual assessment and simple statistical analysis are, however, too uncertain to draw very far-reaching conclusions of the actual unemployment gap. For identification of cyclical unemployment and structural unemployment other methods will also be needed, as discussed [later in this article](#).

Broad unemployment measures according to the employment statistics of the Ministry of Economic Affairs and Employment provide a picture similar to that calculated from Statistics Finland's data (Chart 2). These indicators take account of not only unemployed jobseekers but also people laid off, those on a reduced working week, persons covered by activation services fostering employment and those in training. In principle, like the actual unemployed, these are all people who have only temporarily exited the labour market.

Chart 2.



9. The standard deviation of the cyclical component of unemployment obtained from the HP filter is the largest for the broadest measure of unemployment.

The marked growth in unemployment according to the broadest measure, which includes all these groups, is largely accounted for by the fact that the groups covered by activation services and in training have only existed since 2013. These persons were before statistically classified under other persons outside the labour force. Owing to this statistical change, the differences between the official and the broadest concept of unemployment are not useful for analytical purposes. If the groups covered by activation services and in training are removed from the broad measure of unemployment, the picture will be very similar to that emerging from the statistics compiled by Statistics Finland. The measure including, on top of unemployed jobseekers, also those laid off and those having a reduced working week is comparable to the broadest measure of unemployment calculated on the basis of data compiled by Statistics Finland. According to this gauge, too, official and broad unemployment appear to differ mainly in terms of level, with no significant divergence in cyclical behaviour.

Based on the indicators presented, taking account of the broad measure of unemployment for estimation of labour market slack does not materially change the picture. Structural unemployment estimated on the basis of the broad definition of unemployment may, therefore, simply be at a higher level than if gauged on the basis of official unemployment measures alone. This observation thus refers to structural labour market rigidities rather than volatility in labour market slack caused by aggregate demand.

Consequently, in the current upswing, the official unemployment rate could still provide a useful point of departure for an evaluation as to how much room there is for a cyclical improvement in employment.

## Many types of structural unemployment even in economic theory

The most common concept of structural unemployment stemming from economic theory is the NAIRU.<sup>[10]</sup> This is based on the relationship between unemployment and inflation well-known in economic theory: changes in monetary policy, or more broadly in aggregate demand, push unemployment and inflation in opposite directions over the short term. According to this relationship, a certain level of unemployment corresponds to a stable rate of inflation. The inflation-unemployment relationship was in some form already present in David Hume's writings in the 18th century, and the term NAIRU has been used since the 1970s.

The NAIRU concept is very closely related to the natural rate of unemployment, whose theory was developed by the Nobel laureates Milton Friedman and Edmund Phelps in the 1960s.<sup>[11]</sup> Friedman described the natural rate of unemployment as the lowest rate of unemployment that can be achieved in the long run without an acceleration in real earnings growth. The NAIRU, in turn, means more broadly a rate of unemployment

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10. Non-accelerating inflation rate of unemployment (NAIRU).

11. Milton Friedman, 'The Role of Monetary Policy', *American Economic Review*, March 1968, pp. 1–17; Edmund S. Phelps, 'Phillips Curves, Expectations of Inflation, and Optimal Unemployment Over Time', *Economica*, August 1967, pp. 254–281.

consistent with stable inflation. Occasionally, the concept of NAWRU<sup>[12]</sup> is also used, which means the lowest unemployment rate attainable in an environment of stable wage developments.

In the modern business cycle theory, the NAIRU in its simplest definition results from labour market competition. The less there is competition on the labour market, the higher will be the wages relative to those on effective markets and the higher will be structural unemployment. The degree of competition is, however, a highly abstract concept, and the NAIRU theory as such fails to provide an explanation for the ultimate reasons behind the lack of competition on the labour market and structural unemployment.

Structural unemployment can also be estimated by an equilibrium unemployment model, based on research by such further Nobel laureates as Peter Diamond, Dale Mortensen and Christopher Pissarides, which lays emphasis on labour market frictions related to job search and job creation.<sup>[13]</sup> Equilibrium unemployment is structural unemployment, just like the NAIRU, but their definitions differ slightly. Unlike in the case of the NAIRU, in the equilibrium unemployment model framework, structural unemployment is not affected by short-term changes in prices and wages, nor by inflation expectations.

Equilibrium unemployment is only affected by structural factors, such as the effectiveness of the labour market in matching job vacancies and jobseekers, the unemployment benefit replacement rate and the negotiation activity of the social partners. Structural factors thus include both frictional unemployment, caused by the time and costs involved in job search, and the impact on equilibrium unemployment of norms and institutions regulating the functioning of the labour market. There are only limited possibilities to address frictional unemployment, but changes in other structural factors can impact the level of equilibrium unemployment.

## How could the NAIRU be measured?

The NAIRU has been estimated with the help of simple time series models, but it is currently measured by widely employed methods exploiting the Phillips curve. The significance of NAIRU estimation is highlighted by the fact that it has a direct link to the level of potential output in the economy and, by extension, to the estimated output gap. A high NAIRU reduces the labour force potentially available for the economy and lowers the level of potential output.

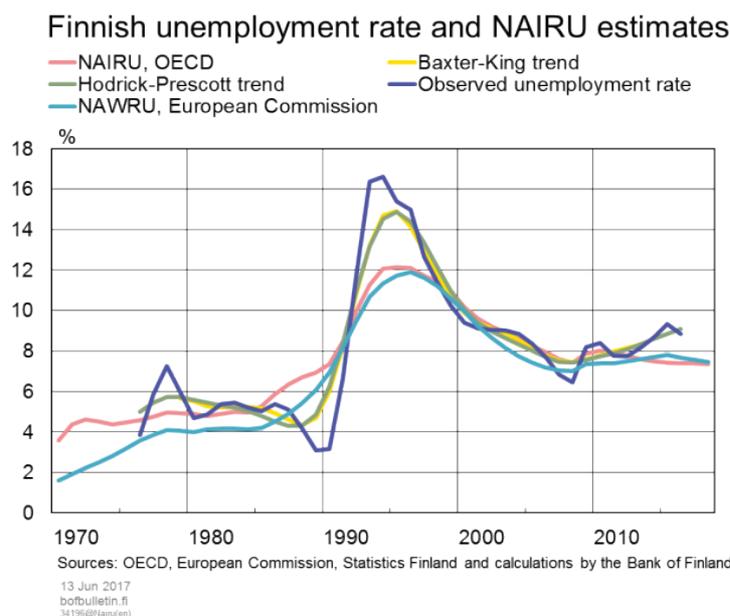
Unfortunately, the NAIRU is very difficult to gauge. The challenge of estimation is due to the NAIRU being an unobserved variable that can only be inferred indirectly from statistics. Chart 3 presents estimates by international organisations of the Finnish NAIRU.

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12. Non-accelerating wage rate of unemployment (NAWRU).

13. The equilibrium unemployment theory is presented in, for example, Pissarides: *Equilibrium Unemployment Theory*. MIT Press, 2000.

Chart 3.



## Statistical methods to separate trend from cycle in unemployment

One approach to NAIRU estimation is to use univariate statistical methods in which different filters decompose time series of economic activity into trend and cycle. One of these methods is the very popular Hodrick-Prescott (HP) filter.<sup>[14]</sup> The trend of the unemployment rate produced by these methods is, however, only a statistical variable, not an actual NAIRU, as these methods are not based on economic theory.<sup>[15]</sup>

One significant problem associated with univariate statistical filters is the sensitivity to revisions of the most recent observations of unemployment trend series generated by them, which leads to considerable uncertainty about interpretations of the current situation. This ‘end-point problem’ means that an understanding of today’s NAIRU will change ex post facto as new statistics are released.<sup>[16]</sup> Other critiques concerning the use of the HP filter have also been presented.<sup>[17]</sup> Furthermore, it remains the responsibility of the user of the widely applied HP filter to opt for a suitable smoothing parameter, which should reflect the properties of the time series in question. This choice has a material

14. Hodrick R. J. and Prescott E. C., ‘Postwar Business U.S. Cycles: An Empirical Investigation’, *Journal of Money, Credit and Banking* 29, February 1997, 1–16.

15. Other frequently used methods for removing cyclical variation from time series of economic activity are the Baxter-King and the Christiano-Fitzgerald filter.

16. For example, Hamilton J.: Why You Should Never Use the Hodrick-Prescott Filter. January 2017, working paper; Orphanides A. and Van Norden S.: ‘The Unreliability of Output Gap Estimates in Real Time’, *The Review of Economics and Statistics*, November 2002, 569–583.

17. The strongest critique perhaps concerns the properties of time series generated by the HP filter. The HP filter adds to the assumed cyclical component a spurious dynamic dependence, which does not necessarily have any basis in the observed time series.

impact on the type of trend produced by the method, in this case the trend in structural unemployment.

## Support for NAIRU measurement from economic theory

Another problem associated with the above statistical univariate methods in NAIRU estimation is that they fully disregard economic theory. This shortcoming can be remedied to some extent by making use of semi-structural unobserved components models. Application of this type of multivariate filter (MVF) methods has recently become more widespread.<sup>[18]</sup> They simultaneously decompose several observed variables into trend and cycle. The observed unemployment is decomposed in the models into an unobserved part, i.e. the NAIRU, and the unemployment gap. Such semi-structural models seek to exploit economic dependencies between variables that are well-known in macroeconomic theory.<sup>[19]</sup> In this case, it is possible to incorporate into the same framework not only statistical dependencies but also relations derived from economic theory, between, on one hand, wages and unemployment and, on the other hand, unemployment and economic growth. Thus the basic assumption is that the rate of increase in inflation or wages includes important information on the output or unemployment gap prevailing in the economy.

The inverse relationship between inflation and unemployment is often described by means of the Phillips curve. In an economic slump where actual output is lower than potential output, i.e. the negative output gap is large, the rate of increase in prices is moderate. The Phillips equation thus enables creation in the model of a direct link between the output gap and inflation, or between the unemployment gap and the rate of increase in wages.<sup>[20]</sup> Meanwhile, Okun's law<sup>[21]</sup> – GDP growth correlates with a decline in the unemployment rate – makes it possible to combine the development of the output gap with that of the unemployment gap. Chart 4 illustrates the relationship between GDP and the observed unemployment rate.

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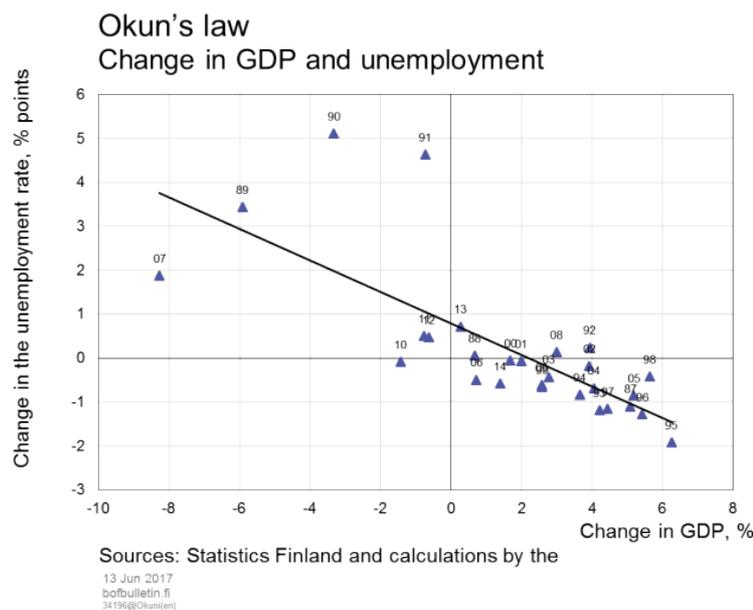
18. Of the earlier literature, worthy of mention is Kuttner's (1994) potential output estimation using an unobserved components method, in Kuttner, K.: 'Estimating Potential Output as a Latent Variable', *Journal of Business and Economic Statistics*, Vol. 12, No. 3, pp. 361–368, 1994.

19. A more accurate description of the multivariate filter method is available from e.g. Hamilton, J.: *Time Series Analysis*, Princeton University Press, New Jersey, 1994; Andrieu M.: *What Is In Your Output Gap? Unified Framework & Decomposition Into Observables*. IMF Working paper WP /13/105, 2013; and Durbin J. and Koopman J.: *Time Series Analysis by State Space Methods*. Oxford University, 2012.

20. The dependence named after William Phillips (1958) and originally observed from statistics was questioned in the 1970s, as the oil crisis caused both inflation and unemployment to increase. Subsequently, theories have been developed to explain the observation of Phillips, and nowadays a version of the Phillips curve that takes, in particular, inflation expectations into account is a key equation in the modern business cycle theory. See e.g. Blanchard and Gali (2007).

21. Okun, A.M., 'Potential GNP: Its Measurement and Significance', *Proceedings of the Business and Economic Statistics Section*, 1962, 98–104 (Washington: American Statistical Association).

Chart 4.



Accordingly, a multivariate filter method enables combination of the Phillips equation and Okun's law as well as estimation of potential output. These types of models have recently been used in regard to, for example, the United States and the euro area.<sup>[22]</sup> The models can be augmented with lags or new observed variables if these are believed to bring additional information for estimation of unobserved variables. For example, efforts could be made to improve estimates of the NAIRU by incorporating information on long-term unemployment or other statistics on structural unemployment within the framework of the model.

One good feature of the multivariate filter method is that it is flexible and enables reduction of the sensitivity of results to revisions. However, application of the method in itself does not guarantee robust outcomes. In this method, too, it is a challenge to generate reliable real-time estimates of current structural unemployment, which complicates the use of NAIRU calculations as a short-term guide for policy.

In order to produce more reliable real-time estimates, the method can also be extended so as to take account of open economy considerations, as Darvas and Simon (2015)<sup>[23]</sup> propose. As well as Darvas and Simon, critics of the sensitivity of results to ex post facto revisions include Borio et al. (2014)<sup>[24]</sup> and Melolinnä et al. (2016),<sup>[25]</sup> who suggest incorporation of financial indicators into the models as a solution. Baggrave et al.

22. IMF economists, for example, have actively developed the models: see Benes J., Clinton K., Garcia-Saltos R., Johnson M., Laxton D., Manchev P. and Matheson T.: Estimating Potential Output with a Multivariate Filter. IMF working paper WP/10/285, December 2010.

23. Darvas Z., and Simon A.: Filling the Gap: Open Economy Considerations for More Reliable Potential Output Estimates. Bruegel working paper 2015/11.

24. Borio C., Disyatat P. and Juselius M.: A Parsimonious Approach to Incorporating Economic Information in Measures of Potential Output. BIS Working papers No. 44, February 2014.

25. Melolinnä M. and Tóth M.: Output Gaps, Inflation and Financial Cycles in the United Kingdom. Bank of England staff working paper No. 585, February 2016.

(2015),<sup>[26]</sup> in turn, propose the use of inflation and growth expectations in multivariate filter models in order to make results less prone to revisions. Alichí et al. (2017, 2015)<sup>[27]</sup> show, among other things, that using the capacity utilisation rate reduces the sensitivity of the method to revisions in connection with estimates of potential output and economic slack.

In analysing empirical research results, however, it must always be remembered that the results obtained are surrounded by uncertainty about model parameters and specification, i.e. how the model is constructed. It is clear that, with poorly defined models, no good results can be obtained even if estimation is made with technically highly sophisticated methods. In any case, the multivariate filter method offers a good auxiliary tool that can be harnessed in estimates of economic slack – in other words, in tracing the unobserved.

Even so, irrespective of different methods, measurement of the NAIRU is at best uncertain. As the NAIRU is a time-varying unobserved variable, estimation challenges can never fully be avoided.

## Structural unemployment derives from labour market frictions and regulation

In the labour market theory developed by Diamond, Mortensen and Pissarides, equilibrium unemployment is only affected by structural factors, such as the effectiveness of the labour market in matching job vacancies and jobseekers, the unemployment benefit replacement rate and the negotiation activity of the social partners. If there are changes in these structural factors, equilibrium unemployment will seek its way to a new level.

According to the theory, equilibrium unemployment will rise if the job destruction rate grows, wage earners' negotiating power increases, pay demands (reservation wage, i.e. threshold for the required level of pay at which it will be financially worthwhile to start working rather than live on unemployment benefits) edge higher or minimum wages rise. Tightening taxation and higher unemployment benefits raise the reservation wage and add to equilibrium unemployment. Meanwhile, equilibrium unemployment is reduced by improved functioning of the labour market.

It is possible to find empirical counterparts for many of these structural factors. For example, the job destruction rate can be measured in Finland on the basis of either individual data<sup>[28]</sup> or employment service statistics<sup>[29]</sup>. The job destruction rate depicts the ratio of new unemployment periods to unemployed jobseekers. The destruction rate

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26. Blagrove P., Garcia-Saltos R., Laxton D. and Zhang F.: A Simple Multivariate Filter for Estimating Potential Output. IMF working paper WP/15/79, April 2015.

27. Alichí A., Bizimana O., Laxton D., Tanyeri K., Wang H., Yao J. and Zhang F.: Multivariate Filter Estimation of Potential Output for the United States. IMF working paper WP/17/106, May 2017; Alichí, A.: A New Methodology for Estimating the Output Gap in the United States. IMF Working Paper WP/15/144, July 2015.

28. See e.g. Ilmakunnas and Maliranta: Recent development of job and worker flows in the Finnish business sector. Finnish Labour Review, 51(3). 2008.

29. See Obstbaum: The Finnish Unemployment Volatility Puzzle. Ministry of Finance Discussion Paper 1/2011.

has fallen significantly in Finland during the double-dip recession following the financial crisis. But this has not reduced the risk of structural unemployment, as the number of unemployed who have found work has declined by even more, thereby expanding the group of unemployed.

Factors impacting the reservation wage, such as taxation and unemployment benefits, can also be measured. Tightening labour taxation, level increases in unemployment benefits and their longer duration, as well as higher housing and living allowances raise this threshold, thereby weakening employment incentives.

A key indicator in describing the functioning of the labour market is the Beveridge curve, which illustrates the relationship between unemployed jobseekers and job vacancies. An outward shift of the Beveridge curve is an indication of the impaired functioning of the labour market, as there are simultaneously more of both job vacancies and unemployed jobseekers. This also increases the risk of structural unemployment.

By contrast, it is very hard to measure some factors that affect structural unemployment. Among other things, it is very difficult to give a precise figure for employees' negotiating power. Despite this, the equilibrium unemployment model framework could enable systematic analyses of structural factors underlying structural unemployment and thus provide valuable additional information on the reasons for structural unemployment.

As structural factors impacting equilibrium unemployment do not remain unchanged over time, the level of equilibrium unemployment will also vary. In Finland, estimates of the level of equilibrium unemployment have not been reported, but in Sweden, for example, this is an established procedure for assessment of structural unemployment.<sup>[30]</sup> In addition to the level, changes in equilibrium unemployment can be roughly measured by means of the factors affecting it.

## **Conclusion: Making better use of statistics and theory to estimate structural unemployment**

The level of structural unemployment and changes therein are key indicators in making decisions on economic and labour market policies. They enable estimates of how much employment can improve as a consequence of economic growth alone and what type of economic and labour market policies should be conducted going forward.

Estimation of labour market slack is, however, very difficult. It may also have become more complicated in recent years, as the economy and labour markets have been shaped simultaneously by population ageing, structural change destroying middle income jobs and an exceptionally protracted recession.

The broader the measure of unemployment used, the higher is unemployment, but this does not yet directly disclose the extent of spare capacity. Broad measures of unemployment constructed on the basis of Finnish employment statistics suggest that the cyclical behaviour of unemployment is very similar irrespective of the measures

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30. See e.g. Konjunkturinstitutet (2013): 'Lönebildningsrapporten'.

deployed. Consequently, the broadening of unemployment measures does not necessarily have any significant information value for counter-cyclical policy, even if it can highlight the need for structural policy actions.

The most common way, derived from economic theory, of gauging structural unemployment is the NAIRU, and this is widely used in Finland, too. Its estimation methods have developed over time, but not all challenges can be met, as it traces something that cannot even ex post be observed from statistics.

Estimation of structural unemployment should therefore be supplemented with an exploration of structural factors derived from equilibrium unemployment theory. This would provide a clue as to the frictions and institutional structures that maintain unemployment above its efficient level. This could not only strengthen an understanding of the extent of labour market slack, but also guide the content of structural policy. Improving business cycles only remedy unemployment caused by cyclical variation, whereas labour market structures need to be altered to reduce structural unemployment.

Both statistics and economic theory could thus be exploited much more than at present, with a view to tackling the level of structural unemployment and changes therein. These approaches can also be combined so as to increase information on the extent of labour market slack.

## Tags

- [unemployment](#)
- [equilibrium unemployment](#)
- [labour markets](#)
- [NAIRU](#)
- [spare capacity](#)
- [structural unemployment](#)

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# Finland struggling to defend its market share on rapidly expanding markets

TODAY 3:00 PM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK •

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The global market share of Finnish exports has been declining continuously ever since the financial crisis. While Finland's export markets expanded by 17% in the years 2008–2015, Finnish exports contracted by 12% over the same period. The loss of market share partly reflects a phenomenon common to the advanced economies. Emerging economies have gained a stronger foothold in the global economy since the 1990s, which has eroded the advanced economies' relative share of world trade.



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The distribution of market shares across countries depends both on the relative cost-competitiveness of the countries' export sectors and on their export structures. If a country's exports are tilted towards products or markets for which demand increases faster than world trade, on average, the country's share of world trade will rise, even if market shares of the country's export goods remain unchanged in individual export countries.

To what extent can the contraction in Finland's market share be explained by the composition of goods exports? The present article explores this issue from the perspective of both product selection and geographical allocation of exports.

In the wake of the financial crisis, global growth in productive investment declined markedly. Finnish exports have traditionally focused expressly on capital goods, as well as intermediate goods, demand for which depends on investment. Furthermore, world trade growth has in recent years been reliant on the emerging economies, whereas Finland's main export markets have traditionally been in European countries that have suffered from sluggish economic growth since the financial and sovereign debt crises.

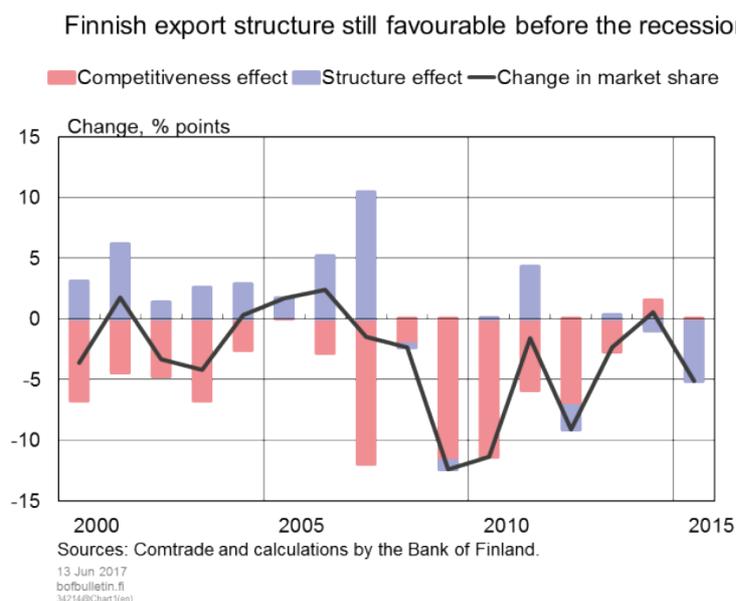
Changes in market share are examined using a constant market share (CMS) analysis. For purposes of the analysis, variations in market share are decomposed into their constituents. The **structural factor** measures the extent to which market share change is related to the export sector's specialisation in products or destination markets that have grown at a different pace than world trade, on average. The **competitiveness factor** is a residual factor indicating to what extent market share change reflects factors other than export structure, such as cost-competitiveness or other competitiveness factors.

The reference period starts at the beginning of the 2000s and ends with year 2015. The research data is based on UN Comtrade data, including 246 export commodities consistent with the Standard International Trade Classification (SITC 3). Export data is expressed in terms of the US dollar and, hence, does not differentiate between effects of price and volume change. Some commodities, including nickel and oil products, have been excluded from the analysis, as their prices have been especially volatile in the period under review.

## Structure of Finnish goods exports favourable until onset of financial crisis

Finnish exports relative to world trade growth showed a mixed performance in the first post-millennium decade (Chart 1). Whereas the Finnish export industry lost market share in 2000–2004, exports increased faster in Finland than in the rest of the world from 2005 until the onset of the financial crisis. In terms of market share development, the financial crisis marked a distinct turn for the worse, with growth in the value of Finnish exports remaining below growth rates in the rest of the world in nearly every reference year between 2007 and 2015.

Chart 1.



Using the constant market share analysis, the change in market share was decomposed into a structure effect and a competitiveness effect (Chart 1). The structure effect is composed of the product and geographical structure of exports as well as the combined net effect of their interaction. The impact of the structure effect is positive in years when Finnish exports have, on average, been directed to commodities or export markets in which trade has increased faster than world trade. Conversely, if exports have been directed to slow-growth markets, the value of the structure effect is negative.

The competitiveness factor, in turn, portrays the component of relative market share change that is not ascribable to the product structure and geographical allocation of exports. However, the competitiveness factor cannot be interpreted as representing exclusively the cost-competitiveness of exports, but also embodies real competitiveness, such as product properties and quality attributes that are superior to those of competitors' products. Loss of market share in high-growth markets may also be due to constraints on output growth. In fact, factors acting as a constraint on output capacity growth show up as declining competitiveness in the CMS analysis.

During the early years of the new millennium, the structure of Finnish exports was favourable overall, buttressing export market share performance up until 2007. The contribution made by the structural factor to the rate of market share growth varied from 3–5 percentage points at the turn of the millennium to 10 percentage points in 2007. By contrast, the impact of the competitiveness factor was negative nearly throughout the reference period, and the competitiveness effect has generally been of greater importance for the evolution of market shares than the structure effect.

Already before the recession and through to 2004, the positive structure effects of exports on market share development were overturned by weak export competitiveness. Finnish exports gained market share only in 2001 and 2005–2007, with exports increasing at best around 2 percentage points faster than world trade.

The competitiveness effect also accounts for the continuous contraction in the market share of Finnish exports witnessed since the financial crisis. In the years 2008–2015, the structure effect was also negative more often than it was positive, but this has been of minor significance for the decline in market share.

We must exercise caution in interpreting the impact of the competitiveness factor on market share. A negative competitiveness effect does not directly merit a conclusion that Finland's cost-competitiveness or real competitiveness has performed weakly relative to the benchmark, which consists of countries of a broadly equivalent level of development and competing with Finland on the same export markets.

Emerging economies' share of world trade increased sharply over the reference years, when the advanced economies were struggling to defend their market shares notably in many traditional sectors of industry, regardless of developments in their mutual competitiveness. In fact, the negative competitiveness effect for Finland is likely to largely reflect difficulties of the Finnish export industry to prevail in the competition for market share with the emerging economies.<sup>[1], [2]</sup>

## Investment slump has cut Finnish exports

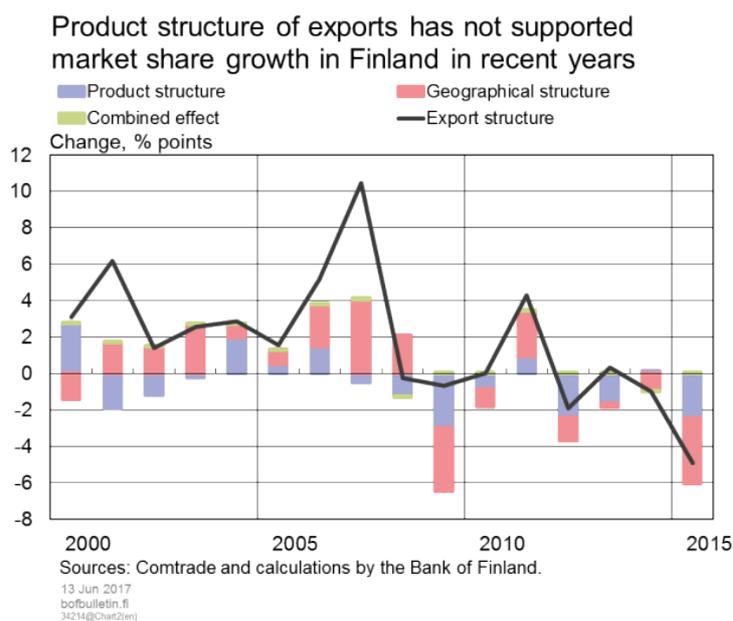
The structure effect can be decomposed further into a product structure effect, which indicates to what extent variations in market share are related to the type of goods exported, and a geographical structure effect, which measures to what extent the geographical allocation of exports drives changes in market share (Chart 2). For individual product groups, trade growth may, to a large extent, be concentrated in one country, in which case the CMS analysis fails to fully distinguish between product and geographical structure effect. This is referred to as interaction effect, which captures the overlapping area between product and destination effect.

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1. For a more detailed [analysis of competitiveness measurement](#), see e.g. Kajanoja (2017).

2. Amador and Cabral (2008) employed the CMS analysis to examine the evolution of Portuguese market shares in world exports, contrasting it with that of some European competitor countries. In a majority of these countries, export market shares began to decline in the 1990s, mostly due to the competitiveness effect. The competitiveness effect was interpreted as expressly signifying a sharpening of the competition for market share with emerging economies.

Chart 2.



The positive structure effect recorded in the early post-millennium years prior to the recession was predominantly due to the favourable geographical structure of exports. The geographical structure effect buttressed growth in market shares from 2001 through to 2009.

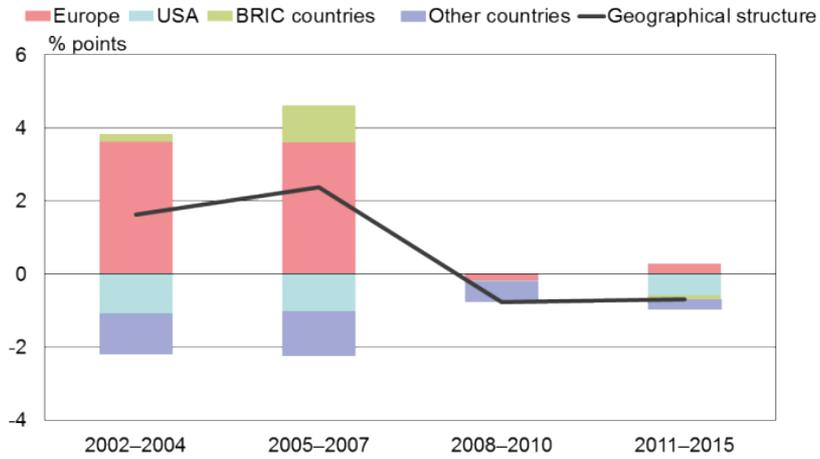
Over the same period, the importance of the product structure of exports for market share growth remained lower, on aggregate, than the geographical structure effect. While supporting the increase in market shares to some extent in 2000 and in 2004–2006, the product structure exerted an unfavourable effect overall in the other reference years.

In the years following the financial crisis, both product and geographical structure of exports mostly had an unfavourable impact on Finnish exports. In some years, notably immediately after the financial crisis in 2009, some of the separate immediate effects on market share of product and geographical breakdown were, nevertheless, offset by a positive interaction effect. All in all, the significance of these structure effects for loss of market share has, nevertheless, been negligible.

The constant market share analysis also enables a more detailed examination of the impact of the geographical and product structure on market share development (Charts 3 and 4).

Chart 3.

**Importance of geographical structure of exports for market share development has declined**

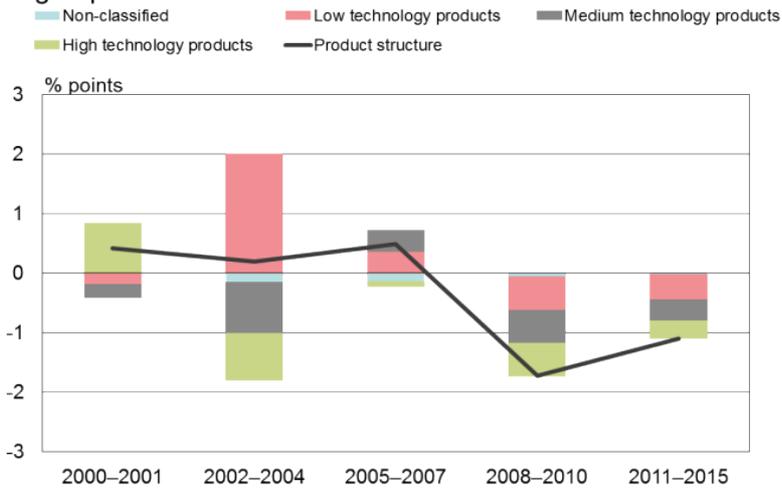


Sources: Comtrade and calculations by the Bank of Finland.

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Chart 4.

**Finnish exports performed sluggishly across all product groups since the financial crisis**



Sources: Comtrade and calculations by the Bank of Finland.

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In the early post-millennium years and until the onset of the financial crisis, the expansion of European markets still made an annual contribution of roughly 3.5 percentage points to growth in the market share of Finnish exports. However, the market share analysis may exaggerate the geographical structure effect of European exports. In the early years post-2000, growth in the trade of European countries was largely derived from the EU integration of European advanced economies and Central European countries and, by extension, an increase in their mutual trade, and Finland's exporters did not benefit directly from this.

In 2005–2007, Finland’s export markets in the BRIC countries (Brazil, Russia, India and China) were also growing faster than world trade. This is likely to be related mainly to exports to the rapidly expanding Russian market. By contrast, as shown by the results of the CMS analysis, the brisk growth witnessed in the Asian countries was barely reflected as an improvement in Finland’s export markets, as Asian countries account for a relatively minor share of Finnish exports. In fact, the expansion in Asian trade was driven largely by trade between Asian countries themselves.

In the post-crisis years of 2008–2010, Finnish export growth fell behind growth in world trade across nearly all markets. Since the financial crisis, the geographical structure of exports has been of minor significance for market share development, with the effect being at its highest around one percentage point in 2011–2015.

Capital goods have traditionally accounted for a relatively large share of Finnish exports, and demand for these goods is cyclically sensitive. The financial crisis caused a plunge in the investment rates of the advanced economies, and a gradual rebound in investment has got underway only recently. The capital goods exported by Finland are typically medium or high tech products. A breakdown of all export goods into low, medium and high tech products enables a closer evaluation of the significance for market share development of the concentration of Finnish exports on capital goods.<sup>[3]</sup>

As well as capital goods, high tech products include mobile phones, exports of which still rose sharply in the early post-millennium years. However, growth in the market shares of Finnish exports was buoyed by rising demand for high technology products exported by Finland only during a short period at the turn of the millennium (Chart 4). Thereafter, the impact of high tech products on market share turned negative. This coincided with a steady decline in the share of high tech products in Finnish exports.

The favourable performance of trade in low tech products strongly underpinned growth in the market share of Finnish exports in 2002–2004, with demand especially for forest industry products – paper, pulp, plywood and sawn timber – picking up considerably towards the end of the period.

Most apparently, demand for capital goods supported growth in the market share of Finnish exports on the eve of the financial crisis in 2005–2007, when the structure effect of medium technology products was also positive. At that time, the global economy was enjoying an investment boom.

In the present decade, Finland’s export markets have performed weakly across all three product groups (Chart 4), which has resulted in a corresponding loss of market share. Growth in global demand has been fastest for high tech products, but Finnish exports have failed to benefit from this owing to a downturn in the electrical engineering and electronics industry. Simultaneously, global demand for medium technology products has contracted in response to the protracted investment slump.

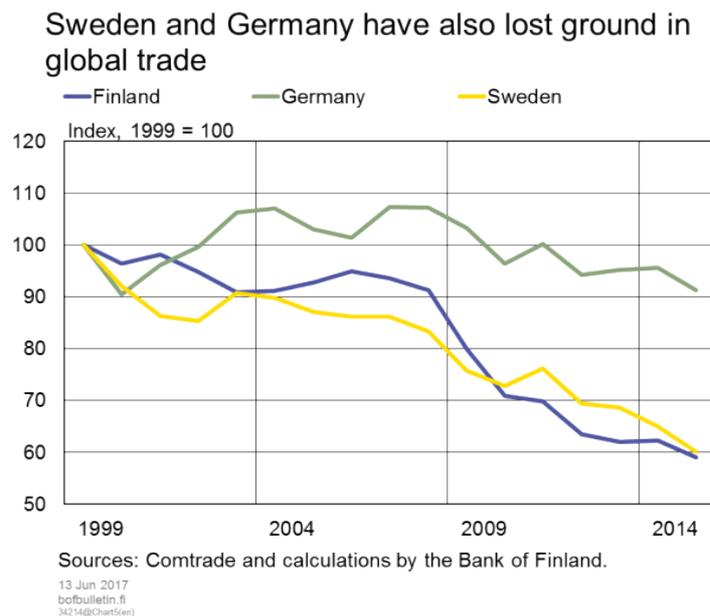
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3. The product groups differ in respect of the R&D intensity of production.

## Swedish and German goods exports have also lagged behind world trade growth

As in Finland, Sweden, too, has suffered a trend decline in market share for its goods exports since the turn of the millennium (Chart 5). However, the timing of market share loss diverged across the two countries. In Sweden, market share declined at a steady pace throughout the reference period 2000–2015, with the contraction being notably faster than in Finland until the onset of the financial crisis. Finland, by contrast, experienced a turning point only with the financial crisis and the consequent recession, after which Finland’s market share began to decline markedly. Over the years 2011–2015, the rate of decline was broadly similar for the two countries.

Chart 5.



In Sweden, exports were supported by the export structure in respect of both product and geographical structure until the financial crisis and economic recession. However, in recent years the structure effect on export share has been negative in Sweden, too.

Until the financial crisis, German goods exports were much more successful in keeping pace with world trade growth than Finnish and Swedish goods exports, even managing to gain market share. With the onset of the financial crisis, however, German goods exports’ share of world trade began to dwindle, albeit the decline has not been as steep as in Finland or Sweden. Furthermore, the export structure of Germany has no longer been beneficial to market share development in the post-crisis years, especially as regards the geographical structure of its goods exports.

## Geographical and product structure of Finnish exports has been unfavourable

In the post-crisis years, Finnish export growth has persistently lagged behind world trade growth. The declining market share can, in part, be explained by the unfavourable

structure of Finnish exports, given that they are largely bound for European countries, which were especially hard hit by the financial and sovereign debt crises. In addition, Finnish exports are tilted towards capital goods, which suffered a clear dip in global demand in response to the financial crisis.

For the most part, the loss of market share is due to a negative competitiveness effect and, hence, cannot be explained by the structural factor of the CMS analysis. This may partly reflect declining competitiveness relative to major competitor countries, but is principally due to difficulties faced in defending market share against competition from emerging economies.

Finnish exports were able to benefit from brisk growth in demand for high tech products only temporarily, from the late 1990s to the turn of the millennium. Since then, Finnish exports have increasingly shifted away from high technology products towards medium and low technology products, notably capital goods and intermediate goods, whose demand depends on investment. The loss of market share is partly attributable to the global investment slump that followed in the aftermath of the financial crisis. Moreover, the geographical structure of Finnish exports has been unfavourable due to the concentration on European countries, which have, as a rule, posted sluggish growth in recent years.

In the immediate years ahead, the export market situation is expected to develop more favourably from a Finnish perspective. Economic growth has got underway in Europe now, too, while global investment demand is set to recover. While the market share of Finnish exports will not return to growth over the forecast period 2017–2019, at least the contraction in market share will ease off {See article [Bank of Finland forecast: Finland grows, and gathers debt](#) (foreign trade)}.

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## Tags

- [international trade](#)
- [market share](#)
- [structure of exports](#)

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# How can we measure the economy in the digital era?

TODAY 3:00 PM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK •

JUHA ITKONEN

- Juha Itkonen  
Economist

The impact of digitalisation is not fully reflected in economic statistics. Even though the commonly used economic metrics such as GDP are still relevant in assessing the state of the economy, the production of statistics should be developed to better measure the digital economy. Because of digitalisation, GDP may have understated output growth, even though measurement errors alone do not explain the exceptionally weak developments in recent years, nor do they eliminate the key challenges for the Finnish economy. Digital technology has, however, improved our well-being in ways that are difficult to measure in money.



## Is digitalisation visible everywhere except in economic statistics?

Digitalisation is transforming the economy and society in a number of ways. The widespread introduction of information and communication technology (ICT) in the various sectors of the economy is reshaping production methods and structures and creating new goods and services. Digitalisation is potentially one of the most significant drivers of productivity and economic growth now and in the future.<sup>[1]</sup>

Digitalisation is reflected in many ways in the day-to-day lives of individuals and entrepreneurs, but in the national accounts the effects seem to have remained smaller

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1. Brynjolfsson – McAfee (2014) and Pohjola (2014).

than expected. The popularity of the Internet and of mobile devices has increased rapidly in recent years, and their speed and efficiency have multiplied in a short period of time. Companies have begun to reorganise production processes as new technology has progressively offered more efficient operating methods. Digital technology has spawned a large variety of new business activities and services.

Despite the above, economic and productivity growth as measured by GDP seems to have slowed globally.<sup>[2]</sup> Over the longer term, productivity growth generated by technological progress is the key factor in increasing living standards and also an important factor in supporting well-being. The question about the importance of digitalisation to growth has divided economists into pessimists and optimists. The pessimists point to statistics and argue that the best applications of ICT have already been seen and that new advances are largely restricted to entertainment and communications. The optimists, in turn, believe that artificial intelligence and robots will revolutionise society in many ways and that the change is already visible. They point out that statistics do not tell the whole story. Digitalisation has created many new challenges for measuring the economy, and it is probable that the change is not fully reflected in the statistics.

Can traditional economic statistics capture developments in an increasingly digitalised economy? Will GDP, the commonly used metric for monitoring the state of the economy, still be a sufficient measure in the future, too? These questions have attracted much attention in recent years, and many national statistical authorities and international organisations such as the OECD and the IMF have begun to review the appropriateness and up-to-dateness of economic metrics. At the end of 2016, the Bank of Finland and Statistics Finland also set up a joint working group to analyse the measurement challenges brought by digitalisation. The working group's findings are summarised below. A more extensive report will be published in autumn 2017.

## What is GDP intended to measure?

When assessing different economic metrics, it is important to bear in mind what each indicator is intended to capture. When we talk about measurement errors, it is necessary to specify in relation to what a metric is biased. Similarly, it is important to clarify what exactly an unbiased indicator would measure.

No single metric can exhaustively answer all questions under all conditions; several indicators are typically needed to capture the different aspects of the phenomenon observed. In assessing the challenges created by digitalisation, it is therefore necessary to distinguish problems related to a measure's appropriateness from problems related to its accuracy. An appropriate measure is suited for a specified purpose and yields answers to the questions presented. An accurate measure, in turn, captures precisely and unbiasedly the phenomenon it is intended to measure according to its definition.

Gross domestic product (GDP) measures domestic production and is the most commonly used metric for the size and development of a national economy. Production refers to the

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2. E.g. Adler et al. (2017).

process of using work, capital and intermediate goods as inputs in order to generate goods and services.

GDP is part of the national accounts, which is an extensive and internationally harmonised statistical system for measurement of an economy. GDP can be computed in national accounts in three conceptually consistent ways. Firstly, GDP measures the value added produced by various economic activities in the economy. Secondly, it measures the income (e.g. compensation of employees and capital income) generated by production. Thirdly, GDP measures the monetary market value of goods and services intended for final use. To put it simply, the three definitions of GDP can be put together by stating that products can be consumed in the same quantity as they have been produced, and income is generated in the same amount as production.

GDP is not a measure of general well-being, even though it is often interpreted as such. GDP is, however, strongly intertwined with many factors essential to well-being and is therefore an important component in assessing well-being.<sup>[3]</sup> GDP does not attempt to capture income or wealth differences, the range of goods, consumption of natural resources, the state of the environment, sustainability of economic growth, population health, criminality nor possible increases in leisure time, even though these matter to the well-being of individuals.<sup>[4]</sup>

GDP per capita measures the average value of goods and services available for people. When GDP is divided by the size of the population, it can be used as a measure of the economic standard of living. In such use, standard of living is to be interpreted relatively restrictedly. GDP is suited for e.g. cross-country comparisons of living standards, as long as differences in price levels are taken into account. This article also examines other factors that should be considered in cross-country comparisons of living standards.

The suitability of GDP as a measure of material living standards is somewhat limited by the fact that some of the activities producing economic value are not counted in statistics. In national accounts, production does not include (apart from some few exceptions) own-account production of services by households or free digital services. GDP does not include e.g. cleaning of one's own home or writing a blog post. Production also excludes free goods of nature (clean air) or growth of natural resources without labour input (growth of natural forests). Estimating a monetary value for such items would be uncertain, laborious and in many cases impossible.

As a compromise between reliability and coverage, national accounts exclude many items that would practically weaken statistical comparability and accuracy, even though they could in principle be included in the accounts. Deficiencies in the coverage of national accounts can, however, be supplemented and elaborated with satellite accounts aimed at estimating activities falling outside the scope of official national accounts using comparable concepts and methods. Statistics Finland, for example, has produced satellite accounts for household production (2006), tourism (2007) and culture (2014).

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3. Pohjola (2013) and Jones – Klenow (2016).

4. Stiglitz et al. (2009) and Prime Minister's Office (2011).

GDP is generally used as a measure of economic growth. In order to assess production developments by comparing GDP figures over different periods, one must also be able to measure price developments. In nominal GDP (GDP at current prices, GDP value), the produced goods are valued according to the prices of the respective time period. Nominal GDP can grow when the general price level rises, i.e. as a result of inflation, even if the quantity of goods and services produced in the economy does not increase nor their quality improve. Real GDP (GDP at constant prices, GDP volume), in turn, measures growth in the value of production not attributable to higher prices. In other words, it aims at measuring growth in the quality and quantity of production. Changes in the quality and quantity of goods can often not be observed directly. Instead, we have to conclude these changes from changes in the value of GDP by eliminating the impact of price changes.

## What should be included in GDP?

Digitalisation impacts economic output in several ways, but not all the effects are necessarily fully reflected in GDP. If digitalisation leads to a significant share of output not being recorded in national accounts, statistics may give a misleading picture of the volume and structure of economic activity.

The statistics may miss many new goods that have been created as a result of technological advances. For example, free products such as open-source software are not counted, even though corresponding proprietary software is recorded in GDP valued at its market price.

The characteristics of old goods can also change so that the goods are either excluded from the statistics or subsequently included in them. In the case of travel agencies, for example, GDP has contracted, since an increasing number of consumers plan and book their trips by themselves. On the other hand, various digital apps make it easier to delegate a variety of household chores such as cleaning to external service providers, in which case these chores are added to the statistics.

In the national accounts, the production boundary determines when an activity carried out for the production of goods and services is included in the statistics. Own-account production of services by households is excluded from the national accounts, apart from a few exceptions. The distinction between recorded and unrecorded production is in many respects based on the practical preconditions for the compilation of statistics. For example, determining the market value of housework or free digital services is difficult and often open to a range of interpretations. Incorporation of imputed estimates in the statistics could weaken their reliability or usability.

The estimate of economic growth could be biased if a significant share of production evolves in a way that it moves in or outside the production boundary of the national accounts. From an economic perspective, it is therefore justified to also consider an extended concept of output that would include the production of goods falling outside the official production boundary. Such an extended GDP would not suffer from the bias caused by the narrowness of the production boundary.

Indeed, the national accounts have been supplemented with satellite accounts as described earlier. These estimate the economic significance of production that falls outside the production boundary. However, it is not meaningful to include absolutely all goods-producing activities in such a metric. For example, it is not necessary to consider hobbies as production even if they generate some sort of products. From the perspective of estimating the condition and development of the economy, measurement can be restricted to activities that can, in principle, be delegated to someone else without a major change in the result. For example, the satellite account for household production aims at estimating the monetary value of housework (cleaning, cooking etc.) on the basis of time use statistics. In 2006, inclusion of household production in GDP was estimated to boost GDP by 39%.

However, it is not always relevant to broaden the concept of GDP. GDP can be used to reflect the funding base of the public sector, i.e. economic activity that could, in principle, be used to gather income for the funding of public expenditure. For this purpose, the official production boundary is more suitable. Taxes can be levied more easily on e.g. cleaning services purchased by households (included in GDP) than on cleaning of one's own home (not included in GDP).

GDP can understate the actual scope of production also when services previously regarded as production become free due to digitalisation and are therefore no longer recorded in the national accounts. For instance, the previously common printed encyclopaedias were reflected in the national accounts as production and consumption, but their sales declined sharply with the popularity of Wikipedia and other web-based data sources. Hence, from the consumer's perspective, a corresponding product is still available, even though in GDP the change is reflected as economic contraction as a result of lower consumption of encyclopaedias.

Unrecorded production is also a factor when assessing the relative size of different economic industries and sectors. Measurement issues with digitalisation are particularly heightened in ICT-related service sectors that produce a large range of free digital services. It is therefore possible that the ICT sector is considerably more important to the economy than the statistics suggest.

For instance, the added value for consumers from social media is not directly captured by the statistics. Free services financed via advertising, such as blogs, are only captured via advertisement-related cash flows. In the national accounts, a blog writer's output equals the writer's advertising revenue, but at the same time the money spent on advertising is an input of the company that advertises, i.e. intermediate consumption. In GDP, these items offset each other. Advertisement-financed free services increase GDP only if they boost consumption of the advertised products without decreasing other consumption. The impact of free services on GDP is therefore modest, nor does it take into account the actual service produced for consumers, i.e. the blog itself that, as a free product, does not have an easily measured monetary value.

Similar measurement problems have also been evident prior to digitalisation, maybe even more extensively than at present. For example, the value for consumers from advertisement-financed radio and television channels or free newspapers has not been, and is not, directly observable.

## Measurement of price developments creates challenges for the measurement of economic growth

The real growth rate of the economy is largely determined on the basis of estimates of developments in nominal GDP and prices. In order to measure the economic growth rate correctly, one must also be able to measure the value and prices of output sufficiently accurately. The most significant challenges in measuring economic growth relate to the measurement of price developments.

Estimating the rise in the general level of prices, i.e. inflation, is a precondition for a reasonable comparison of monetary variables at different points in time. Price indices are needed to separate, in changes in nominal measures, the impact of a rise in prices from actual real economic factors. For most items, real GDP growth must be calculated by excluding the effect of price changes from nominal GDP growth. There are a variety of price indices for different purposes: the consumer price index measures changes in prices of goods consumed by households, while the producer price index measures changes in prices of outputs and intermediate goods. There are also specific price indices for imports and exports.

The measurement challenges associated with price indices have long been known.<sup>[5]</sup> Key factors causing measurement errors include problems with the measurement of consumption shares of goods, substitution bias related to the index formula, new goods, quality bias and sampling bias. These factors are discussed in more detail below.

A price index is based on a basket of goods that describes the distribution of consumption or production across various goods. The consumer price index (CPI), for example, is based on a goods basket in which the weight assigned to each product corresponds to its share in household consumption expenditure. Calculating a relevant price index requires that the content of the goods basket has been chosen and the weight structure has been measured correctly. The earlier mentioned measurement problems related to the structure of the economy are therefore also reflected in price indices.

An economically meaningful CPI corresponds as accurately as possible to a cost-of-living index that measures the relative amount of money required for the achievement of an equal utility level at different points in time. The cost-of-living index shows how much more nominal income is needed in the current year – after changes in prices, quality and goods selection – to buy a goods basket that provides the same utility level as the previous year's goods basket. Hence, the cost-of-living index makes it possible to calculate to what extent growth in nominal income has generated utility to customers.

A cost-of-living index so defined differs from a fixed-weight CPI because consumers can react to price changes by adjusting the consumption shares of goods and thereby improve their position. The difference between these indices is called substitution bias. In practice, it is difficult to compute a cost-of-living index, as this would require the estimation of consumers' willingness to pay (reservation prices). A similar phenomenon

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5. E.g. Boskin et al. (1998), Hausman (2003), Statistics Finland (2016).

is also related to producers' activity since they, too, can adjust the structure of inputs and outputs in the event of changes in producer prices.

The variety of new goods created as a result of digitalisation pose a significant challenge. New goods should be taken into account in price indices because they enable the consumer to achieve the same utility level at a smaller cost. Even though the prices of old goods do not change and consumers' nominal income does not increase, the existence of new products improves the position of consumers. An estimate based on detailed consumption data shows that new products cause a 0.8 percentage point upward bias in the CPI in the United States. The estimate is subject to a number of reservations, but it indicates the importance and potential scale of new goods.<sup>[6]</sup>

New free digital services should also be taken into account in price indices the same way as new goods. An estimate based on consumption and time use data suggests that the consumer surplus generated by use of the Internet was about 2–3% relative to median income in the United States in 2005.<sup>[7]</sup> This estimate, too, is subject to many reservations and is at best indicative. It should be noted that the use of the Internet and mobile devices, in particular, has increased considerably since 2005.<sup>[8]</sup>

It is also problematic that new goods are included in the sample of the price index with a time lag, and therefore changes are not initially reflected in the development of the index. This problem is alleviated by the fact that, initially, the weight of new goods is often small in the basket, and thus their effect on the index is minor. However, if there are large changes in prices and a rapid growth in consumption share, the effect could also be reflected in the overall index. The introduction of a chain index formula in the CPI and other price indices of the national accounts has helped mitigate this problem.

Price indices aim ultimately at measuring 'pure' price developments, i.e. keeping the quality of goods and services constant. In other words, the purpose is to compare, over different time periods, the prices of goods that are equal in terms of their quality and other characteristics. If a price increase of e.g. a new computer model is solely due to the increase in quality, an index that measures pure price developments should not rise. From the economic theory perspective, the purpose is to find for price comparisons perfect substitutes that would offer the same utility for the customer.

It is challenging to hold the quality of many goods and particularly services constant, if it is not possible to find goods that are fully comparable or observe similarities at different points in time. For example, car and computer models change rapidly and the characteristics of the various models differ. Similarly, services are often tailored so that they are not fully comparable, and it may be difficult to see the quality differences. With digitalisation, production processes become more flexible and logistics more efficient, which makes it even easier to expand and tailor the selection of goods and services.

Digitalisation has changed the character of many products from goods to services. For example, in addition to compact discs, consumers can now also subscribe to streaming

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6. Broda – Weinstein (2010).

7. Goolsbee – Klenow (2006).

8. Brynjolfsson – Oh (2012) and Syverson (2017).

services and access a vast music library instead of individual albums. If CDs and streaming services are interpreted as separate products, the digital transformation is not directly reflected in the price index for traditional CDs. Future changes in subscription prices of streaming services are reflected in the index only after the services have been added to the goods basket of the index.

The selection of outlets and companies in the price index sample may cause bias if the price levels or price developments between outlets differ, the sample is not sufficiently representative or consumption shares between outlets have not been estimated correctly. The increasing popularity of online shopping (and also of discount stores) in recent decades has presumably caused an upward bias in price indices. New cheaper shopping venues entering the markets do not directly cause a decline in the CPI; instead, the products of these businesses are eventually included in the goods basket (somewhat similarly to new goods).

These measurement challenges are reflected in economic growth estimates. Analytically, it can be shown that the observed growth rate of real GDP deviates from the growth rate of GDP extended by unobserved output, if developments in nominal GDP or price indices are measured wrongly or the growth rate of unobserved GDP deviates from the growth rate of observed GDP. Even though some production is not counted in the statistics, this does not necessarily cause a bias in the GDP growth figure.

Measurement errors related to real GDP matter less when monitoring economic cycles than when assessing long-term trends.<sup>[9]</sup> The perception of cyclical conditions is largely based on changes in the growth rate of GDP. If the measurement bias is constant, i.e. independent of cyclical conditions, the phases of economic cycles are still observable as long as the bias is taken into account in the trend growth rate. If, however, the magnitude of the bias changes, this can lead to erroneous conclusions about economic conditions. Studies show that new goods are created more (in net terms, while there is also product destruction) during economic expansions, and therefore the measurement bias is in this respect procyclical.<sup>[10]</sup> Hence, the impact of cyclical fluctuations on well-being may be stronger than measured.

## We should pay more attention to digitalisation

It is not a simple or easy task to build an overall picture of a national economy. Challenges related to the measurement of the economy have always been considerable. Digitalisation is reshaping the economy and society in a number of ways, which creates new challenges to those who produce and interpret statistical data.

The current system of national accounts and its concepts and measures are largely relevant and accurate in capturing economic output, income formation and consumption. The bulk of output can be measured appropriately.<sup>[11]</sup> With the progress of digitalisation, however, the economic structure is increasingly focused on products for

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9. E.g. Feldstein (2017).

10. Broda – Weinstein (2010).

11. Groshen et al. (2017).

which it is difficult to estimate changes in quantity, quality and price. Classifications of economic activities and goods are ill suited to assessing the digital structural change, since ICT has already become part of almost every aspect of economic activity, just as electricity in the past. As part of ongoing statistical development, however, more attention should be devoted to digitalisation.

Developments in well-being should be assessed on the basis of diverse metrics. There is, however, a strong connection between measures depicting the economy and developments in well-being. It is possible that this connection will weaken to some extent with technological advances, since the impact of digitalisation on higher living standards is not fully reflected in economic statistics. It is not appropriate to assess welfare developments solely on the basis of economic metrics, nor should we do so without them. Besides GDP, the national accounts also include other measures that capture overall economic developments (such as net domestic product and national income). The usability of these measures has heightened further.

The economic literature does not provide a commonly agreed method for estimating the magnitude of the measurement bias stemming from digitalisation. Nor was there an adequately comprehensive and profound estimate available of the change in the magnitude of measurement errors caused by digitalisation at the time of writing this article. The general view among researchers would seem to be that it is impossible to give a precise estimate of the measurement biases related to various metrics, although more is known about their direction. A comprehensive assessment of individual phenomena related to digitalisation can show the probable direction of measurement biases and reveal which factors are of sufficient magnitude to impact the overall picture of the economy.

Free services, quality changes and global intellectual capital are perhaps the most significant challenges associated with the measurement of digitalisation. Free services increase consumer well-being but are largely excluded from economic statistics. Quality improvement in ICT devices and services is very challenging, and measurement errors may accumulate over time. Movements in global intellectual capital can cause huge level shifts in GDP and the related key figures.

Measurement errors probably explain some of the exceptional economic phenomena of the past decade, such as slower productivity growth, but cannot be regarded as the sole reason behind them. Discussion on the magnitude of measurement errors is still ongoing.

We should note, however, that measurement errors do not fundamentally change the view on public sector sustainability or cost-competitiveness. Economic growth that is not reflected in monetary market transactions does not boost the tax base. Unmeasured gains from digitalisation, such as free digital services, do not help to correct public sector deficits. In principle, we could assume that measurement errors are similar in competitor countries and do not therefore alter Finland's relative position.

When facing new measurement challenges, we should not draw the conclusion that the statistics would be less valuable and meaningful in supporting decision-making. On the contrary, because of the rapid technological transformation, it is even more important to

get reliable information on the condition of the economy and changes in economic structures. However, maintaining economic statistics relevant in a changing world requires ongoing development. Digitalisation also brings new tools to the production of statistics, and we should make use of these tools. Information is crucial for the functioning of the economy and the well-being of the public.

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## Tags

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# Profitable firms generate employment and pay higher wages

TODAY 3:00 PM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK •

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An economy does not export products or create jobs – firms do. These are, however, very heterogeneous and often far from the average. Only the few 'superstars' of high productivity and profitability stand out distinctively in the large mass. A situation in which a few successful firms deviate strongly from the mass may distort the picture of an average firm and lead to erroneous conclusions about the condition of the corporate sector. However, a characteristic common to all firms is that success is reflected in wages and employment, even if in the export sector, the effect is typically smaller. Economic policy should pay more attention to the considerable heterogeneity of firms.



Satu Nurmi, Head of Research at Statistics Finland, has co-authored this article.

## Exports and jobs are generated in firms

Economic policy debate focuses often on macroeconomic factors, such as export success, productivity or unit labour costs of the economy as a whole or the various sectors of the economy. The economy per se does not, however, export products or create jobs; this is done by firms operating in the economy.

Firms are a heterogeneous group. An analysis of firm-level data reveal that the differences in productivity and profitability levels are considerable, even within narrowly

defined industries.<sup>[1]</sup> Moreover, the firms are distributed asymmetrically: the few ‘superstars’ of high productivity and profitability are distinct in the large mass of firms, in which productivity and profitability levels are considerably more moderate. Corporate productivity and profitability have also changed over time. During the crisis since the turn of the millennium, firms’ profitability distribution has weakened on two occasions, and by 2015 it had not recovered at all.

The success or lack thereof of firms is visible in wages and employment. Higher productivity has a positive effect on wages, as expected, even if in export firms, the effect is smaller than in the closed sector. In addition, firms with higher productivity create more jobs than lower-productivity firms, but in export firms, this effect, too, is smaller on average. The international competition faced by the export sector seems to force firms to moderate developments in wages, and differences in profitability are not reflected in job creation as strongly as in the other sectors of the economy.

For economic policy purposes, it is important to take into account the skewness of productivity and profitability distributions. Because a small group of very successful firms improve the mean of corporate productivity and profitability, determining the economic policy stance, for example, based on the average company is unsuitable for a large share of firms.

## Large differences in corporate profitability and productivity

There is considerable heterogeneity in productivity in Finnish firms, and the dispersion of labour productivity is large and asymmetric. A notable feature, both in Finland and elsewhere, is the large number of firms with a relatively low level of productivity, while at the same time, only few firms reach very high productivity levels. The small number of high-productivity firms is visible as a relatively long right tail in the productivity distribution (Chart 1).<sup>[2]</sup> In the international research literature, this phenomenon is referred to as ‘the happy few’.<sup>[3]</sup> Average corporate profitability then overstates labour productivity for a large proportion of firms.

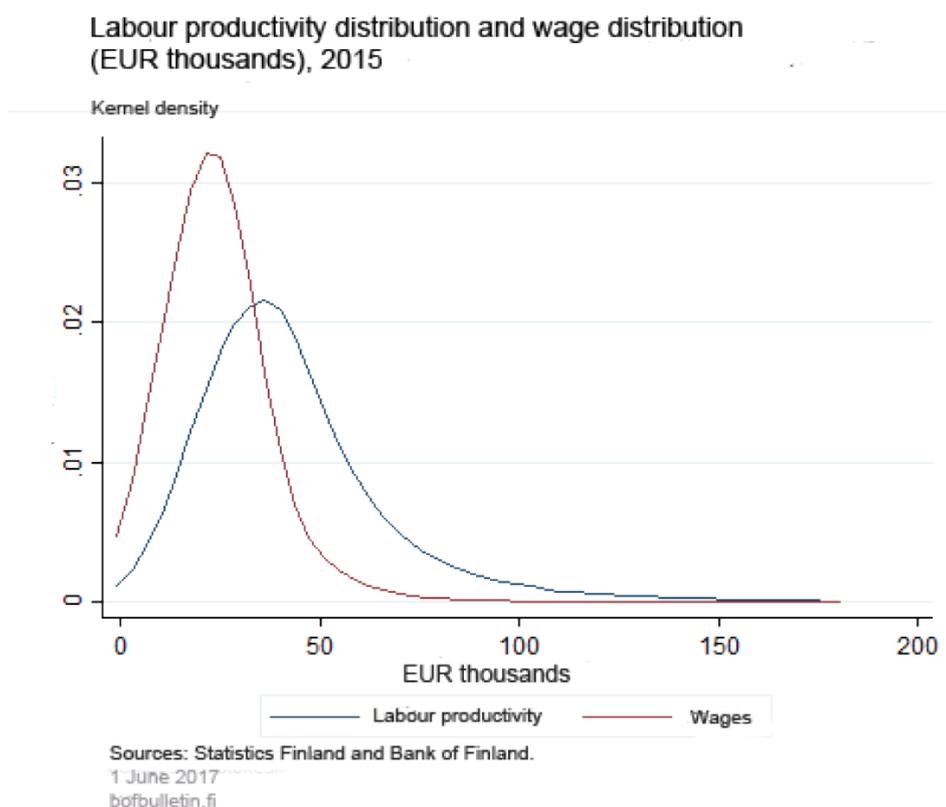
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1. The calculations in this article are based on financial statement statistics for 1999–2015 compiled by Statistics Finland. The minimum size of the firms is set at one employee ( $\geq 1$ ), and the calculations include the private sector, with the exception of certain specific industries.

2. In studies by the Competitiveness Research Network (CompNet), this phenomenon is identified in many countries (e.g. Lopez-Garcia et al. {2015}).

3. Ottaviano – Mayer (2008) use the term ‘the happy few’ in discussing the success of export firms.

Chart 1.



The distribution of wages is similar to that of labour productivity, but significantly more concentrated.<sup>[4]</sup> This reflects the fact that other factors than productivity have a strong impact on wages, e.g. wage bargaining institutions and/or competition.

## The mean overstates profitability for a large proportion of firms

Skewed productivity and profitability distributions may distort the picture of the average company and lead to erroneous conclusions about the condition of firms. In addition to mean values, it is useful to examine the entire distribution of these variables. A more useful – or at least complementary – measure than the mean of labour productivity, wages or profitability is the median of productivity. The median firm is the one that is in the middle when the firms arranged in order from smallest to biggest in terms of productivity. As a result, the value is less affected by the values of some few outliers. The difference between mean and median tells how much the few firms in the right tail of the distribution push up the mean.

An examination of differences in mean and median values in 2015 shows that the dispersion of labour productivity and the profitability margin is large (large standard

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4. In this article, wages are the real wages and salaries paid by a company, divided by the number of full-time equivalent employees.

deviation) and the median is considerably lower than the mean (Table 1). For a large share of companies, labour productivity and the profitability margin are relatively low, but the few firms with high productivity and profitability push up the mean values. These few firms do not, however, have a direct impact on the labour productivity or profitability of other firms, and hence on, for example, their capacity to pay wages.

The heterogeneity in wages is smaller (small standard deviation) and the difference between the mean and the median is small (also by international standards). When the median of labour productivity is 83% of the mean, the median wage is nearly the same as the mean wage. The median of profitability is only 61% of the mean.

Table 1.

**Median of labour productivity and profitability significantly smaller than mean – figures for 2015**

	Labour productivity (EUR 000)	Wages (EUR 000)	Profitability margin (EUR 000)
Mean	47.8	23.6	23.7
Median	38.5	22.6	14.5
p90	74.8	39.3	44.0
Median/Mean	0.81	0.96	0.61
Standard deviation	156.7	24.2	153.4

Source: Bank of Finland.

Labour productivity and wages as well as differences in their distributions have an impact on corporate profitability. If profitability is measured, in a simplified manner, as the difference between labour productivity and wages, and the wage distribution is very similar to that of the distribution of labour productivity, the profitability of firms is distributed very evenly, i.e. all the firms have fairly similar levels of profitability.<sup>[5]</sup> If, on the other hand, the wage distribution is more concentrated than the productivity distribution, the differences in profitability may be large and asymmetrically distributed. In addition to the shape of the wage distribution, corporate profitability reflects the location of the wage distribution relative to the labour productivity distribution.

5. In this article, corporate profitability is the difference between labour productivity and wages, all at constant prices.

## Large differences in and between industries

Differences in productivity are fairly large between industries, and the productivity distributions are very dissimilar. For example, in accommodation and food service activities, the majority of firms have relatively low productivity, and only very few are high-productivity firms (Chart 2a). In manufacturing, productivity is typically higher, which is visible in the distribution (Chart 2a) as a thicker tail. This means a larger number of high-productivity firms. In information and communication services, the location of the peak of the productivity distribution is broadly the same as in manufacturing, but the distribution is more even. The share of both low-productivity and high-productivity firms is larger than in manufacturing.

Intra-industry heterogeneity can also be very large (Chart 2b). For example, in the sub-industries of manufacturing, the differences in productivity distributions are considerable.

Chart 2a.

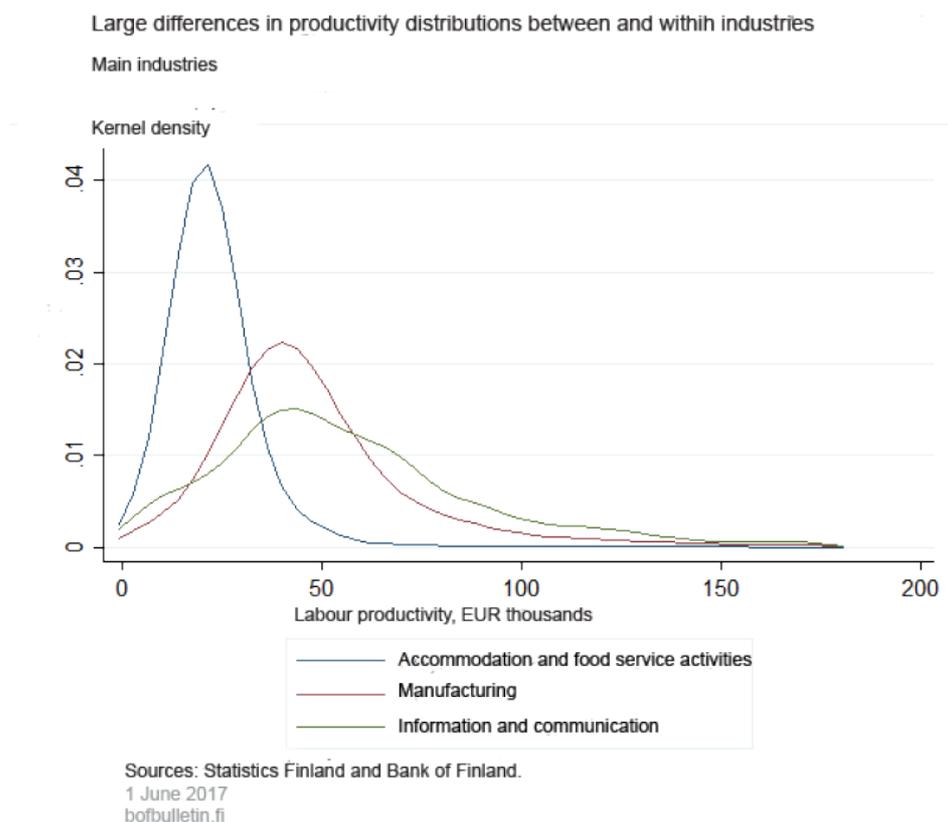
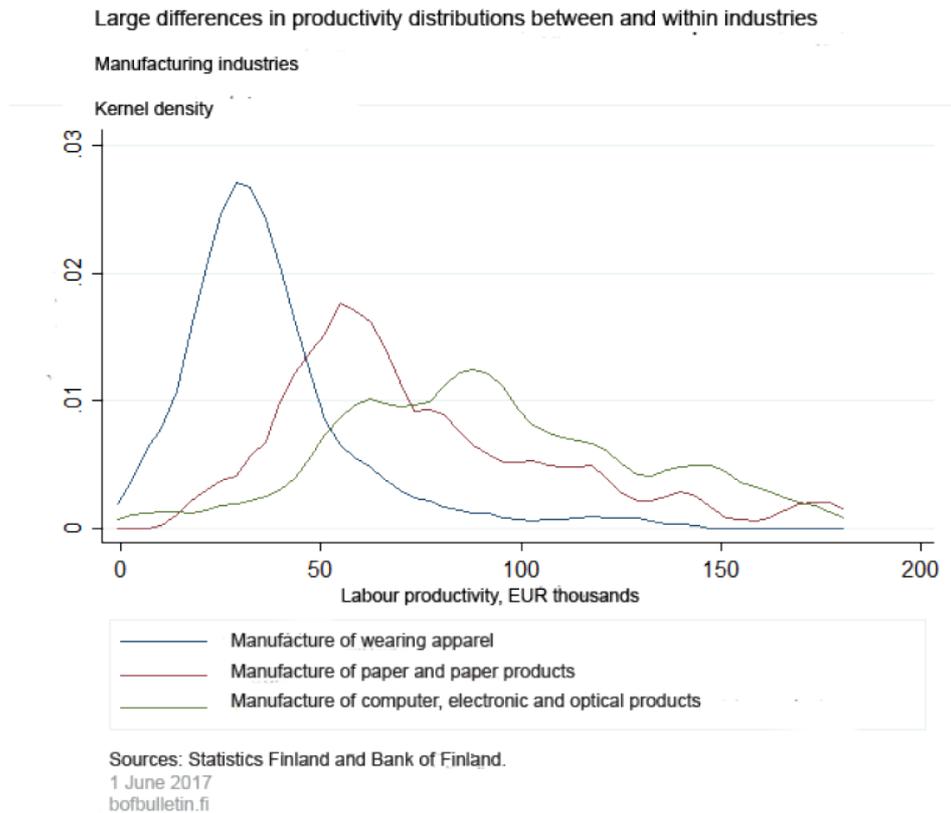


Chart 2b.



## A one-size-fits-all economic policy is ill-suited for many

The heterogeneity of firms is of major importance in the economy.<sup>[6]</sup> A simultaneous shock to all the companies in the economy or within an industry, for example changes in exchange rates or energy prices, has a different impact on firms that differ in terms of profitability. If the productivity and productivity distributions are skewed, the capacity of an average company to adapt to a shock may differ considerably from that of the majority (cf. median) of firms. Correspondingly, a pay rise determined on the basis of mean productivity may be oversized for the majority (cf. median) of firms. A one-size-fits-all economic policy is unsuitable in an environment of considerable heterogeneity in productivity and profitability.

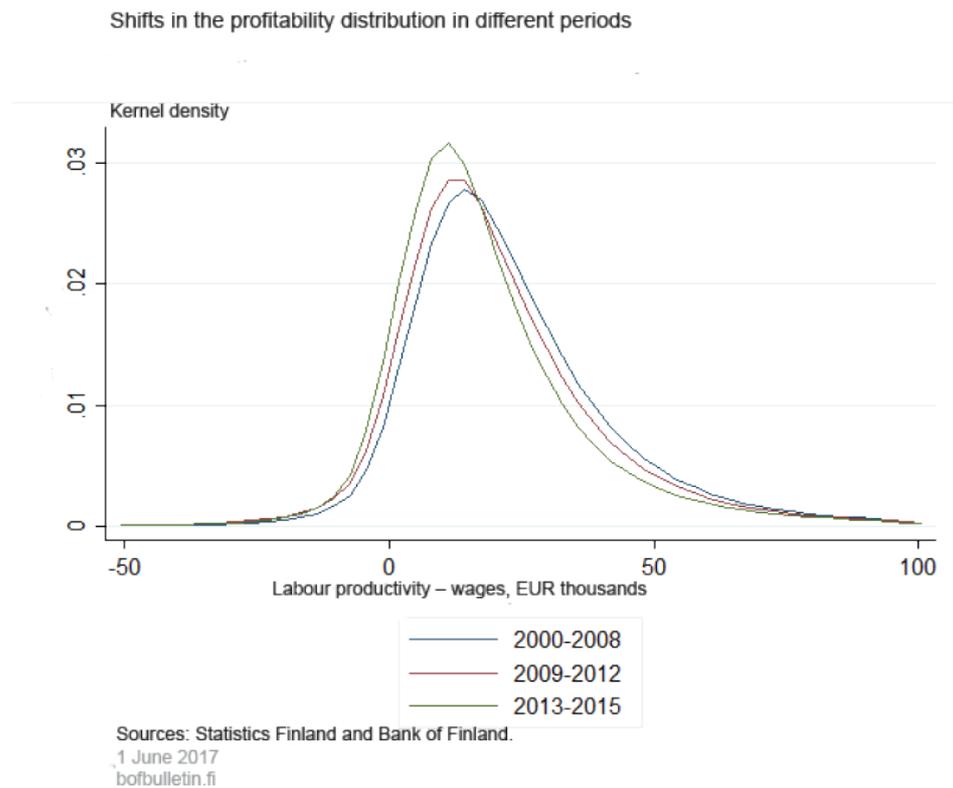
## Corporate profitability has weakened since the turn of the century

During the crisis since the turn of the millennium, the profitability of firms has changed significantly on two occasions. In 2000–2008, the profitability distribution, which describes the margin between labour productivity and wages, remained broadly unchanged, but during the financial crisis in 2009, profitability weakened. In the graph

6. See e.g. Melitz – Redding (2014), Barba Navaretti et al. (2012) or Lopez-Garcia et al. (2015).

(Chart 3), the weakening of profitability was reflected as a shifting to the left of the entire productivity distribution, and at the same time, the share of high-profitability firms decreased and the share of low-profitability firms increased. The distribution remained broadly unchanged until 2012, and as we can see in the graph (Chart 3), the distribution shifted again to the left as the share of low-profitability firms started to increase again, at the expense of the number of firms with good profitability. Profitability had not recovered at all by 2015, which partly explains the anaemic developments in the Finnish economy in 2012–2015.

Chart 3.



The weakening of the profitability distribution was due on one hand, to the decline in labour productivity (productivity distribution shifted to the left and changes in its shape, to the loss of high-productivity firms) in 2009 and 2013.<sup>[7]</sup> In contrast, wages rose in 2009 (wage distribution shifted to the right and the share of large wages increased). In 2013, the wage distribution shifted to the left and the share of low-pay firms grew slightly, but changes in wages were smaller than changes in labour productivity.

Table 2.

7. The renewal of Statistic Finland's business statistics in 2013 may affect the figures slightly.

## Indicators of labour productivity wages and profitability 2000–2015

		2000–2008	2009–2012	2013–2015
Profitability	Mean	27.0	25.0	22.9
	Median	19.3	16.9	14.4
	Median/Mean	0.72	0.68	0.63
	Standard deviation	83.0	97.5	123.5
Labour productivity	Mean	48.9	48.5	46.6
	Median	41.2	39.9	37.8
	Median/Mean	0.84	0.82	0.81
	Standard deviation	86.0	99.6	129.7
Wages	Mean	21.9	23.5	23.4
	Median	21.6	22.8	22.2
	Median/Mean	0.99	0.97	0.95
	Standard deviation	15.9	15.9	27.1

Source: Bank of Finland.

## Productivity is reflected in wages

Firm heterogeneity in productivity and profitability is significant, which is reflected as considerable differences in the capacity to pay wages. Productivity and profitability in individual firms varies over time, due, for example, to firm-specific shocks to demand and productivity. As noted above, the distribution of wages is more concentrated than the labour productivity distribution. This is due to the fact that other factors than productivity have a strong impact on wages. If labour productivity changes as a result of a demand or supply shock, will it have an impact on wages or will it lead to changes in profitability (i.e. will it affect the margin between labour productivity and wages)?

When we examine the indirect effect of productivity changes on wages by using a model in which relative changes in wages are explained by relative changes in labour productivity, we find that labour productivity is passed through to wages on the aggregate level and in all industries.<sup>[8]</sup>

However, the size of the effects (regression coefficients in the model) varies between industries (Table 3). For example, in construction, transportation as well as administrative and support service activities the pass-through is stronger than in manufacturing, wholesale and retail trade, and accommodation and food service activities. For all firms, the elasticity is 0.36, i.e. significantly below one. This, in turn, means that, in the short-term, an increase in productivity will improve corporate profitability, while a decrease in productivity will reduce profitability. However, the size of the coefficient does not mean that productivity growth would have a permanent impact on profitability, because it reflects the short-term effect of productivity on (real) wage growth. In the long term, real wages and productivity inevitably develop at a similar pace and the functional income distribution remains unchanged.

In export firms, and in general in firms participating in foreign trade, the pass-through of changes in productivity to wages is weaker than in the closed sector (smaller coefficient). In the closed sector the elasticity is 0.37, but for export firms it is only 0.25. This means that in export firms, changes in productivity do not pass through to wages in a similar manner (as rapidly) and fluctuations in profitability are correspondingly larger. This may be explained by the degree of competition: the price elasticity of export firms' products to demand is larger than in the closed sector, which forces the firms to stricter wage moderation and to maintain a higher profitability margin. In fact, the latter feature seems to hold true in the data examined here. For export companies, the average margin per employee for the entire period is EUR 31,600, whereas in non-export companies, the figure is EUR 25,400 per annum. The larger margin of the export companies may be due to higher capital intensity and thus also larger investment needs (export companies have on average 15 times more capital than companies on average).

The elasticity of wages to productivity is also nonlinear: the elasticity is larger when productivity grows than when it declines. This is consistent with the recent research literature, which finds (nominal) wages to typically exhibit downward rigidity.<sup>[9]</sup>

Table 3.

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8. Regression coefficients are examined in the model, in which  $wr$  is real wages and  $pr$  real labour productivity,  $\Delta \log wr_{it} = \alpha_0 + \alpha_{1j} \Delta \log pr_{it} + \alpha_{2i} \sum_j year_{jt} + \alpha_3 OY_{it} + \varepsilon_{it}$ , in which  $wr$  is real wages and  $pr$  real labour productivity.  
 9. Dickens et al. (2007), Holden – Wulfsberg (2014) and Messina et al. (2010).

## Regression coefficients in the model

No.	Coefficient	t-ratio	R <sup>2</sup>	Industry	Panel	Explanation
1	.363	567.38	0.170	All	re	
2	.329	197.14	0.165	Manufacturing	re	
3	.426	281.03	0.220	Construction	re	
4	.302	260.68	0.161	Wholesale and retail trade	re	
5	.414	175.18	0.129	Transportation and storage	re	
6	.323	122.60	0.135	Accommodation and food service activities	re	
7	.356	118.61	0.181	Information and communication	re	
8	.299	75.27	0.114	Real estate activities	re	
9	.393	220.64	0.186	Professional, scientific and technical activities	re	
10	.456	154.13	0.220	Administrative and support service activities	re	
11	.247	140.90	0.157	All	re	Export>0
12	.371	550.86	0.172	All	re	Export = 0
13	.272	154.92	0.149	All	re	Export company
14	.450	309.90	0.269	All	re	Import company
15	.257	63.19	0.149	All	re	Foreign trade
16	.362	440.61	0.151	All	re	Non-foreign trade
17	.334	2251.01	0.171	All	fe,w	

## Regression coefficients in the model

18	.225	1277.76	0.136	All	fe,w	Export>0
17	.422	1890.66	0.175	All	fe,w	Export = 0
18	.202	1674.39	0.120	All	fe,w	<100%
19	.129	885.11	0.068	All	fe,w	<100%, Export = 0
17	.80	130.37	0.082	All	fe,w	<100%, foreign trade
18	.272	1458.78	0.123	All	fe,w	<100%, non-foreign trade
19	.151	165.80	0.040	All	re	<100%, $\Delta\logpr>0$
20	.135	158.82	0.041	All	re	<100%, $\Delta\logpr<0$
21	.295	288.77	0.111	All	re	<200%, $\Delta\logpr>0$
22	.120	125.86	0.029	All	re	<200%, $\Delta\logpr<0$

In the table, *re* refers to the random effect model; *fe* is the fixed effect model; *w* refers to weight (number of employees); '*export>0*' means that the firm's export deviates from zero; '*export firm*' indicates that the firm is registered as an export firm; '*import firm*' is defined correspondingly and '*foreign trade*' shows that the firm is registered as a firm involved in both export and import. The figures <100% (<200%) mean that the sample is designed so that the rise in real wages can be 100% (200%) at a maximum; t ratios are non-clustered.

**Source: Bank of Finland.**

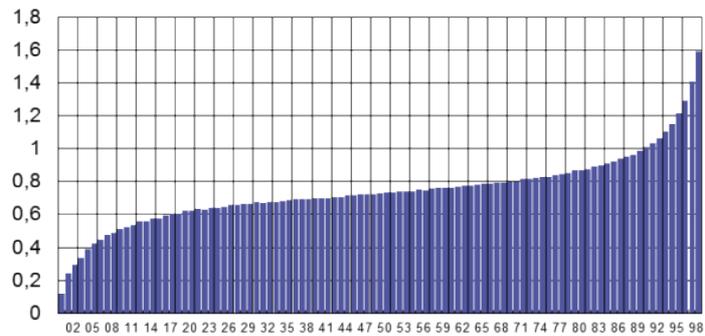
Due to the considerable heterogeneity of firms even within industries, it is advisable to examine the pass-through of productivity to wages in firms with different productivity developments. When firms are divided into percentiles based on productivity growth and we examine the pass-through of productivity to wages in each group, we find that the pass-through is nonlinear.<sup>[10]</sup> The pass-through of productivity to wages (size of the regression coefficient) is larger in firms with high productivity growth than in those with low productivity growth.

10. The regression coefficient is estimated from the equation  $\Delta\log wr_{it} = a_0 + a_{1j} \sum_j D_{jt} + a_{2i} \sum_i year_{it} + a_3 OY_{it} + \varepsilon_{it}$  in which  $D_j$  is the ordinal dummy variable of productivity growth (D1 is the lowest value and D100 the hundredth [highest] category of productivity growth). In the model, the control variables are year dummies and the stock company dummy OY representing the corporate legal structure.

If productivity growth is weak, the rise in wages will also be minor (Chart 4). For the majority of productivity growth values, the rise in wages is, however, of similar size. But on the highest level of productivity growth, there is excess flexibility, although this applies to only some 10–20% of firms.

Chart 4.

### The impact of changes in labour productivity on wages, all companies



The Y axis shows the regression coefficient from a model in which logarithmic wage differentials are explained with dummy variables that correspond to logarithmic productivity differentials (D1 is the lowest value and D100 the hundredth [highest] category of productivity growth). In the model, the control variables are the year dummy and the corporate structure dummy.

Sources: Statistics Finland and Bank of Finland.

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If we examine separately manufacturing (macro industry 1) and the export sector (Chart 5), we find that the coefficients are smaller, but the company-level distribution of wage growth is nonetheless similar to that in the economy as a whole. In manufacturing, and in the export sector in particular, the pass-through of labour productivity to wages seems to be smaller than in other industries. The smaller pass-through in the export sector may reflect not only the above-mentioned differences in capital intensity but also restrictions in wage setting that are due to international competition: company-level productivity developments do not in the same manner define the capacity to pay wages as in the closed sector. The figures may also reflect the general trend in economic developments in recent years. In manufacturing and in the open sector in general, developments have been weaker than in the service industries or in the closed sector in general.

Chart 5a.

### The effect of labour productivity on wages, manufacturing

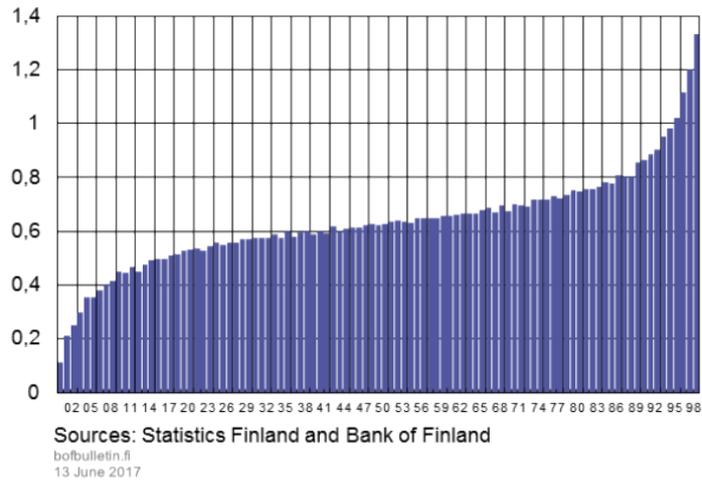
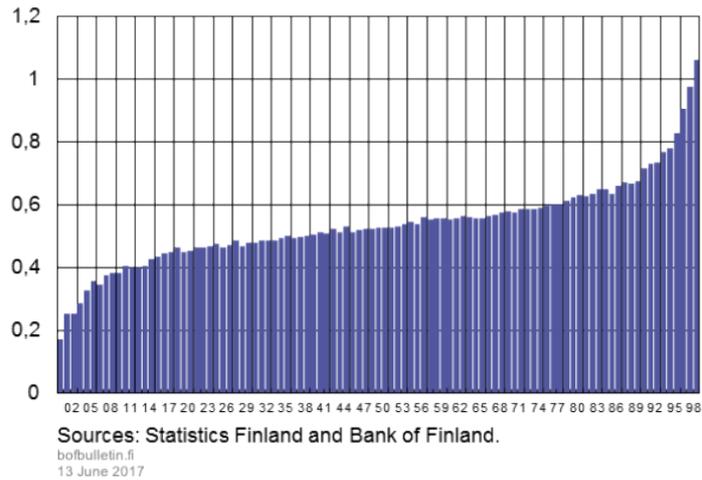


Chart 5b.

### The effect of labour productivity on wages, export sector



Another indication of the considerable heterogeneity of firms is that the rise in wages related to productivity growth is at its largest more than double the amount in the reference group with the weakest productivity growth (lowest percentile). In the export sector, the dispersion of the coefficients is considerably smaller, and the largest coefficient is only just above one. This suggests that in the export sector, both the average effect of productivity growth on wages and the dispersion of the effects are smaller.

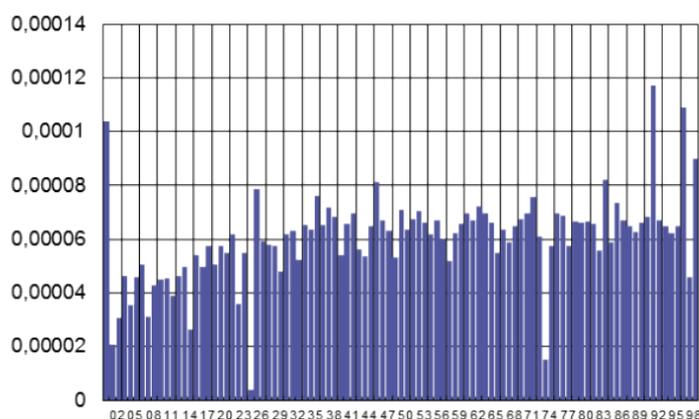
## Corporate profitability affects job creation

The heterogeneity of firms is also reflected in the number of jobs they create. The employment effect of different types of firms can be examined from the macroeconomic perspective, in which case the focus of interest is the contribution of certain types of firms to the number of jobs created in an industry or in the economy. On the other hand, we can examine the effects of a company's characteristics on its own level of employment.

When we divide firms into percentiles based on profitability and examine the contribution of each group to employment in a sector we find that the contribution of firms with weak profitability to job creation in a sector is typically smaller than that of firms with higher profitability (Chart 6). The effect is, however, relatively small and is evident mainly at the lower end of the productivity-wage margin.

Chart 6.

The effect of the profitability margin on the contribution of companies to the number of jobs in an industry



Sources: Statistics Finland and Bank of Finland.

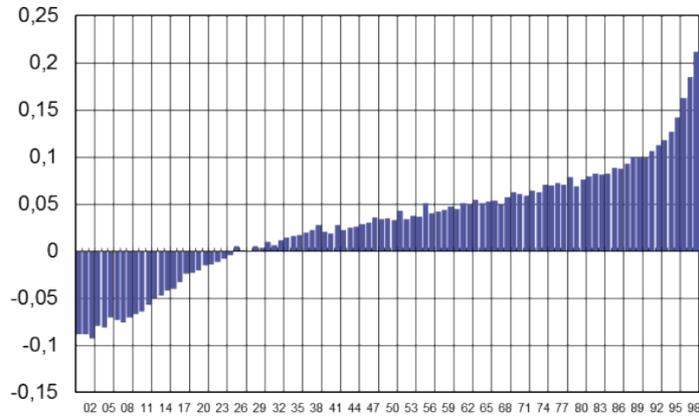
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A somewhat similar result is achieved when we analyse the effect of the size of a company's profitability margin on its own level of employment growth (job creation in the company).<sup>[11]</sup> We observe that there is a positive, almost linear correlation between a company's employment growth and productivity (Chart 7). In firms with very weak (or even negative) profitability, employment growth is negative, i.e. firms reduce their labour force. For the sake of comparison, it should be noted that the share of observations of negative productivity-wage margin is 12%, i.e. the group of firms with negative employment growth also includes firms with a positive (but small) productivity-wage margin.

11. The dummy variables are again corporate size, year dummies and a corporate legal structure dummy.

Chart 7.

### The effect of the profitability margin on employment growth in a company

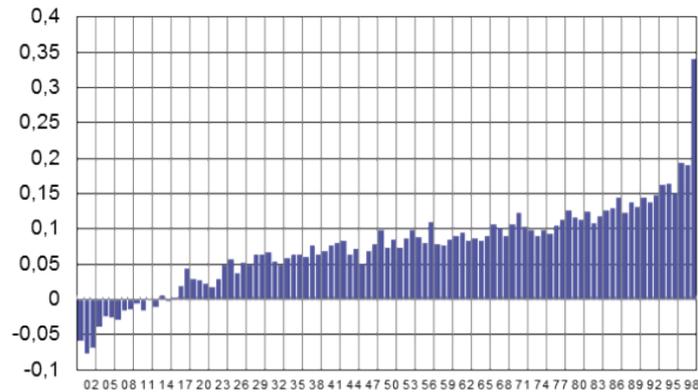


Sources: Statistics Finland and Bank of Finland.  
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When we examine the effect of the profitability margin on a company's employment growth in the export sector (Chart 8) we find a qualitatively similar relation as in the previous exercise (Chart 7). The positive values are, however, larger and the group of negative values is smaller, i.e. the result is in line with the results for wage growth. The dispersion of the coefficients is smaller, i.e. in terms of behaviour, the export sector is clearly more homogeneous.

Chart 8.

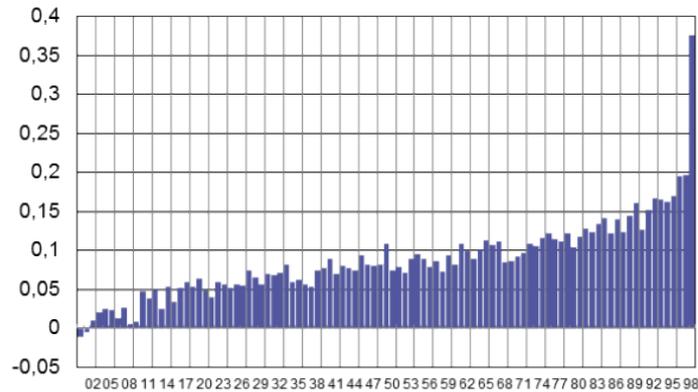
### The effect of the profitability margin on employment growth in an export company



Sources: Statistics Finland and Bank of Finland.  
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Chart 9.

### The effect of the logarithmic profitability margin on employment



Sources: Statistics Finland and Bank of Finland.  
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In terms of employment growth (net changes in the number of jobs), a company's profitability is of key importance. If the profitability margin is small (or negative) jobs are not created. This is evident when we compare firms with a negative margin against firms with a positive margin. Of the former, 10.7% increase and 16.2% reduce their labour force, whereas in the case of firms with a positive margin, 15.0% increase and 10.8% reduce their labour force.

This is most clearly evident in the estimation results of the simplified model accounting for changes in employment (Table 5). The results show that in export companies, employment growth is clearly less sensitive to the margin than in other companies. On the other hand, if we examine the logarithmic margin (which excludes firms with a negative margin), the difference is virtually non-existent.

Table 4.

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## Estimation results on employment growth

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$\Delta \log l = 036 \log\_margin_{.1} - 135 \log l_{.1} - 149 OY + \text{year dummies}; \text{all}, R^2 = 0.011, t_1 = 99.44, t_2 = 267.74, t_3 = 82.72$

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$\Delta \log l = 037 \log\_margin_{.1} - 074 \log l_{.1} - 190 OY + \text{year dummies}; \text{export} > 0, R^2 = 0.018, t_1 = 34.65, t_2 = 59.31, t_3 = 13.74$

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$\Delta \log l = 556 \text{margin}_{.1} - 212 \log l_{.1} - 129 OY + \text{year dummies}; \text{all}, R^2 = 0.035, t_1 = 49.70, t_2 = 472.58, t_3 = 74.83$

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$\Delta \log l = 326 \log\_margin_{.1} - 110 \log l_{.1} - 175 OY + \text{year dummies}; \text{export} > 0, R^2 = 0.027, t_1 = 119.45, t_2 = 99.24, t_3 = 12.61$

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Here 'margin' refers to the difference of real productivity and wages per employee;  $l$  is the number of employees and OY refers to stock company.  $t_i$  are t ratios. The number of observations is 1,601,948 and the number of companies, 238,679.

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**Source: Bank of Finland.**

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## We need labour market flexibility

Finnish firms are a heterogeneous group, in which the few 'superstars' of high productivity and profitability stand out in the large mass of firms. These differences between firms play a significant role, as the importance of various types of demand and productivity shocks can differ considerably, depending on the location of the firms in the profitability distribution. If the productivity and profitability distributions are skewed, the capacity of an average company to adapt to a shock may differ considerably from that of the majority (cf. median) of firms. This is important also in terms of economic policy, as a one-size-fits-all economic policy is unsuitable in an environment of large differences in productivity and profitability. Skewed distributions also distort the picture of an average company and may lead to erroneous conclusions about the condition of firms.

Both competitiveness and employment would benefit if a more flexible wage-setting system were introduced in the labour market, both on the industry level and the company level. For a small open economy like Finland, it is of course important that the price-competitiveness of the export sector is good. This, in turn, requires reasonably good profitability. For the economy as a whole, it is somewhat problematic if closed sector wages react in a considerably stronger manner to changes in productivity (and other domestic factors). An increase in costs in the closed sector will inevitably in the

long term be reflected also in the competitiveness of the export sector, as it pushes up the costs of export firms.

The results of our analysis show that high corporate profitability is reflected in employment growth. It is clear that firms that record losses cannot create permanent jobs, but this applies also to firms with very low profitability.

As for wage flexibilities, they do not necessarily have to be similar in, for example, all industries. In some industries, various forms of performance-related pay may be the most appropriate way of implementing flexibilities. On the other hand, it may be advisable to implement them via adjustments in the number of hours worked. Thus far only a small amount of research has been conducted into the suitability and appropriateness of the various alternatives for the Finnish labour market.

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## Tags

- [companies/firms](#)

- employment
- Finland
- productivity
- profitability
- wages

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## FORECAST TABLES

# Forecast for 2017–2019

13 JUN 2017 11:00 AM • BANK OF FINLAND BULLETIN 3/2017 • ECONOMIC OUTLOOK

## June 2017

### 1. BALANCE OF SUPPLY AND DEMAND, AT REFERENCE YEAR 2010 PRICES

% change on previous year

	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
GDP at market prices	0.3	1.4	2.1	1.7	1.4
Imports of goods and services	3.1	2.5	2.7	2.3	2.1
Exports of goods and services	2.0	0.5	3.9	3.4	2.9
Private consumption	1.5	2.0	1.3	1.3	1.2
Public consumption	0.1	0.5	-0.2	0.1	-0.2
Private fixed investment	2.6	6.1	5.2	3.0	2.8
Public fixed investment	-4.9	1.4	2.4	0.2	-0.1

Source: Bank of Finland.

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## 2. CONTRIBUTIONS TO GROWTH<sup>1</sup>

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	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
GDP, % change	0.3	1.4	2.1	1.7	1.4
Net exports	-0.4	-0.7	0.4	0.4	0.3
Domestic demand excl. inventory change	1.1	2.3	1.7	1.3	1.1
of which Consumption	0.8	1.2	0.7	0.7	0.6
Investment	0.2	1.1	1.0	0.6	0.5
Inventory change + statistical discrepancy	-0.3	-0.2	0.0	0.0	0.0

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<sup>1</sup> Bank of Finland calculations. Annual growth rates using the previous year's GDP shares at current prices as weights.

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**Source: Bank of Finland.**

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### 3. BALANCE OF SUPPLY AND DEMAND, PRICE DEFLATORS

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Index 2010 = 100, and % change on previous year

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	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
GDP at market prices	112.0	112.9	113.5	115.0	116.5
	1.7	0.8	0.6	1.2	1.4
Imports of goods and services	100.9	99.0	101.9	104.6	107.0
	-3.7	-1.8	2.9	2.6	2.2
Exports of goods and services	103.0	100.5	102.7	105.1	107.1
	-1.1	-2.4	2.2	2.3	1.9
Private consumption	110.6	111.3	112.2	113.6	115.3
	0.4	0.6	0.8	1.3	1.5
Public consumption	113.1	114.3	114.1	115.5	116.9
	0.7	1.0	-0.1	1.2	1.2
Private fixed investment	109.5	111.4	113.8	115.9	117.8
	0.5	1.8	2.2	1.8	1.7
Public fixed investment	110.2	110.7	112.6	114.1	117.3
	0.0	0.4	1.8	1.3	2.8
Terms of trade (goods and services)	102.1	101.5	100.7	100.4	100.1
	2.8	-0.6	-0.7	-0.3	-0.3

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Source: Bank of Finland.

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#### 4. BALANCE OF SUPPLY AND DEMAND, AT CURRENT PRICES

EUR million and % change on previous year

	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
GDP at market prices	209,511	214,062	219,782	226,207	232,535
	2.0	2.2	2.7	2.9	2.8
Imports of goods and services	77,810	78,262	82,738	86,868	90,680
	-0.7	0.6	5.7	5.0	4.4
Total supply	287,321	292,324	302,520	313,075	323,216
	1.2	1.7	3.5	3.5	3.2
Exports of goods and services	77,186	75,677	80,386	85,094	89,253
	0.9	-2.0	6.2	5.9	4.9
Consumption	166,847	170,671	173,056	176,834	180,652
	1.5	2.3	1.4	2.2	2.2
Private	115,761	118,811	121,381	124,454	127,795
	1.9	2.6	2.2	2.5	2.7
Public	51,086	51,860	51,676	52,380	52,857
	0.7	1.5	-0.4	1.4	0.9
Fixed investment	42,867	45,792	48,930	50,999	53,163
	1.5	6.8	6.9	4.2	4.2
Private	34,694	37,467	40,258	42,196	44,120
	3.1	8.0	7.4	4.8	4.6
Public	8,173	8,325	8,672	8,803	9,043
	-4.9	1.9	4.2	1.5	2.7
Inventory change + statistical discrepancy	421	184	148	148	148
% of previous year's total demand	-0.1	-0.1	0.0	0.0	0.0
Total demand	287,321	292,324	302,520	313,075	323,216

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#### 4. BALANCE OF SUPPLY AND DEMAND, AT CURRENT PRICES

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	1.2	1.7	3.5	3.5	3.2
Total domestic demand	210,135	216,647	222,134	227,981	233,963
	1.3	3.1	2.5	2.6	2.6

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Source: Bank of Finland.

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#### 5. BALANCE OF SUPPLY AND DEMAND

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% of GDP at current prices

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	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
GDP at market prices	100.0	100.0	100.0	100.0	100.0
Imports of goods and services	37.1	36.6	37.6	38.4	39.0
Exports of goods and services	36.8	35.4	36.6	37.6	38.4
Consumption	79.6	79.7	78.7	78.2	77.7
Private	55.3	55.5	55.2	55.0	55.0
Public	24.4	24.2	23.5	23.2	22.7
Fixed investment	20.5	21.4	22.3	22.5	22.9
Private	16.6	17.5	18.3	18.7	19.0
Public	3.9	3.9	3.9	3.9	3.9
Inventory change + statistical discrepancy,	0.2	0.1	0.1	0.1	0.1
Total demand	137.1	136.6	137.6	138.4	139.0
Total domestic demand	100.3	101.2	101.1	100.8	100.6

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Source: Bank of Finland.

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## 6. PRICES

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Index 2010 = 100, and % change on previous year

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	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
Harmonised index of consumer prices, 2005=100	100.0	100.4	101.2	102.2	103.4
	-0.2	0.4	0.8	1.0	1.3
Consumer price index, 2005=100	119.3	119.7	120.4	121.5	123.2
	-0.2	0.4	0.6	0.9	1.4
Private consumption deflator	110.6	111.3	112.2	113.6	115.3
	0.4	0.6	0.8	1.3	1.5
Private investment deflator	109.5	111.4	113.8	115.9	117.8
	0.5	1.8	2.2	1.8	1.7
Exports of goods and services deflator	103.0	100.5	102.7	105.1	107.1
	-1.1	-2.4	2.2	2.3	1.9
Imports of goods and services deflator	100.9	99.0	101.9	104.6	107.0
	-3.7	-1.8	2.9	2.6	2.2
Value-added deflators					
Value-added, gross at basic prices	111.8	112.7	113.2	114.5	115.9
	1.8	0.7	0.4	1.2	1.3
Private sector	110.9	111.8	112.4	113.7	115.1
	2.0	0.8	0.5	1.2	1.3
Public sector	115.5	116.2	116.4	117.8	119.2
	1.1	0.6	0.2	1.2	1.2

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Source: Bank of Finland.

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## 7. WAGES AND PRODUCTIVITY

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% change on previous year

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	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
Whole economy					
Index of wage and salary earnings	1.4	1.2	0.7	1.5	1.8
Compensation per employee	1.6	1.1	-0.3	1.1	1.4
Unit labour costs	0.9	0.1	-1.8	0.2	0.5
Labour productivity per employed person	0.7	1.0	1.5	1.0	1.0

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Source: Bank of Finland.

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## 8. LABOUR MARKET

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1,000 persons and % change on previous year

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	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
Labour force survey (15–74-year-olds)					
Employed persons	2,437	2,448	2,461	2,477	2,489
	-0.4	0.4	0.5	0.7	0.5
Unemployed persons	252	236	230	222	220
	8.7	-6.4	-2.4	-3.4	-1.1
Labour force	2,690	2,683	2,691	2,700	2,709
	0.4	-0.2	0.3	0.3	0.3
Working-age population (15–64-year-olds)	3,476	3,463	3,453	3,445	3,438
	-0.4	-0.4	-0.3	-0.2	-0.2
Labour force participation rate, %	65.6	65.3	65.3	65.3	65.4
Unemployment rate, %	9.4	8.8	8.6	8.2	8.1
Employment rate (15–64-year-olds), %	68.1	68.7	69.3	69.9	70.3

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Source: Bank of Finland.

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## 9. GENERAL GOVERNMENT REVENUE, EXPENDITURE, BALANCE AND DEBT

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% OF GDP

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	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
General government revenue	54.2	54.2	52.8	52.3	51.8
General government expenditure	57.0	56.1	55.2	54.5	53.9
General government primary expenditure	55.8	55.1	54.2	53.5	53.0
General government interest expenditure	1.2	1.1	1.0	0.9	0.9
General government net lending	-2.7	-1.9	-2.4	-2.2	-2.0
Central government	-3.0	-2.7	-2.8	-2.4	-1.9
Local government	-0.6	-0.5	-0.6	-0.6	-0.6
Social security funds	0.9	1.3	0.9	0.8	0.5
General government primary balance	-1.6	-0.9	-1.5	-1.3	-1.1
General government debt (EDP)	63.7	63.6	65.1	66.1	66.8
Central government debt	47.6	47.8	49.3	50.2	50.7
Tax ratio	44.0	44.1	43.2	42.8	42.6

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Source: Bank of Finland.

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## 10. BALANCE OF PAYMENTS

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EUR million

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	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
Exports of goods and services (SNA)	77,186	75,677	80,386	85,094	89,253
Imports of goods and services (SNA)	77,810	78,262	82,738	86,868	90,680
Goods and services account (SNA)	-624	-2,585	-2,352	-1,774	-1,427
% of GDP	-0.3	-1.2	-1.1	-0.8	-0.6
Investment income and other items, net (+ statistical discrepancy)	1,701	2,246	1,774	1,760	1,746
Current transfers, net	-2,321	-1,951	-2,007	-2,073	-2,139
Current account, net	-1,244	-2,290	-2,585	-2,087	-1,820
Net lending, % of GDP					
Private sector	2.1	0.8	1.3	1.3	1.3
Public sector	-2.7	-1.9	-2.5	-2.2	-2.0
Current account, % of GDP	-0.6	-1.1	-1.2	-0.9	-0.8

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Source: Bank of Finland.

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## 11. INTEREST RATES

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%

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	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
3-month Euribor <sup>1</sup>	0.0	-0.3	-0.3	-0.2	0.0
Average interest rate on new loan drawdowns <sup>2</sup>	2.1	1.9	1.8	1.9	2.0
Average interest rate on the stock of loans <sup>2</sup>	1.6	1.5	1.4	1.4	1.5
Average interest rate on the stock of deposits <sup>3</sup>	0.3	0.2	0.1	0.1	0.2
Yield on Finnish 10-year government bonds <sup>1</sup>	0.7	0.4	0.6	0.9	1.1

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<sup>1</sup> Technical assumption derived from market expectations.

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<sup>2</sup> Finnish credit institutions' loans to households and non-financial corporations (excl. overdrafts, credit card credits and repurchase agreements).

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<sup>3</sup> Finnish credit institutions' deposits from households and non-financial corporations.

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**Source: Bank of Finland.**

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## 12. INTERNATIONAL ENVIRONMENT

### The Eurosystem staff projections

	2015	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
<b>GDP, % change on previous year</b>					
World	3.3	3.0	3.3	3.6	3.5
USA	2.6	1.6	2.2	2.5	2.3
Euro area	1.9	1.7	1.9	1.8	1.7
Japan	0.6	1.0	1.3	0.7	0.6
<b>Imports, % change on previous year</b>					
World	1.9	1.5	4.5	3.9	4.0
USA	4.6	1.1	4.2	4.5	5.0
Euro area	6.3	4.0	5.2	4.6	4.3
Japan	0.4	-1.7	2.5	2.6	3.1
<b>Index, 2010 = 100, and % change on previous year</b>					
Import volume in Finnish export markets	117.3	119.5	124.5	129.2	133.9
	-0.2	1.9	4.2	3.7	3.7
Export prices (excl. oil) of Finland's trading partners, national currencies	109.1	106.7	111.1	113.9	116.5
	-0.3	-2.2	4.1	2.6	2.3
Export prices (excl. oil) of Finland's trading partners, in euro	106.1	101.0	106.9	109.3	111.8
	0.3	-4.8	5.8	2.3	2.3
Industrial raw materials (excl. energy), HWWA index, in US dollars	100.1	97.3	116.3	116.7	121.9
	-26.0	-2.8	19.6	0.3	4.5
Oil price, USD per barrel <sup>1</sup>	52.4	44.0	51.6	51.4	51.5
	-47.1	-15.9	17.1	-0.4	0.3

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## 12. INTERNATIONAL ENVIRONMENT

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Finland's nominal competitiveness indicator <sup>1, 2</sup>	102.8	105.6	103.9	104.3	104.3
	-0.5	2.7	-1.6	0.3	0.0
US dollar value of one euro <sup>1</sup>	1.11	1.11	1.08	1.09	1.09
	-16.5	-0.2	-2.1	0.8	0.0

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<sup>1</sup> Technical assumption derived from market expectations.

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<sup>2</sup> Broad nominal effective exchange rate.

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Source: Bank of Finland.

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## 13. Current and march 2017 forecast

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	2016	2017 <sup>f</sup>	2018 <sup>f</sup>	2019 <sup>f</sup>
GDP, % change	1.4	2.1	1.7	1.4
March 2017	1.6	1.6	1.5	1.3
Inflation (HICP), %	0.4	0.8	1.0	1.3
March 2017	0.4	1.0	1.0	1.3
Current account, % of GDP	-1.1	-1.2	-0.9	-0.8
March 2017	-0.8	-1.4	-0.7	-0.5
General government net lending, % of GDP	-1.9	-2.4	-2.2	-2.0
March 2017	-2.0	-2.1	-1.9	-1.7
General government debt (EDP), % of GDP	63.6	65.1	66.1	66.8
March 2017	63.5	64.9	65.8	66.2
Unemployment rate, %	8.8	8.6	8.2	8.1
March 2017	8.8	8.6	8.3	8.1

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Source: Bank of Finland.

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## Tags

- [economic situation](#)
- [forecast](#)
- [indicators](#)