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3 • 2011

Economic outlook



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The front cover depicts the national motif on the Slovenian 10 cent coin: Architect Jože Plečnik's unrealised plan for the Slovenian Parliament.

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Preface

The Finnish economy is currently recovering from the sharp output contraction that took place during the recession. Recent high GDP growth rates threaten to mask the fact that the state of the Finnish economy is still substantially weaker than in the pre-recession period.

Although the contraction of the Finnish economy during the recession was exceptionally large relative to other euro area countries, the weakening of overall economic performance remained partly less severe than feared during the recession. This was due, in part, to the fact that central government debt declined before the recession. If Finland's public finances had been weaker prior to the recession, it would not have been possible to avoid emergency measures to restore budget balance.

Going forward, the challenges concerning public finances are sizable in any case. The implications of population ageing will already begin to manifest themselves in economic activity over the next few years and, at the same time, public finances have been strongly impaired by the recession and its consequences. General government finances have moved into deficit, and central government debt is increasing rapidly. The forecast foresees that, in the absence of economic policy measures, the combined central and local government deficit will stabilise at just below 4%

relative to GDP. Clearly, fiscal consolidation is becoming a necessity.

A long-term plan is needed to correct central and local government fiscal positions. It is important for fiscal consolidation to be predictable and for the related plans to be credible. This will enable households and firms to look forward to the future with confidence, without uncertainty about upcoming tax increases, for example, causing them to give up their consumption and investment decisions. In this way the predictability of future developments in public finances serves to support economic activity in a situation where fiscal consolidation measures may, for their part, act as a drag on activity in the short term.

The use of rules-based approaches underpins successful fiscal consolidation, making it more predictable. In Finland, an important tool in this process has been the central government spending limits system, for which a key role needs to be ensured in budget policy. The targets and procedures agreed at EU level also support the predictability of fiscal consolidation and the credibility and transparency of the plans involved. This is important not only for domestic economic developments and decision-making but also from the viewpoint of those mainly foreign investors who finance the Finnish government deficit and debt-servicing.

It is necessary to use different measures to consolidate public finances. Structural reforms that meet the challenge of populating ageing are important factors in putting public finances on a sustainable footing. In particular, the reforms relate to the lengthening of the time spent in working life and the improvement of productivity in the provision of basic public services. In addition, sustainability can be addressed by other decisions that serve to reform the structures of the economy and foster employment and labour productivity. In addition to structural reforms, public revenue and expenditure need to be revisited.

Making long-term fiscal consolidation plans requires assessment of overall economic developments in the future. Anticipating such developments for decades ahead is naturally surrounded by a high degree of uncertainty. In long-term estimates, errors may arise from, for example, future labour productivity performance, trends in how long people stay in working life and immigration developments, changes in health and care expenditures and movements in interest rates. What is known for certain is that public debt has now started to grow and that we face an unprecedented change in the population structure.

Nevertheless, fiscal consolidation decisions need to be made in an

environment marked with uncertainty. It is useful to look at these decisions from the perspective of how to avoid the biggest risks in future developments.

If prompt action is taken, stability in public finances can be safeguarded even in the case of no positive surprises in future economic developments. If positive surprises are to happen, they will enable a reduction in public debt and thereby create room for manoeuvre. Such room for manoeuvre could be used for managing potential future economic crises.

If the measures are not initiated and if future developments fail to provide considerable positive surprises, it will be necessary later to take emergency action to restore public finances. It may then prove insurmountable to prevent, for example, the erosion of health services, infrastructures and education.

A decision not to take prompt action to consolidate public finances and to implement structural reforms for improving long-term fiscal sustainability would mean taking a big risk and shifting responsibility on to future generations.

13 June 2011



Erkki Liikanen

Bank of Finland forecasts

This issue of the Bank of Finland Bulletin presents the Bank's macroeconomic forecast, which is prepared by the Bank's Monetary Policy and Research Department. The forecast report examines recent developments in the economy and the outlook for the present calendar year and the next two years ahead. The focus is on the Finnish economy. The forecast itself describes the most probable developments in the economy, and the risk assessment that is included discusses the uncertainties relating to the forecast.

The forecast is prepared as part of the Eurosystem staff projections for future macroeconomic developments in the euro area.¹ Accordingly, the underlying forecast assumptions and assessments of future developments in the international economy are the same as in the Eurosystem staff projections. The assumption is for interest

¹ *The Eurosystem comprises the European Central Bank plus the national central banks of countries in the euro area, including the Bank of Finland.*

rates to develop according to market expectations and for bilateral exchange rates to remain unchanged during the forecast period.

The forecast for the Finnish economy and the related risk assessment are prepared using a macroeconomic model developed at the Bank of Finland plus a large body of other data and assessments of economic developments.²

The publication schedule for Bank of Finland macroeconomic forecasts has changed in 2011 so that the forecast article and the related separate articles are published in the June and December editions of the Bank of Finland Bulletin. The European Central Bank publishes summaries of the Eurosystem staff projections in the June and December editions of the ECB Monthly Bulletin.

² *The forecast uses the latest version of the Bank of Finland's macroeconomic model, Aino. The basic features of the model are described in the article by Elisa Newby, Jukka Railavo and Antti Ripatti 'A general equilibrium model for forecasting', published in this issue.*

Executive summary

The Finnish economy has been growing exceptionally fast for about one year.¹ The level of GDP is, however, still clearly lower than before the recession and the gap is not expected to close before 2012. Employment has improved only slowly, and the decline in the unemployment rate has now been stagnating for more than six months.

The strong output recovery began in 2010, as Finnish exports started to increase rapidly from their low levels, to which they had plunged during the recession. The strengthening of exports in the course of 2010 also served to amplify export growth rates in 2011. During 2011 export growth, however, is clearly decelerating. Fairly brisk growth in Finland's export markets is anticipated to continue in 2012 and 2013. In addition, the gradual pick-up of international investment demand will underpin growth in Finnish exports geared towards capital goods. Output growth in 2011 will also be boosted by strong domestic demand. The Bank of Finland forecasts that Finland's GDP will grow 3.8% in 2011. The current year's growth rate is amplified by the large carry-over effect from last year's exceptionally strong output growth.

GDP growth has been strong, but the pace of growth in the Finnish economy will decelerate in 2012–2013. Owing to the output collapse caused by the recession, there appears to be no considerable need to increase manufacturing capacity during the forecast period. The weight of fixed investment in productive capacity continues to be on replacement investment. No rapid investment growth in service sectors is discernible either.

Households' consumer demand will grow at a steady pace in the forecast

¹ The publication is based on statistical data available on 24 May 2011.

years, but the savings ratio will remain high. Higher inflation will dampen growth in household real incomes. Public consumption and investment will witness only subdued growth.

Although the export markets are assumed to continue expanding at a fairly brisk pace, the post-recession rapid phase of recovery will be over in 2012–2013 and GDP growth is forecast to ease back to close to 2½%.

Employment has been slow to improve after the recession. The rebound in output has increased the number of hours worked clearly more than the number of employed. Employment growth is not expected to gain momentum in the immediate years ahead, with the number of employed still failing to reach the pre-recession level at the end of the forecast period. The unemployment rate will decrease only slightly during the forecast years, ie to 7% in 2013.

General government finances are forecast to remain in deficit, with a shortfall of about 1% relative to GDP during the entire forecast period. The budget balance that appears good by international standards masks a substantial central and local government deficit that has turned structural in nature. In the absence of new fiscal policy measures, the combined central and local government deficit will still be around 4% in 2013. The forecast period will see an increase of EUR 25 billion in central government debt, with the debt amounting to EUR 100 billion, ie 48% to GDP, at the end of 2013. General government EMU debt will be 54% of GDP in 2013.

The share of GDP accounted for by the current account surplus is projected to contract this year by just under

1 percentage point and to remain at slightly over 2% throughout the forecast period. The surplus on goods and services will be about 3% relative to GDP. Growth in real exports will compensate for the negative impact of higher import prices on the goods and services account. Particularly in the current year, the terms of trade will be clearly weakened by rising raw material prices. Contraction in the current account in 2011 will reflect the erosion of the exceptionally large surplus on the income account.

The stronger increases in consumer prices that began in the latter part of 2010 will persist in 2011. Inflation will be boosted by higher energy and food prices. The increase in services prices has also picked up in the first months of the current year. Inflation is forecast to accelerate to about 3½% this year. In 2012–2013, the rate of increase in consumer prices will slow to around 2%, as markets expect a fall in energy prices and the upward impact on prices from already implemented tax changes gradually peters out.

Table 1.

Forecast summary						
Supply and demand						
	2010	2009	2010	2011 ^f	2012 ^f	2013 ^f
	At current prices EUR billion	Volume, % change on previous year				
Gross domestic product	180.3	-8.2	3.1	3.8	2.6	2.4
Imports	65.2	-17.6	2.6	5.1	6.9	6.9
Exports	70.2	-20.1	5.1	8.0	7.0	7.2
Private consumption	97.3	-2.1	2.6	2.7	2.0	1.8
Public consumption	44.2	1.0	0.4	1.2	0.7	0.9
Private fixed investment	28.5	-17.4	0.9	6.3	6.4	5.5
Public investment	4.9	6.2	0.1	0.8	0.2	0.1
Key economic indications						
		2009	2010	2011 ^f	2012 ^f	2013 ^f
% change on previous year						
Harmonised index of consumer prices		1.6	1.7	3.4	2.1	2.1
Consumer price index		0.0	1.2	3.5	2.3	2.2
Wage and salary earnings		4.0	2.5	2.9	3.4	3.2
Labour compensation per employee		1.7	2.0	3.0	3.2	3.2
Productivity per person employed		-5.5	3.5	2.8	1.6	1.8
Unit labour costs		7.6	-1.5	0.1	1.5	1.4
Number of employed		-2.9	-0.3	0.9	1.0	0.6
Employment rate, 15–64-year-olds, %		68.3	67.8	68.7	69.8	70.6
Unemployment rate, %		8.2	8.4	7.9	7.4	7.0
Export prices of goods and services		-7.4	4.1	5.5	1.3	1.3
Terms of trade (goods and services)		0.6	-1.4	-2.7	-0.6	-0.1
% of GDP, National Accounts						
Tax ratio		43.0	42.1	42.3	42.4	42.2
General government net lending		-2.9	-2.8	-1.2	-1.0	-0.7
General government debt		43.8	48.4	50.8	52.7	54.1
Balance on goods and services		2.3	2.8	3.0	2.9	3.1
Current account balance		2.3	3.1	2.1	2.1	2.3
<i>f = forecast</i>						
Sources: Statistics Finland and Bank of Finland.						

Economic outlook 2011–2013

Recent development

According to the preliminary data published in May, the quarter-on-quarter GDP growth slowed to 0.3% in the first quarter of 2011, from 1.7% in the last quarter of 2010. Compared with the corresponding period a year ago, GDP growth was over 5% higher in the first quarter of 2011.¹

In 2010 as a whole, GDP rose by 3.1%, and growth was clearly concentrated on the second and fourth quarters. During the year, GDP growth was particularly fuelled by increased volumes of chemical and metal industry exports and housing construction.

Industrial output growth slowed in the first quarter of 2011 and even

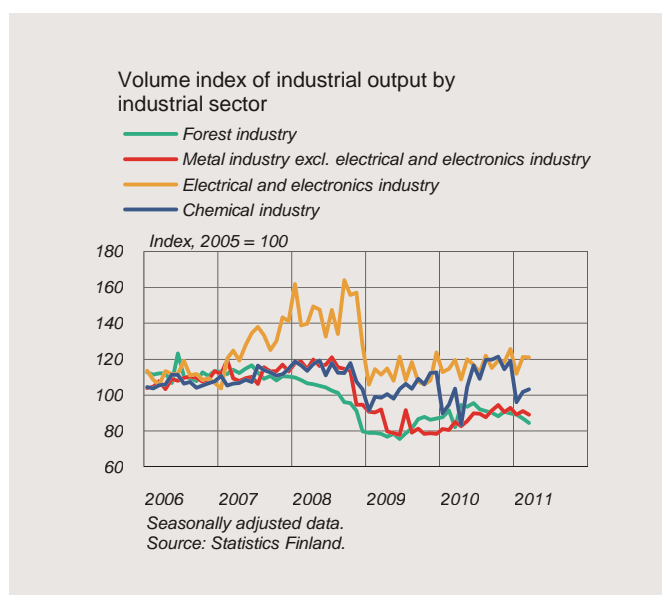
decreased from the previous quarter. The chemical industry has grown robustly after the recession, but output has fluctuated considerably from quarter to quarter. Output growth in the forest industry seems to have come to a halt for the time being, and output volumes have remained clearly smaller than prior to the recession. Output in the electrical and electronics industry has grown only sluggishly, and new orders have been restrained. Output in machine and metal industry has been growing at a notable pace, even though growth also eased in this sector in the first quarter of 2011. Growth in the manufacture of basic metals has also edged down in recent quarters (Chart 1).

Exports grew strongly in the last quarter of 2010, as the delivery of a large shipping vessel increased the volume of goods exports. Monthly data indicate that the volume of goods export decreased in the first quarter of 2011 in quarterly terms. Exports of raw materials and intermediate goods have rebounded, boosted by favourable demand, but the volumes of capital goods exports, an important component of Finnish exports, are still far from the level prevailing in 2008.

Despite the moderation of export and output growth, industrial companies' future expectations have remained positive. Order books have improved close to their average levels, and inventories have normalised, although company-specific differences are considerable. On the other hand, about a fourth of industrial companies still have excess capacity relative to demand.

¹ Preliminary national accounts data for the first quarter of 2011 are discussed in Box 1.

Chart 1.



The strong rebound in construction, led by housing construction, eased in the last quarter of 2010 and, at the same time, growth in building permits turned downward. The cubic volume of building starts contracted in the first quarter of 2011. In the early months of 2011, the volume of new building only increased by a little less than 1% from the last quarter of 2010.

Households' confidence in their own financial situation in particular has been above average for over a year (Chart 2). By contrast, confidence in Finnish economic developments has been weaker this year than a year earlier. Increasing household income has supported retail trade. In 2010 households' strong confidence was also reflected in brisk car sales. In the early months of 2011, both retail trade and motor vehicle sales have contracted slightly. Service sector confidence indicators point to resilient confidence in sales growth. The lack of skilled workers is already hampering sales growth for some service sector companies.

Employment growth has been sluggish relative to output growth. Employment has increased in the service sector, especially in education. Manufacturing industry recorded the greatest job losses during the recession, and employment growth has still remained negative in most of the industrial subsectors.

The decline of the unemployment rate came to a halt already more than 6 months ago. The unemployment rate was 8.2% in April, over 1 percentage point lower than a year ago. Layoffs

have decreased further during the spring, but the number of workers temporarily laid off is still higher than normal. Job vacancies in the economy as a whole have increased rapidly after the recession, but are still clearly lower in manufacturing industry than prior to the recession. Job vacancies increased only marginally in the early months of the year (Chart 3).

Chart 2.

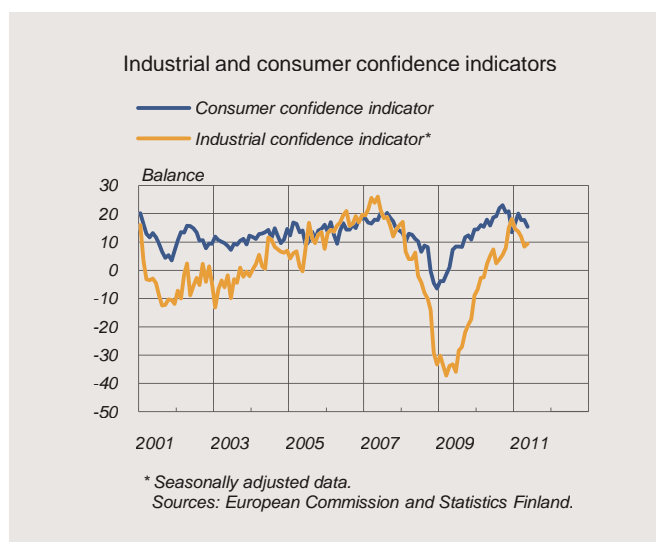
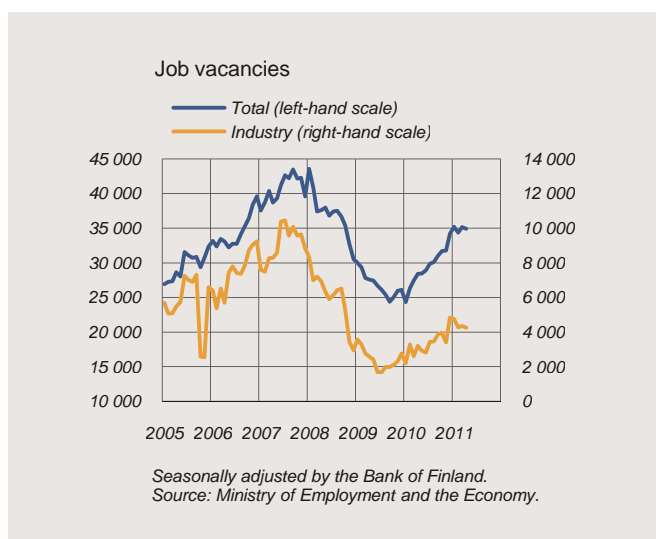


Chart 3.



Inflation has accelerated rapidly

Inflation has accelerated clearly in the course of this year. Consumer prices also continued to rise sharply in April. Measured by the harmonised index of consumer prices (HICP), prices rose by 3.4%, only a tenth less than in March (Chart 4). Inflation as measured by the national consumer price index (CPI) eased slightly in April, to 3.2%. The pick-up in inflation in the past six months stems particularly from higher energy and food prices, but increasingly also from rising service prices. Consumers' inflation expectations have also edged up in recent months. According to the Statistics Finland's consumer survey published in May 2011, inflation was still expected to exceed 3% 12 months ahead.

Indirect taxation contributed to inflation by 0.6 percentage point in

April. This impact came mainly from the rise in VAT in mid-2010 and energy tax rises early this year.

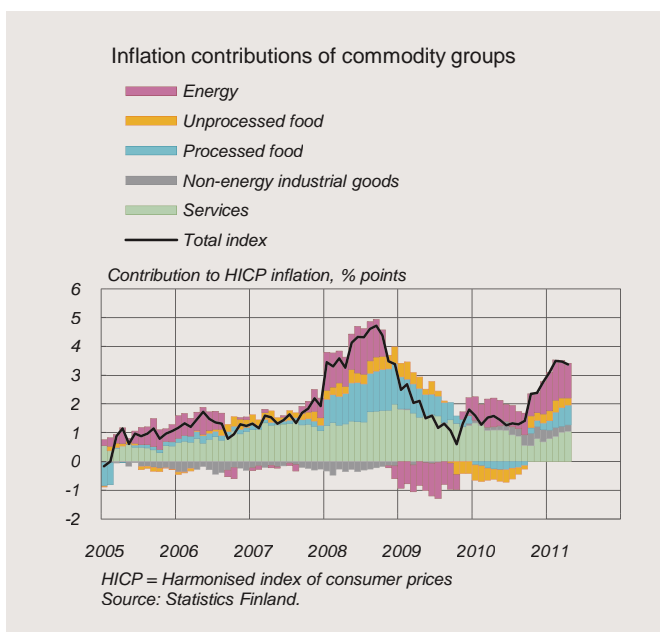
The key factor pushing up HICP inflation in the early months of the year was energy prices which have risen in response to the recent rises in crude oil and electricity prices. Even though the rise in energy prices has eased slightly in recent months, energy prices are still 16% higher than a year ago. The contribution of energy prices to inflation was 1.2 percentage points in April.

Food prices have risen considerably in the course of this year and were 4.1% higher in April than a year ago. The rise in food prices boosted HICP inflation by 0.9 percentage point.

In the past six months, HICP inflation has also increasingly been fuelled by rising service prices. In April 2011 services inflation was already 2.7%. The rise in service prices is mostly explained by higher rents. In other respects, services inflation was relatively broad-based. The lowering of the VAT rate of restaurant and café food in July 2010 and the following price falls had a dampening impact on inflation last year. However, café and restaurant services prices have continued to rise again, and their contribution to annual inflation has once more turned positive.

The rise in non-energy industrial goods prices has also picked up in the course of this year, and the prices were 0.7% higher in April than a year ago. Non-energy industrial goods prices fell in the 2000s for several years, but rose in 2010 by just under 1%.

Chart 4.



National accounts for the first quarter of 2011

On 3 June 2011 Statistics Finland published preliminary data on quarterly national accounts which contain the latest statistical data on Finnish economic developments in the first quarter of 2011.

This Bank of Finland forecast is based on the quarterly national accounts published in March, preliminary data on output for the first quarter published in May and extensive indicator data on economic development.

According to the new quarterly national accounts, GDP grew in the first quarter of 2011 by 0.8% from the previous quarter. The preliminary data published in May indicated a growth of 0.3%. GDP growth for the fourth quarter of 2010 was also revised upwards by 0.1 percentage point from the previous estimate to 1.8%.

Private investment decreased in the first quarter of 2011 by 0.4% in nominal terms, even though private investment is estimated to have grown from

the previous quarter by 2.4% in real terms. The growth of residential investment slowed to below 2% quarter-on-quarter in real terms. Investment in machinery and equipment grew at the same pace as in the previous quarter, but is still very moderate. There is no single major project that would have explained the pace of growth of investment.

Private consumption growth moderated to 0.1%. The volume of consumer goods grew faster than total private consumption. Weak consumption growth reflected a halt in services consumption growth. However, services consumption growth had been elevated in the previous quarter. Imports increased by 2.2% from the previous quarter, whereas exports contracted by 4.8%, despite an increase of 15.9% compared with the corresponding period a year ago. The contraction of exports stemmed from the delivery of a large cruise ship in last October and a fall in exports of services. In the corre-

sponding period a year ago exports contracted on account of a labour dispute in stevedoring. GDP growth picked up also due to strong increase in inventories in the first quarter.

The number of employed and hours worked increased from the previous quarter by 0.3%. The nominal wages and salaries bill grew in the first quarter by 5.5% compared with the previous year.

Developments in the value added by industry reflect changes in demand. Value added contracted slightly in the metal industry as well as in the wood and paper industry, and pronouncedly in construction and trade.

The quarterly national accounts data signal a similar development for the first quarter of 2011 as the statistical and indicator data published previously for the first months of the year. Economic growth has moderated, as both exports and domestic demand have levelled off.

Economic growth is moderating

Indicator data from the early months of 2011 show that economic growth has slowed compared with the brisk pace of recovery in 2010. Favourable demand has supported exports of raw materials and intermediate goods, but capital goods exports have only increased slowly. Output growth varies considerably by industrial sector. In particular, output in electrical and electronics industry has grown sluggishly, and there are no signs of strengthening. In addition, construction seems to have passed the phase of fastest growth for the time being. Retail trade has moderated in the early months of the year. Employment growth has concentrated on the service sector in particular. Employment has continued to contract in large subsectors of industry, and unemployment is therefore falling slowly. Developments in households' purchasing power and corporate profitability are overshadowed by rising commodity prices which have also passed through to consumer prices.

Operating environment

Global economy and Finland's export markets

The recovery of the global economy continued over the first half of the year, with ongoing robust growth in world trade driven by strong demand from emerging economies. The growth rate

of the global economy, however, slowed down slightly.

The short-term outlook for growth has remained virtually unchanged. Risks mainly relate to the effects of the natural catastrophe in Japan, higher commodity prices and the state of public finances in developed economies. Inflationary pressures have increased, especially in the fastest-growing emerging economies. In developed economies, low capacity utilisation rates and high unemployment are keeping inflationary pressures in check.

Real GDP in the euro area grew at a robust pace in the first quarter of 2011, but is projected to slow down over the year. This year, net exports are expected to make a large contribution. Domestic demand is forecast to strengthen over the projection period. With less slack in the economy, stabilising demand prospects and reduced uncertainty, non-residential private investment is expected to pick up.

In the United States, weak labour and housing markets and rising fuel prices dampened economic growth in the first quarter. Growth is, however, expected to gain momentum over the forecast period. Productive investment growth is expected to pick up as exports continue to grow at an increasing pace and capacity utilisation rates improve.

China remains the main engine for world economic growth. The Chinese economy is projected to grow robustly throughout the forecast period, albeit at a slowing rate. Growth in Asia is forecast to be dampened by a considerable slowdown in Japan as a result of the natural catastrophe earlier this year.

Nevertheless, the Japanese economy is expected to rebound in the second half of the year as reconstruction starts. This reconstruction will expand exports from developed countries into Japan. A similar beneficial effect will be felt by smaller export-driven Asian economies.

In Russia, a recovery in private consumption, investment and industrial production has continued over the spring months. Economic growth in Russia is projected to remain fairly robust over the forecast period.

World real GDP growth is expected to slow down this year from close to 5% in 2010 to just over 4% in 2011 and to remain at just over 4% in 2012 and in 2013. Emerging economies will continue to be the main drivers of economic growth, whereas in the developed economies growth remains fairly slow throughout the forecast period. World trade is projected to reach 8% this year and to slow down slightly in 2012 and 2013 (Table 2).

Growth in imports of the countries that are Finland's main trading partners is expected to surpass world trade growth in 2011. This is partly explained by strong growth in imports into Russia. In 2012 and 2013, Finland's export market growth is expected to be slower than world trade growth. Several of the relevant emerging or developed export markets are projected to grow robustly over the next few years. Despite the uncertainty surrounding global economic activity and the amount of slack in the economy, Finland's export growth should be supported in the coming years by an increase in global demand

Table 2.

Rates of growth in GDP and world trade				
<i>% change on previous year</i>				
GDP	2010	2011^f	2012^f	2013^f
<i>United States</i>	2.9	2.6	2.7	2.8
<i>Euro area*</i>	1.7	1.5–2.3	0.6–2.8	
<i>Japan</i>	4.0	-0.4	2.8	1.9
<i>Asia excl. Japan</i>	9.4	7.9	7.5	7.5
<i>World</i>	4.9	4.1	4.2	4.3
<i>World trade</i>	12.0	8.0	7.8	7.6
<i>Finland's export markets**</i>	13.7	8.4	7.4	7.1

** The Eurosystem staff projections for macroeconomic developments in the euro area are prepared for the years 2011–2012. The uncertainty related to the estimates is illustrated by presenting them as ranges. The ranges are based on differences between estimates made in previous years and actual developments. The breadth of the ranges is the mean of the absolute values of these differences, multiplied by two.*

*** 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.*

f = forecast

Sources: Eurosystem and Bank of Finland.

for capital goods which account for a large portion of Finnish exports and are thus of considerable importance.

Commodity prices and foreign trade prices

Commodity prices continued to rise strongly until early May. The rise in crude oil prices was mainly due to political uprisings in a number of oil producing countries as well as the growing demand for energy in emerging economies. Another factor affecting energy price movements is the increasing uncertainty about the scope of nuclear energy in the future. Crude oil prices plummeted in May, but have now risen again slightly. In this forecast, Brent crude oil price is assumed to follow the trend in futures prices as at 18 May 2011. Towards the end of the forecast period, crude oil price in dollars would thus be 12% below its average for April and May this year.

Non-oil commodity prices rose until early May but have since declined slightly. The rise in commodity prices earlier in the year can be traced back to increasing demand from emerging economies as well as to supply constraints still pushing up food prices in particular. During the forecast period commodity prices are expected to increase moderately.

The rise in commodity prices in the early months of the year also had an impact on export prices of several of Finland's key competitors, such as Germany, Sweden, Great Britain and the United States. All these countries

had robust hikes in their export prices in early 2011. Over the next few years, the export prices of Finland's key competitors are expected to increase moderately. Towards the end of the forecast period the rate of increase is projected to be close to 2%. Modest export price developments are due to market competition that does not allow prices to rise but demands instead ever greater increases in productivity.

Interest rates and exchange rates

According to forecast assumptions based on market expectations, the 3-month Euribor will rise moderately over the next few years and be close to 3% at the end of the forecast period (Figure 5).

The long term rate on Finnish 10-year government bonds will rise more modestly, ending the forecast period at just over 4%. The yield curve thereby becomes less steep i.e. the difference between long and short-term rates diminishes significantly over the forecast period. The external value of the euro is assumed to remain unchanged in the forecast period (Table 3).

Chart 5.

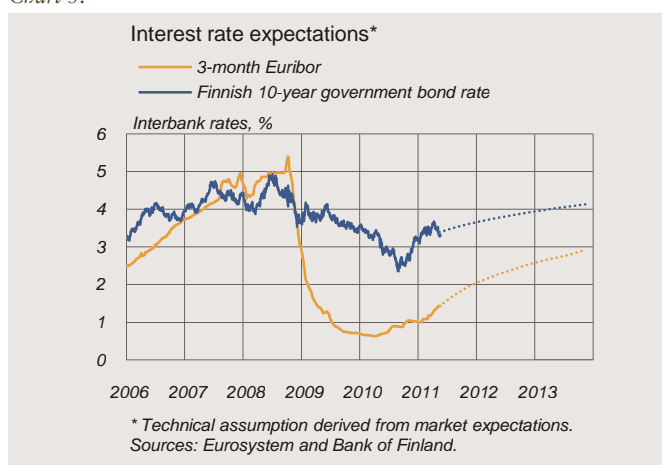


Table 3.

Forecast assumptions	2009	2010	2011 ^f	2012 ^f	2013 ^f
Finland's export markets, ¹ % change	-13.5	13.7	8.4	7.4	7.1
Oil price, USD/barrel	61.9	79.6	111.1	108.0	103.7
Euro export prices of Finland's trading partners, % change	-4.7	7.5	4.1	1.6	1.7
3-month Euribor, %	1.2	0.8	1.5	2.3	2.8
Yield on Finnish 10-year government bonds, %	3.7	3.0	3.5	3.8	4.1
Finland's nominal competitiveness indicator ²	107.6	103.6	103.1	103.5	103.5
US dollar value of one euro	1.39	1.33	1.42	1.43	1.43

¹ 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.
² Narrow plus euro area, 1999Q1 = 100
f = forecast
Sources: Eurosystem and Bank of Finland.

The assumptions on interest rates and exchange rates in this forecast are derived from market expectations as at 18 May 2011. These assumptions are purely technical in nature and do not constitute a forecast of the monetary policy of the European Central Bank. Nor do they embody any estimate of equilibrium exchange rates.

Financial markets

Businesses and households in Finland enjoy stable financing conditions. The Finnish banking sector is, all in all, in good shape.² The strong capital adequacy ratio and profitability of Finnish banks mean that they have relatively easy access to market-based financing.

In Europe, the banking system is overshadowed by the risk of a potential widening and deepening of the sovereign debt crisis. Such developments could also, in a worst case scenario, impair Finnish banks' access to market-based financing and their operational capacity. In this forecast, however, the lending capacity of the Finnish banking sector is expected to remain sound in the coming years. It is expected that, in the next few years, economic growth is supported by a steady supply of financing.

According to market expectations, the 3-month Euribor will reach 2.8% in 2013. Interest rates on new lending to households and non-financial corporations are expected to rise alongside market interest rates. Banks' lending margins are expected to remain slightly

higher than before the crisis. During the crisis, lending margins expanded and credit standards tightened considerably. Financing conditions have now eased in comparison, but as risk pricing practices tighten and financial markets become more carefully regulated, the cost of financing is likely to stay slightly elevated and credit standards slightly tighter than in the days before the onset of the financial crisis.

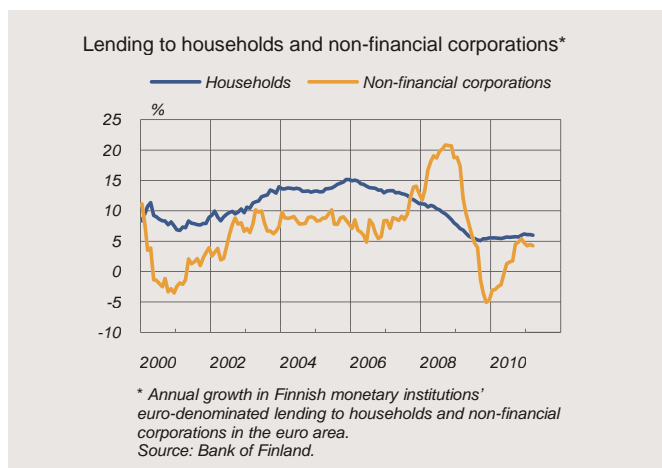
During the financial crisis, the loan stock of non-financial corporations contracted, as investments plummeted and the need for financing diminished while access to financing also became constrained. The growth rate of lending to non-financial corporations turned positive again already towards the end of 2009 and was over 4% in the first quarter of 2011. The moderate growth of lending to non-financial corporations is a reflection of the still slow expansion of corporate investment.

The balance sheets of Finnish non-financial corporations are, on average, strong. The Finnish corporate sector is not overly indebted³ and has, except during the recent crisis, enjoyed strong earnings over the past decade. In the early phase of the economic crisis, stock markets plummeted, but indices picked up already in the second quarter of 2009 both in Finland and internationally, with strong expectations of economic recovery. The positive sentiment in the stock market has supported the financial situation of the corporate sector.

² For a comprehensive review of the state of the Finnish financial system see Bank of Finland Bulletin 2/2011: Financial stability.

³ See Box 3, 'European comparison shows Finnish companies are mildly indebted', Bank of Finland Bulletin 02/2011: Financial stability.

Chart 6.



Non-financial corporations' access to bank-based financing shows marked improvement in comparison to 2009, when access to financing became significantly constrained, and access to other kinds of financing is similarly improving.⁴ Non-financial corporations' access to equity financing from the international market improved in 2010, and equity finance will be increasing, as reported in the Business financing survey. Thus the supply of financing is not expected to constrain

⁴ Business financing survey 2010, Bank of Finland, Confederation of Finnish Industries and the Ministry of Employment and the Economy.

productive investment in the forecast period.

Average household indebtedness has increased during the last decade. Lending to households continued to grow during the financial crisis, although the growth rate slowed considerably in 2009 and 2010 from over 10% to around 5.5%. In early 2011, the growth rate increased slightly to 6% (Figure 6).

In Finland, the fall in house prices was less severe than in many other countries during the financial crisis: house prices fell on average only by some 6% from their peak preceding the crisis. They also began to rise again as early as in the second quarter of 2009. Finnish households' housing wealth thus virtually retained its value during the financial crisis. The debt burden of households has increased, but so has the value of their housing wealth. Greater indebtedness does, however, make the household sector more vulnerable to shocks to the economy and may increase the cyclical sensitivity of the economy as a whole.

The rise of the Euribor rates, as derived from market expectations,

Box 2.

Recent euro area monetary policy

The Governing Council of the European Central Bank (ECB) aims to keep the euro area inflation rate, measured in terms of the Harmonised Index of Consumer Prices (HICP), at a level below but close to 2% over the medium term. The Governing Council decides monthly on the

level of interest rates that is consistent with the objective of price stability, taking into account the economic situation.

As a consequence of the financial crisis, the Governing Council of the ECB lowered the key ECB interest rate to 1% in May 2009. The interest rate on

the main refinancing operations (MROs) remained at 1% for almost two years, until the Governing Council decided to raise the key ECB rates by 25 basis points in April (7 April) this year. Accordingly, the interest rate on the MROs rose to 1.25% (Chart 7).

The Governing Council of the ECB considered its interest-rate decision warranted in the light of risks related to inflation. Euro area inflation has picked up in the first five months of this year and remained at 2.8% in April and, according to preliminary data, at 2.7% in May. Price increases have so far been due to external factors, beyond the control of monetary policy, such as the elevation of global food commodity prices and the world market price of oil.

The sharp hike in world market prices of oil and food has given a substantial short-term boost to inflation. In increasing the ECB interest rates, the Governing Council of the ECB aims at preventing the external shock from spreading into a broad-based acceleration in inflation. The Governing Council underlines that it always makes its interest-rate decision on the basis of the latest information available at the time of decision.

On account of the financial crisis, the Eurosystem has been supporting the banking system and the provision of credit by means of non-standard measures for more than three years.¹ Despite

¹ Banks' access to refinancing has been improved and the maturities of refinancing operations have been lengthened. In addition, the eligibility criteria for securities accepted as collateral have temporarily been eased and efforts have been made to improve the operation of certain financial market segments by launching programmes of securities purchases. See Tuomas Välimäki: Rabapolitiikan toimeenpano finanssikriisin aikana. Euro & talous 3/2010 (Implementation of monetary policy during the financial crisis, in Finnish only).

an improvement in the general state of the financial markets in 2010, confidence in the ability of the most indebted euro area countries to meet their obligations began to falter, and serious tensions emerged in government bond markets. In deciding on non-standard measures, the Governing Council of the ECB has sought to ease these tensions and mitigate their adverse spillover effects in the economy.

The Eurosystem conducts the main refinancing operations (MROs) as tender procedures with full allotment, effective since October 2008. This means that banks' liquidity requirements are met in full at a rate of interest set in advance. The Eurosystem requires adequate collateral for its monetary policy credit operations. The Governing Council of the ECB has safeguarded banks' access to liquidity by promising to continue the full allotment policy

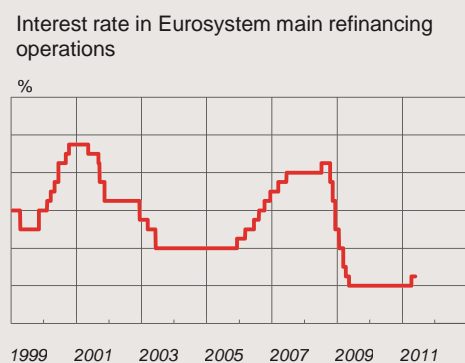
in the MROs for as long as necessary.²

After the financial crisis had hit the euro area markets for government paper with full force in the early part of 2010, the Eurosystem launched in May 2010 a Securities Markets Programme, enabling it to purchase private and public securities in market segments that have become dysfunctional and play a key role in the operation of the monetary policy transmission mechanism.

The Eurosystem will continue to conduct non-standard monetary policy measures for as long as necessary to safeguard the effective transmission of monetary policy. There will be a stepwise exit from the non-standard measures.

² The Governing Council of the ECB has decided to continue the full allotment policy in the MROs at least until 11 October 2011.

Chart 7.



Source: European Central Bank.

implies an increase in the interest payments of households over the forecast period. The rising market interest rates may herald financial difficulties for the most heavily indebted households.

Fiscal policy assumptions⁵

No major longer-term fiscal policy decisions have been taken since the stimulus package at the time of economic slowdown. The problems related to the balance of public finances in Finland have increased, but decision-making was postponed due to the end of the parliamentary term. Thus, in this forecast, fiscal policy is assumed to remain virtually unchanged in 2012 and 2013.

The fiscal policy assumptions of this forecast are, for the most part, included in the government budget for 2011. The key measures in that budget are the raising of energy and environmental taxes, the introduction of a tax on confectionary and the raising of the tax on soft drinks at the beginning of 2011. It was also decided to increase the diesel fuel tax in 2012. Adjustments to the state income tax rates in 2011 compensated wage and salary earners for higher taxation as a result of higher earnings. The assumption in this forecast is that a 2% adjustment for inflation will be made in 2012 and 2013. Net increases in taxes and adjustments to the state income tax rates will reduce government deficit by approximately EUR 900 million in 2011. In 2012, the deficit will be

reduced by a mere EUR 50 million and in 2013 it is projected to grow by an estimated EUR 170 million. Municipal tax rates are assumed to remain unchanged on average. The distribution of revenue from corporate income tax between central and local governments is expected to return to its earlier levels in 2012 after a temporary increase in the share of municipalities as part of the stimulus package for the economy in 2009-2011. State transfers to municipalities are expected to increase as their corporate tax income revenue diminishes. State transfers are projected to rise also as a result of rising local government expenditure.

Pension contributions are assumed to increase 0.4% in 2012 and 2013 in line with the agreement between the Finnish Government and labour confederations. This increase will add some EUR 160 million to the Finnish employment pension funds' annual surplus.

The lack of new fiscal policy measures in the forecast effectively means that fiscal policy remains neutral in 2012 and 2013. In 2011 fiscal policy will tighten somewhat. At the beginning of 2011, an indirect tax hike increased consumer price inflation by 0.6%.

⁵ Assumptions are based on the situation as at 8 June 2011.

Non-financial corporations

The operating environment and financial results of non-financial corporations in Finland improved markedly in 2010 as economic growth picked up after the slowdown of 2009. Operating surplus, which had collapsed during the slowdown, grew by 36% in 2010. Nevertheless, the operating surplus of the corporate sector remained more than 20% below its pre-recession peak of 2007.

In the forecast period, export companies will receive a boost from strong world trade and projected moderate labour cost development. Companies focusing on the domestic market are similarly forecast to continue to benefit from positive demand prospects as a result of, amongst other things, increasing household income and a growing need for health and social services.

Positive demand prospects

Exports of goods and services grew by 5.1% in 2010. Export growth was driven by goods exports, which grew by 10%, while services exports fell by some 7%. This fall in services exports and an export structure geared to capital goods meant that Finland's export growth was markedly lower in 2010 than the growth of its export markets (Figure 8).

Strong export growth in 2010 also pushes up the export growth rate for the current year. Finland's main trading partners for exports are expected to see

a picking up of demand for capital goods, an important component of Finnish exports, only in 2012-2013. Export growth is expected to be robust in the forecast period, and in 2013 export volume should reach its pre-recession level of five years ago.

A continued strong increase in export prices is forecast for 2011. In the near term, the rise in export prices will be underpinned by the high cost of raw materials used in production and rising demand in Finnish export markets. Oil prices are expected to fall in the forecast period, dampening the rise of export prices in 2012 and 2013. In addition, export price pressures will be contained by unused capacity and stiff competition in key export sectors.

The demand prospects of companies focused on the domestic market are forecast to remain fairly positive. In 2010, output in services sectors grew by around 2% and construction output by around 5%. In the first quarter of 2011, the annual output growth in services sectors was about

Chart 8.



3%. Construction growth, and in particular growth in housing construction, has levelled out in the early part of the year, although Statistics Finland reported an annual growth rate of around 21% for new construction in the first quarter in its volume index of new building and dwelling production.

Household income growth will support retail trade growth and the demand for private services in the forecast period. The need for health and social services is also projected to grow considerably. Municipalities' increasing reliance on purchased services is a driver for ongoing strong growth in private service activity.

Investment ratio to increase slightly

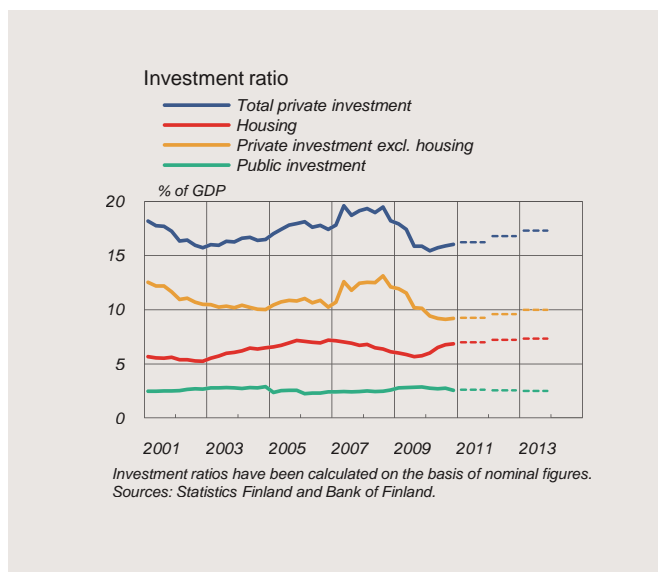
The manufacturing capacity utilisation rate is still slightly below its long-term average and there is as yet no pressing need for productive investment by non-financial corporations. Nevertheless, capacity utilisation rates are

approaching their pre-crisis level, at least in forestry. According to an investment survey by the Confederation of Finnish Industries, the value of fixed investment in the manufacturing sector is expected to grow by 12% this year. The share of replacement investment remains exceptionally large, however, and a mere 25% of fixed investment in the manufacturing sector is new capacity investment.

Rising demand for exports and the strong financial results of export companies are the main drivers of productive investment (private investment excluding housing). A further need for new investment is foreseen following the considerable contraction in investment in machinery and equipment in 2009 and 2010. No significant financing constraints are expected to hamper investment during the forecast period, although the cost of financing is projected to rise towards the end of the period as interest rates rise. Productive investment as a share of GDP will remain clearly below earlier levels in the coming years.

Housing investment is forecast to moderate after a period of strong growth in 2010 as housing construction nears its peak of earlier years. Further dampening factors include rising interest rates and the completion of several building projects that were started with the aid of economic stimuli. Other construction activity is projected to grow at a moderate rate over the forecast period as output growth boosts the demand for private non-residential construction. Municipalities will need to postpone

Chart 9.



renovation investment because of their meagre finances.

In 2010, private investment ratio remained low at around 16% despite strong growth in housing investment (Figure 9). In the forecast period, private investment ratio is expected to increase as productive investment picks up and housing construction continues to grow at a moderate rate.

Labour costs rising moderately

Ongoing output growth will maintain labour input demand in non-financial corporations over the forecast period. The number of persons employed in the private sector is forecast to grow by around 25,000 in 2011. In 2012-2013, employment growth will slow down after a phase of rapid economic growth.

Cost pressures from domestic economic growth remain fairly low, in line with the modest projection for labour cost development.⁶ In contrast, unit labour cost growth is forecast to increase somewhat in the forecast period labour productivity growth slows down for cyclical reasons, after 2011 while the wage growth rate remains unchanged at 3%. Overall, no significant changes are expected in the competitiveness of Finnish export companies over the forecast period; one of the forecast assumptions is that nominal exchange rates will remain unchanged.

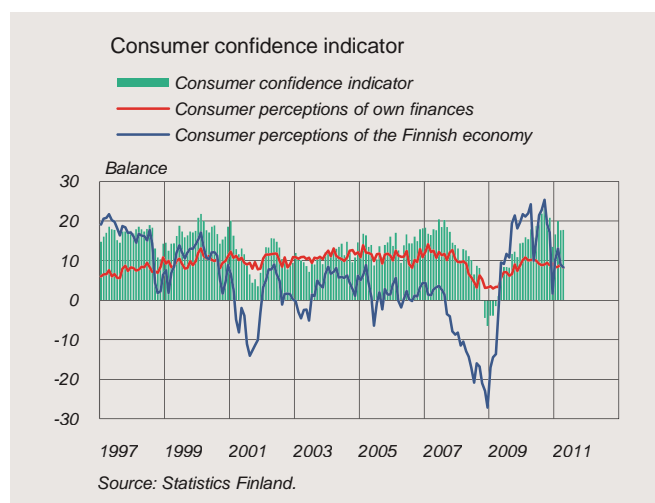
⁶ An alternate calculation in Box 8 examines the macroeconomic impact of faster wage growth.

Households

According to Statistics Finland's consumer confidence indicator, Finnish consumers' confidence in both their own economy and in the Finnish economy strengthened in 2010 close to pre-recession levels (Chart 10). At the same time, household disposable income increased by slightly more than 4% in response to pay rises, improvements in the level of employment and higher capital income. Real incomes grew by around 3% despite rising consumer price inflation. The saving ratio moved up slightly, despite an increase in private consumption by 2.6%, driven by stronger consumer confidence and a higher level of income.

In the forecast period, private consumption will be underpinned by brisk growth in household disposable income, averaging around 4% per year. Wages are forecast to increase at an

Chart 10.



annual rate of slightly over 3%. Growth in household disposable income is related to improvements in employment, as well as to pay increases. However, employment growth will moderate towards the end of the forecast period in step with output growth. The growth in household income in the forecast period also reflects higher retirement income. The number of pensioners will increase and the initial level of new pensions rise, as pensions are based on higher wage incomes. In response to both higher inflation and stronger earnings development, index increments to pensions will be clearly higher in 2012 and 2013 than in this and last year. Higher capital income will also contribute to growth in household disposable income in the forecast period.

Growth in household purchasing power is held back by accelerating inflation. In 2011, consumer prices are

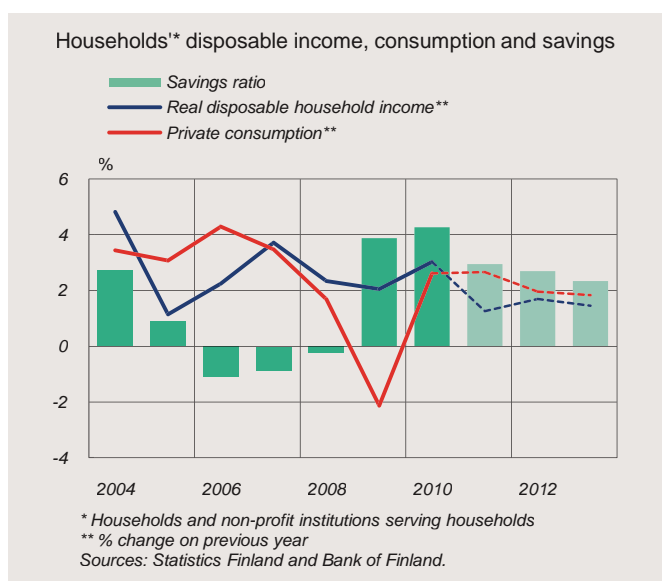
expected to rise by 3.4%, while real wages are expected to fall slightly. In 2012–2013, inflation is expected to settle at around 2%, which points to an annual growth in real wages of 1% on average. Overall, household disposable income will increase by 1.5% on average over the years 2011–2013 (Chart 11).

Private consumption will continue to support economic growth over the next few years. In 2011, private consumption is projected to grow by 2.7%, but growth will fall back to approximately 2% in 2012–2013. The saving ratio is forecast to drop to 3% in 2011, but will only decline slightly in 2012 and 2013. According to the forecast, the saving ratio will remain higher than before as households make provision for the consolidation of public finances foreseen for the period beyond the forecast horizon.

According to market expectations, the level of interest rates will gradually edge up throughout the forecast horizon. The relatively slow rise in interest rates built into the forecast keeps growth in household debt servicing expenditure at a moderate level.

Although the accumulation of household debt has continued at a much lower pace compared with pre-recession levels, the household debt ratio, nevertheless, remains high and will rise to 109% of disposable income in 2011.⁷ The debt servicing ability of households has been sustained by a low level of interest rates and favourable

Chart 11.



⁷ With the inclusion of the estimated household share of lending by housing corporations, the household debt ratio rises by 7 percentage points (Statistics Finland estimate for 2009).

income development. Although having increased, the number of heavily indebted households remains fairly low.⁸ Unemployment continues to be the major default risk for households. If interest rates rise in line with market expectations, interest expenses for households will increase from their current very low levels, but the projected income development will maintain the sound debt servicing ability of households.

GDP and employment

Finland's GDP grew by 3.1% in 2010 as both exports and household consumption grew rapidly (Chart 12). At the end of 2010, GDP was over 6% higher than at the bottom of the recession in summer 2009. The rapid rise in GDP in the course of 2010 will boost considerably the average figures for GDP growth in 2011.

Finland's GDP is forecast to grow 3.8% in 2011, and the pace of growth will ease back to around 2.5% in 2012–2013. Despite the relatively brisk pace of growth, according to the Bank of Finland forecast, the pre-recession levels of output will not be achieved until 2012.

Structure of growth

An examination of the components of aggregate demand shows that the

pick-up in GDP growth was mainly due to the rapid growth of net exports. The brisk growth in Finland's export markets, and particularly the recovery of the demand for capital goods important for Finnish exports, will boost exports in 2011, and the growth of net exports will continue to contribute for a significant share of the growth of output in 2011 (Chart 13).

Chart 12.

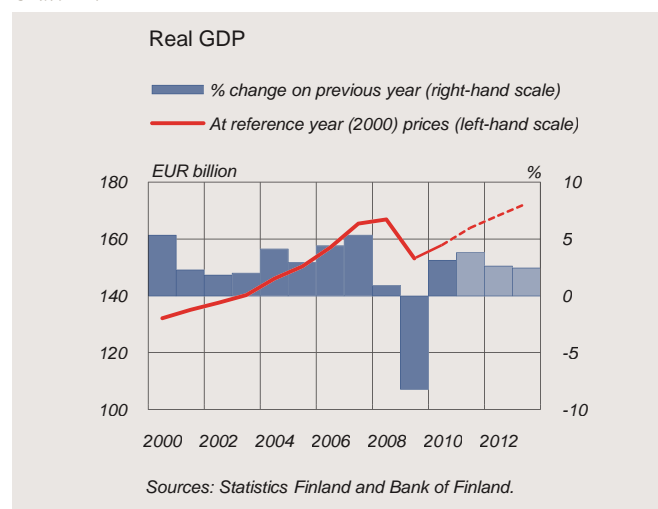
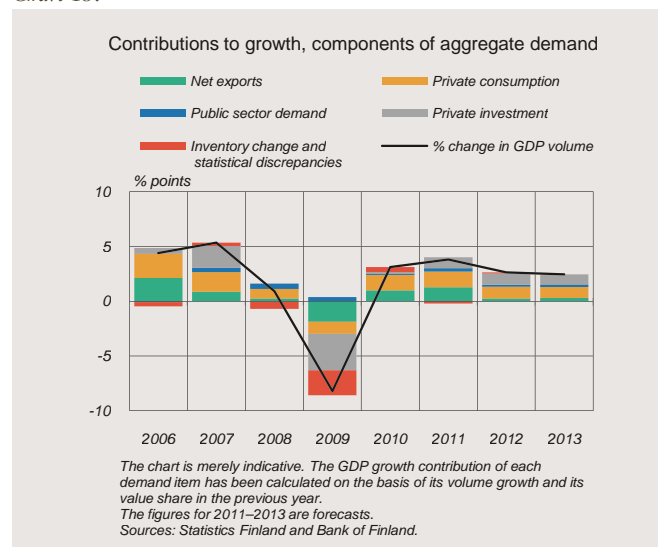


Chart 13.



⁸ See Bank of Finland Bulletin 2/2011: Financial stability.

In 2012–2013, GDP growth will be increasingly based on domestic demand, ie the structure of economic growth will better correspond to economic growth under less exceptional circumstances. Of the components of domestic demand, growth will be bolstered by the pick-up in investment demand during year 2011. Since the recession, private consumption has grown by slightly less than 3% annually, but the pace is forecast to slow in 2012–2013 by one percentage point.

Labour market

The labour market situation in the next few years will be challenging and difficult to anticipate. The number of employed and hours worked have typically moved in parallel with developments in the level of output. However, during the recession, this link weakened as companies adjusted their demand for labour by using lay-offs

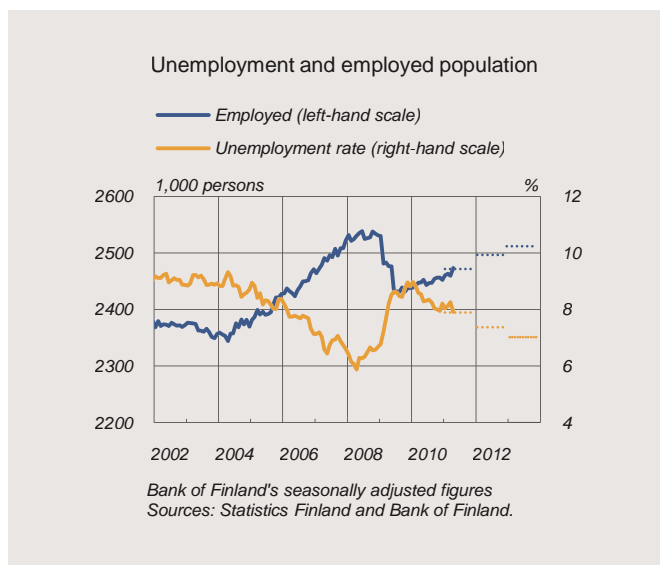
and flexible time accounts. Thus the decline in the number of employed was considerably more subdued than could have been expected based on the reduction in output. Correspondingly, the return to output growth has been accompanied by a relatively slow recovery of employment.

The growing demand for labour can still in 2011 be met partly by increasing the number of hours worked. Employment growth will however strengthen as the focus of output growth shifts from the capital-intensive export industry to the labour-intensive services sector and construction. Growth in the number of employed will remain slow, averaging at slightly under 1% per annum. The number of employed will not return to pre-recession levels in the forecast period (Chart 14).

A positive thing is that at least thus far there have been no signs of the labour market mismatches that typically result from a protracted weak employment situation (see Box 3). As a result of protracted unemployment, some of the unemployed may still have difficulties of re-entering the labour market, which will slow the decline in the unemployment rate. The unemployment rate is expected to decline in 2011–2013, from 7.9% to 7%.

In the long term, the growth potential of the Finnish economy will be impaired by the reduction in the size of the labour force in response to the ageing of the population. The first signs of the reduction in the size of the labour force will be evident already in the forecast period 2011–2013. Although

Chart 14.



cohort-based labour force participation rates are expected to continue to grow, due to age and cohort factors, labour supply is inevitably declining. The situation could be alleviated by extending working lives or increasing work-related immigration. Even these measures could not stop the reduction in the size of the labour force.⁹

Flexibility in labour supply could, particularly in the services sector, be provided also by the possibility of those who are already in receipt of retirement pension to participate in the labour force. The importance of this factor for the labour market is however thus far difficult to assess.

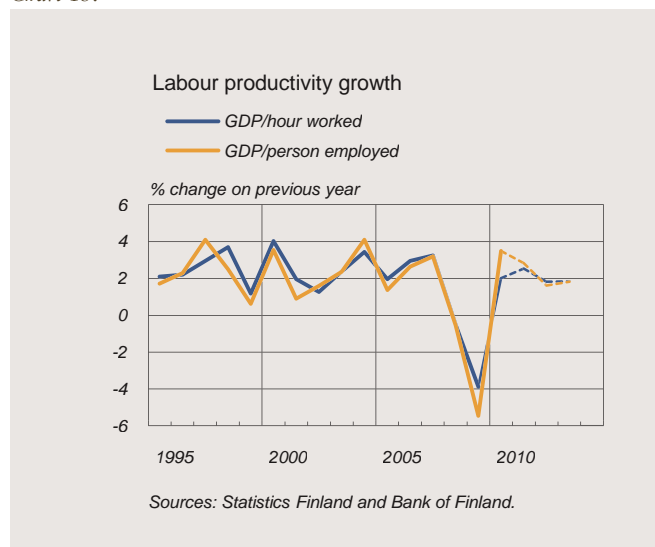
The labour market is expected to remain virtually unchanged. Local and sector-specific bottlenecks will however increasingly emerge, despite the high rate of employment. They are however not assumed to escalate into an overall labour supply problem that would trigger a significant rise in labour costs.

Productivity

Labour productivity improved considerably in 2010 with a rapid growth of output and only slow recovery in employment. This cyclical recovery of productivity growth will however slow already in 2011. Labour productivity measured in terms of GDP per person will grow in 2011 nearly 3%, but after that productivity growth will slow to under 2% (Chart 15).

Non-cyclical trend growth in productivity will also be slower than in previous decades. The slower pace of

Chart 15.



productivity growth is mainly due to structural changes in and between sectors. A significant share of productivity growth in the industrial sector has been accounted for by the electronics industry. The electronics industry's GDP share has however already declined considerably. Moreover, there is a risk that the industrial sector's GDP share will decline as the population ages and an increasing proportion of consumer demand will be demand for services, eg various nursing and health care services, rather than for goods. Productivity growth in the services sector has been much slower than in the industrial sector.

⁹ See Helvi Kinnunen's and Petri Mäki-Fränti's article 'Long-term supply of labour' in this Bulletin.

Job-matching in the labour market after the recession

Structural changes in the economy in connection with deep recessions often have a large and long-term impact on employment. This is due to the deterioration in the matching of jobs and vacancies when post-recession growth in output and employment occurs in sectors other than where jobs were lost.

Labour market mismatches can be illustrated with the Beveridge curve, which shows the relationship between job vacancies and unemployment. Shifts along the curve usually indicate cyclical changes in the unemployment and vacancy rates (the latter is the ratio of job vacancies to labour force). However, an inward shift in the curve usually indicates an increase in job-matching efficiency and an outward shift a decrease in matching efficiency.

In context of the Finnish recession in the 1990s, a rapid change in the structure of production led to an increase in labour market mismatch. During the economic recovery that began in 1994, this was reflected in an

outward shift in the Beveridge curve: the ratio of job vacancies to the number of unemployed jobseekers increased as people who had lost their job in the industrial or construction sector found it difficult to find a job elsewhere, eg in the service sector (Chart 16). Increased mismatch was reflected eg in rapidly growing and persistent long-term unemployment.

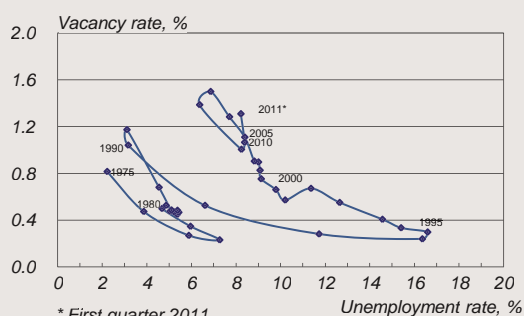
The deep recession that followed the global financial crisis does not seem to have increased labour market mismatch in Finland, and there has been no apparent outward shift of the Beveridge curve as in the 1990s. Observations in recent years have generally remained on the observed curve in the past 10 years. At the start of the crisis – as unemployment rose and the vacancy ratio fell – there was a shift downwards along the curve, which is typical of a cyclical downturn. After the trough of the crisis, recovery has occurred along the Beveridge curve observed in the last decade.

A relatively small rise in unemployment during the crisis is partly explained by the fact that the sharp decline in output triggered by the crisis was fairly short-lived in Finland. Temporary layoffs provided flexibility, and dismissals were fewer than expected. The ratio of job vacancies to labour force declined, albeit not to the level of the 1990s.

The number of job vacancies has increased since the start of 2010, but in recent quarters, the decline in the unemployment rate has slowed and long-term unemployment has increased (Chart 17). Labour market mismatch and long-term unemployment may enforce each other, as protracted unemployment typically weakens employment opportunities. If the unemployment rate remains high, there is a risk of a permanent increase in structural unemployment.¹

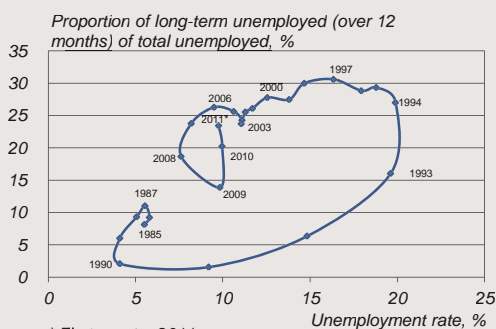
¹ This Box is based on a publication by Heidi Schauman and Juuso Vanhala (2011) 'Beveridge-käyrä, kriisit ja työmarkkinoiden rakenteelliset muutokset'. BoF Online 2/2011 (Beveridge curve, crises and structural changes in the labour markets, in Finnish only).

Chart 16.
Beveridge curve 1975–2011



* First quarter 2011.
Sources: Statistics Finland and the Ministry of Employment and the Economy.

Chart 17.
Unemployment and long-term unemployment in 1985–2011



* First quarter 2011.
Source: Ministry of Employment and the Economy.

Public finances

The general government fiscal position was still strong in 2008, but the fiscal balance deteriorated by 7 percentage points in 2009 following the recession. The widening of the fiscal deficit was halted in 2010 as tax revenues started to increase in the wake of the economic recovery (Table 4). However, the ongoing stimulus measures were still reflected in strong growth in government expenditures, causing the central government finances to move deeper into deficit, standing at 5.4% of GDP. Local government expenditures grew at the same pace as in 2009, ie with clearly less momentum than in the years before. The local government deficit improved slightly from the year before, to 0.3% of GDP. Benefiting from the strong surplus on the social security funds, the general

government deficit contracted to 2.8% of GDP in 2010.

Central government deficit to remain huge

The fiscal balance will improve considerably in 2011. The central government deficit will contract following GDP growth and fiscal tightening, but will, nevertheless, remain around 3½% of GDP at the end of the forecast period. In aggregate, the general government deficit will amount to 1% of GDP over the years 2012–2013.

The strong growth in tax revenues on earnings will continue in 2011, in response to a higher level of employment and, therewith, a larger wage bill. In addition, improvements in business performance will also contribute to tax revenue growth. Tax revenues are estimated to grow by around 5% overall in 2011, and this growth rate will be broadly sustained in 2012–2013.

Table 4.

General government revenue, expenditure, financial balance and debt, % of GDP						
	2008	2009	2010	2011 ^f	2012 ^f	2013 ^f
<i>General government revenue</i>	53.5	53.4	52.3	52.7	52.7	52.5
<i>General government expenditure</i>	49.3	56.3	55.1	54.0	53.7	53.3
<i>General government primary expenditure</i>	47.9	54.8	53.7	52.5	52.0	51.5
<i>General government interest expenditure</i>	1.5	1.4	1.4	1.5	1.6	1.7
<i>General government net lending</i>	4.2	-2.9	-2.8	-1.2	-1.0	-0.7
<i>Central government</i>	0.5	-4.8	-5.4	-4.2	-3.8	-3.6
<i>Local government</i>	-0.4	-0.6	-0.3	-0.1	-0.1	-0.1
<i>Social security funds</i>	4.0	2.6	2.9	3.1	2.9	3.0
<i>General government primary balance</i>	5.6	-1.5	-1.4	0.3	0.7	1.0
<i>General government debt</i>	34.1	43.8	48.4	50.8	52.7	54.1
<i>Central government debt</i>	29.5	37.5	41.7	44.3	46.4	48.0
<i>Tax ratio</i>	43.0	43.0	42.1	42.3	42.4	42.2

f = forecast

Sources: Statistics Finland, State Treasury and Bank of Finland.

Tax revenues on production, such as value added and excise taxes, will post brisk growth. The value added tax rate was raised in the mid-2010's, while rates of environmental and energy taxes were increased at the beginning of 2011. Indirect tax revenues will also increase in step with rising private spending. Tax revenues on production and imports are projected to stand 10% higher in 2011 as compared with 2010. The increase in the diesel tax rate will also contribute to higher revenue on energy taxes in 2012, but growth in VAT revenue will fall back with dampening inflation and consumption

growth. In aggregate, growth in tax revenue on production and imports will be 4% and 3%, respectively, in 2012 and 2013.

Central and local government expenditures are forecast to grow at a rate of close to 4% over the years 2011–2013 (Chart 18). The recession caused the municipalities to tighten their finances, and local government expenditures are projected to continue to grow at a fairly low rate also during the forecast period, compared with previous years. Labour supply in the public sector will decline somewhat and pay rises are forecast to remain moderate. Thus, the forecast foresees more subdued growth in public consumption expenditure compared with previous years. Similarly, the increase in public investment will remain sluggish in the forecast period as many investment projects were brought forward during the recession as part of the stimulus measures. However, investment expenditure is maintained by the many transport infrastructure projects and local government refurbishment and construction programmes currently underway.

Despite a higher rate of income growth and relatively moderate expenditure development, the aggregate central and local government fiscal balance will remain in large deficit. In 2013, expenditure still exceeds revenue by close to EUR 8 billion, which accounts for 3.7 of GDP (Chart 19). Local government finances will be close to balance, assuming that transfers from the central government will increase.

Chart 18.

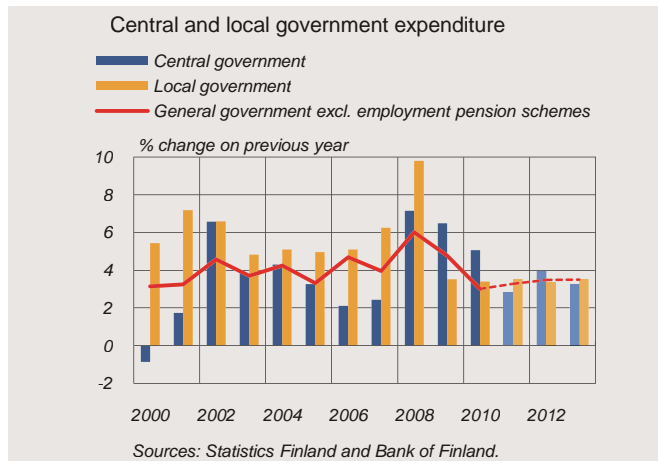
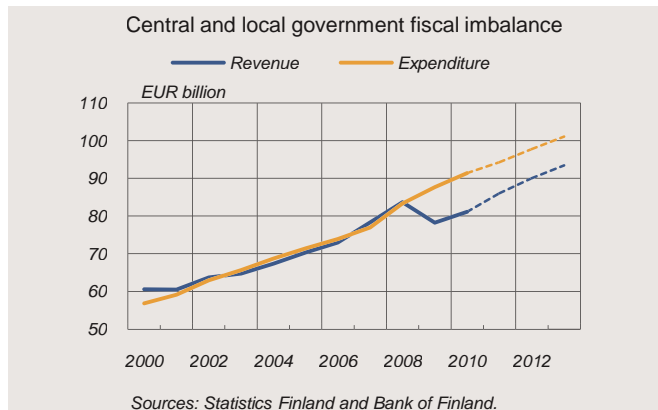


Chart 19.



Pension funds will remain clearly in surplus following improvements in employment and growth in income on assets. Contribution revenue will also be boosted by increases in the rates of social insurance contributions. The surplus on pension funds will be eroded by higher pension expenditure as the size of the retired population will grow and average pensions increase in response to higher pension accruals and a higher number of qualifying years. In addition, index increments to pensions will also be higher in 2012 and 2013 than in this and last year.

The general government expenditure ratio will fall only slightly, standing at 53.3% of GDP at the end of the forecast period. The overall tax rate will remain broadly consistent with 2010 levels throughout the forecast horizon (Table 4).

Considering the large general government deficit, accumulation of debt will continue (Chart 20). Public debt is projected to grow by more than 5 percentage points over the forecast horizon and amount to 54% of GDP, following the high rate of growth of central government debt.¹⁰ With the higher indebtedness ratio and a higher level of interest rates, central government interest expenditure will grow but its GDP share will, nevertheless, remain below 2% in 2013.

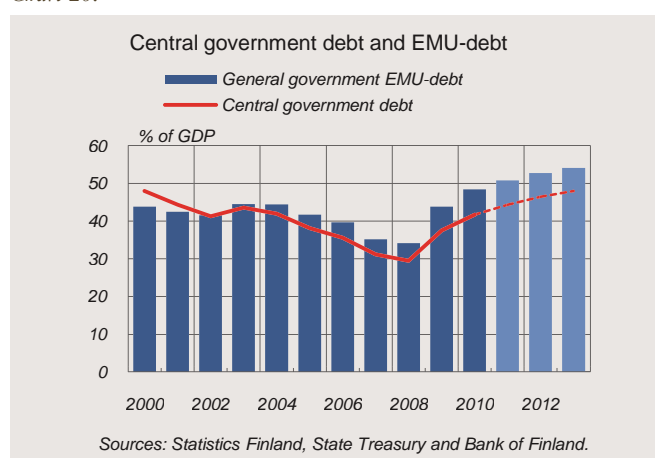
The forecast for the public finances is currently surrounded by an exceptionally high degree of uncertainty, mainly related to near-term economic policy. If the new Government will embark on

determined fiscal consolidation measures, the general government fiscal position could be stronger than foreseen here. The price developments related to public expenditure are another source of uncertainty. Higher-than-expected pay rises would result in stronger growth in public expenditure than predicted.

Cyclical upswing will not restore the fiscal balance

In the Stability Programme for Finland, a structural surplus of 0.5% has been set as the medium term objective for the general government's finances. If no adjustments are made to the revenue and expenditure framework, the general government structural deficit, which is independent of the business cycle, will be around 1% of GDP at the end of the forecast period. Hence, the medium-term objective will not be achieved if fiscal policy remains unchanged (see Box 4). On deviation from the medium-term objective, the structural fiscal position should, according to the Stability and Growth Pact, be strengthened by at least 0.5% on an annual basis. This objective

Chart 20.



¹⁰ Central and local government financial assets are discussed in Box 5.

Medium-term outlook for public finances

According to the forecast, general government finances will not move out of deficit by 2013. In the absence of new fiscal policy decisions, the central government deficit will amount to around 3½ of GDP in 2013. This means that the central government debt-to-GDP ratio will increase from 30% to 48% over the years 2008–2013.

In these medium-term projections, the forecast horizon is extended up to 2016 in order to obtain an understanding of the fiscal policy stance after elimination of the effect of cyclical factors on economic developments.

Economic growth to slow

Economic growth in Finland will lose momentum in the future for two reasons. First, the ageing of

the population will influence economic developments in a number of ways, especially in the long term.¹ However, a major impact on economic developments in Finland will be felt already in the near term.

According to cohort-based projections of labour force participation rates, the supply of labour will start to decline over the next few years as employees born in the 1940s exit the labour market.² Although this coincides with a drop in the unemployment rate, the growth effect of the labour input will, even at

best, be only negligible. Hence, economic growth will hinge on productivity growth alone.

Second, economic restructuring will cause a slowdown in the average rate of productivity and output growth. The GDP share of manufacturing has declined, while the recession has further speeded up the shift in the industrial production structure. Manufacturing jobs are increasingly being relocated to low-cost countries. In the 2000s, the rate of labour productivity growth has largely depended on the strong productivity growth witnessed in the electronics industry. However, a marked decline in the GDP share of the electronics industry is already underway. In addition, consumer demand is increasingly shifting towards services, away

¹ See the article 'A general equilibrium model for forecasting' by Elisa Newby, Jukka Railavo and Antti Ripatti in this issue. It discusses the macroeconomic effects of demographic change.

² See the article 'Long-term supply of labour' by Helvi Kinnunen and Petri Mäki-Fränti in this Bulletin.

Table 5.

Economic developments in 2011–2016

	2011	2012	2013	2014	2015	2016
<i>Real GDP, percentage change</i>	3.8	2.6	2.4	2.2	2.1	1.9
<i>Inflation (CPI), %</i>	3.5	2.3	2.2	2.2	2.0	2.0
<i>Labour productivity, percentage change</i>	2.8	1.6	1.8	1.6	1.9	1.9
<i>Employed population, percentage change</i>	0.9	1.0	0.6	0.5	0.2	0.0
<i>Unemployment rate, %</i>	7.9	7.4	7.0	6.7	6.6	6.6
<i>General government net lending, % of GDP</i>	-1.2	-1.0	-0.7	-0.6	-0.9	-1.2
<i>Central government net lending, % of GDP</i>	-4.2	-3.8	-3.6	-3.5	-3.4	-3.3
<i>General government EMU debt, % of GDP</i>	50.8	52.7	54.1	55.4	56.8	58.1
<i>Central government debt, % of GDP</i>	44.3	46.4	48.0	49.5	50.9	52.1
<i>Total tax ratio, % of GDP</i>	42.3	42.4	42.2	42.2	41.9	41.7

Source: Bank of Finland.

from industrial products. The ageing of the population will boost the demand for various social welfare and health care services in particular, with productivity in the production of these services clearly lagging behind that of the industrial sector.

After the recovery phase following the recession, economic growth is projected to stabilise at around 2% through the years 2014–2016. By the end of this period, the unemployment rate will have dropped to 6½%. Labour input will grow only marginally, with the rate of growth in labour productivity being a little under 2% (Table 5).

Public finances to remain in deficit

The medium-term projection of public finances is based on the assumption that the need for public services will grow at a slightly higher pace than before. This growth reflects a situation where the proportion of the age groups most in need of public services is increasing relative to the working-age population. However, growth will still be modest in 2014–2016 compared to the early 2020s when the effect of population ageing on the need for welfare and care

will rise sharply. The calculation assumes that the pension eligibility and determination criteria remain unchanged. Due to higher pension benefits and a larger retired population, pension expenditure will grow at a slightly faster rate than the wage bill. In the calculation, public expenditure is somewhat reduced by the decline in the unemployed population.

For the revenue side, the assumption is that taxation criteria remain unchanged and will, thus, not affect the average tax ratio. Pension contributions are assumed to move up by 0.4 percentage points in 2014, based on an agreement between the labour market participants. The rate of return on income on assets is assumed to develop in line with the interest rate payable on government debt.

Under these assumptions and this economic scenario, the GDP share of public expenditure (excl. interest expenditure) will stabilise at around 51% in 2014–2016. The average tax ratio will decline by ½ percentage point, in response to the falling share of income based on a high tax ratio (Table 5).

Public finances will remain in deficit in 2016. The general government deficit will amount

to 1% of GDP, while the central government deficit will stand at around 3%. The central government debt-to-GDP ratio will rise to 52%, while the general government debt-to-GDP ratio will be 58%.

Conclusions

According to the medium-term projections, the general government deficit will not contract even after the forecast horizon extending up to 2013, unless adjustments are made to the revenue and expenditure framework. The recession added momentum to the restructuring of the economy, which is threatening to cause a permanent deceleration of economic growth. The data of the medium-term projection point to negative growth effects from both labour productivity and labour supply. Growth of the financial base of public finances will remain clearly slower than before. The accumulation of government debt will not be contained over the next five years. Consequently, the debt ratio will increase to so high a level that the additional expenses arising from population ageing in the 2020s cannot be absorbed by additional borrowing in the years to come.

Central and local government financial assets

General government assets have, from time to time, been widely debated in Finland. With reference to these assets, it has been claimed that the threat to the sustainability of general government finances is not as serious as calculations of the gross level of debt indicate. This article looks at the assets held by central and local government in Finland.¹ The review is based on financial account data, excluding holdings of real assets, such as property, land and water.² Most of the real assets held by central and local government are highly illiquid and hence difficult to mark to market.

Central and local governments have major holdings of financial assets

According to financial account data, financial assets held by the central government totalled EUR 65 billion before the onset of the financial crisis, which slightly exceeded central government liabilities. Local government net financial assets were also positive, by a few billion euros. In the wake of the financial crisis

¹ The concept of general government also includes employee pension funds, which have substantial holdings of financial assets in Finland. The counteritem of these assets, ie the provision for future pensions, are not included in the liabilities of the financial accounts. For this reason, this box only addresses the assets and liabilities of central and local government.

² Albeit real assets in the form of shares and participations are covered (eg certain real estate holdings).

Table 6.

Central and local government financial assets, 31 Dec 2010, EUR bn

	<i>Cash reserves</i>	<i>Shares and participations</i>	<i>Other financial assets</i>	<i>Total</i>
<i>Central</i>	12.0	35.6	15.2	62.8
<i>Local</i>	4.1	8.7	8.0	20.7

Cash reserves include cash, deposits, money market instruments, bonds and derivatives.

Source: Statistics Finland, general government financial accounts.

and economic recession, however, central government net financial assets moved into a deficit of close to EUR 23 billion by the end of 2010. Similarly, aggregate net financial assets of local government have declined slightly. At the end of 2010, local government financial assets and liabilities were in balance.

Holdings of shares and participations, as well as cash reserves, account for the major part of central government financial assets (Table 6). At the end of 2010, these amounted to slightly over EUR 35 billion, which includes holdings of listed and unlisted shares and participations. Holdings of listed shares account for more than half of the total value of central government financial assets. The central government has direct holdings in listed companies which are defined as strategically important, such as Finnair, Fortum and Neste. The ownership of other listed companies has been entrusted to the holding company Solidium, which is wholly state owned.

Central government holdings of shares and participations in unlisted companies include holdings in the energy, transport and financial sectors, as well as various real estate holdings.

At the end of 2010, central government cash reserves, consisting of deposits and various money market instruments, amounted to EUR 12 billion. The size of the cash reserves shows a relatively high degree of volatility over the year in response to the timing of current revenues and expenditures, debt amortisations and new borrowing. During the past few years, an upward trend has been discernible in the size of the cash reserves.

Loans and other assets make up the remainder of central government financial assets, ie about EUR 15 billion. The majority of this consists of loans granted by The Housing Finance and Development Centre of Finland (ARA). The rest includes loans to the agricultural sector to facilitate investment and ownership changes.

In the aggregate, local government cash reserves amounted to roughly EUR 4 billion at the end of 2010. Similarly as for central government, shares and participations accounted for the major part of local government financial assets, a little less than EUR 9 billion. Local government assets consist mainly of holdings other than listed shares, eg real estate, joint municipal authorities and government business enterprises, as well as loan-based receivables from their own companies.

Limited disposability of financial assets

Although central and local government net financial assets have turned negative over the past few years, the net amount of debt remains fairly small, amounting to slightly over 12% of GDP.

The net amount of debt has little informational value as such. What is relevant is the effect of the existence of financial assets on the sustainability of general government finances, on the one hand, and on the room for manoeuvre of fiscal policy in various situations, on the other.

Inflows of returns on financial assets are, for instance,

included in the sustainability calculations regularly undertaken by the Bank of Finland. However, if the rate of return on financial assets remains clearly below the interest rate payable on government debt, it is, in principle, possible to improve the sustainability of general government finances by selling financial assets and using the proceeds to amortise debt. In practice, this seems not to have been the case in recent years, at least not if one looks at central government financial assets, which have generated fairly high returns.³ Consequently, the disposal of financial assets would not necessarily alleviate the sustainability problem related to central government finances; rather it might even aggravate it if investment returns fall further than interest expenses.

The importance of financial assets for fiscal policy manoeuvrability depends on the extent to which financial assets can be used to cover central and local government current expenditure in an acute crisis related to the availability of market funding. The key issue here is the degree of liquidity of the financial assets.

³ Ministry of Finance, *Economic Bulletin*, spring 2011.

Cash reserves are the most liquid of central and local government financial assets. These assets are available for meeting public expenditure in nearly all situations. However, due to the timing mismatch between revenues and expenditures, the cash reserves must always observe a certain minimum limit, below which they cannot fall without the risk of substantially increasing payment default.

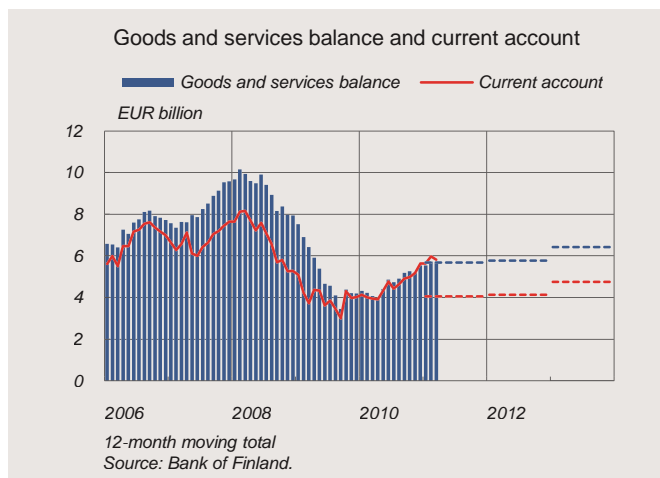
Holdings of listed shares are the second most liquid of assets. The extent to which these are available for meeting expenditure depends on their volume and the prevailing market situation. It may take a very long time to dispose of large share volumes, even under normal circumstances. In times of crisis, realisation can be difficult.

Much more difficult still is the realisation of assets other than listed shares, such as unlisted shares and participations. The difficulties in marking them to market, together with limited demand, may present insurmountable hurdles especially in times of crisis. Overall, the disposability of these assets for meeting current expenditure is highly limited, not least so in a crisis.

will not be achieved either according to the forecast.

In order to ensure fiscal sustainability, changes must be made to the public expenditure and revenue framework. The further the introduction of fiscal consolidation is postponed, the larger the scale of adjustment measures to be taken before long. Central government spending ceilings have proven to be an efficient fiscal policy instrument for containing expenditure growth. They have paved the way for the consideration of sustainability aspects in the practical exercise of fiscal policy. In terms of the continuance of the fiscal policy stance and the stability of the operating environment, it would be important that spending limits retain their key role within the fiscal policy regulatory framework. However, the spending limits alone are not sufficient to absorb all of the pressures on public spending, as local government expenditure, as well as a considerable part of central government expenditure, falls outside their scope.

Chart 21.



External balance

The current account surplus was EUR 5.6 billion in 2010, which was about 3% of GDP (Chart 21).¹¹ The value of exports increased slightly faster than the value of imports in 2010. The surplus for goods account amounted to EUR 3.1 billion, which, despite the rebound in exports, was considerably less than prior to the recession. The contraction of services imports increased the services balance surplus to EUR 2 billion in 2010.

According to the forecast, the surplus for goods and services will strengthen in 2011, as the volume of exports increases considerably. In 2013 the surplus is forecast to reach over EUR 6 billion. The rapid rise in import prices will weaken the terms of trade, i.e. the relation between export and import prices especially in the current year.

In 2009 the income account posted an exceptionally large surplus, as the financial results of some large international companies' Finnish subsidiaries weakened markedly. Preliminary data on income for 2010 indicate that income is still in surplus. Companies' financial results are assumed to normalise in the forecast period, and the income account is forecast to return closer to the level prevailing prior to the recession. The income account is forecast to weaken in 2011, which will reduce the current account surplus. The slight strengthening

¹¹ The relation between current account surpluses and the net international investment position is discussed in Box 6.

Finland's net international investment position has improved by less than the current account surpluses indicate

For some time in the Economic and Monetary Union, investigation of euro area countries' current accounts and net international investment positions had a low priority. Although the combined euro area current account was close to balance, significant cross-country differences could be found. Major deficiencies were particularly common in the South European countries; but their financing seemed not to be a problem, with financial market integration progressing and the willingness to take risks increasing. In contrast, significant surpluses were posted, for example, in Germany and Finland.

In the aftermath of the financial crisis and the ensuing economic crisis, it has become

clear that the current account is important as an indicator of the health of the economy. It provides valuable information about potential economic problems relating to competitiveness and other problems of imbalance. The corresponding position variable – the net international investment position (NIIP) – is an important indicator of foreign assets and indebtedness in different sectors of the economy.¹ As the recent years' crisis has shown, extensive external indebtedness is a risk factor that makes the economy more sensitive to disturbances in international financial markets.

The current account and net international investment

¹ Specifically, the corresponding flow variable of net international investment position is the sum of current account and capital account.

position are candidates for inclusion in the 'scoreboard' to be used in monitoring macroeconomic developments in EU countries. The idea is that the indicators in the scoreboard would detect potential imbalances in time.

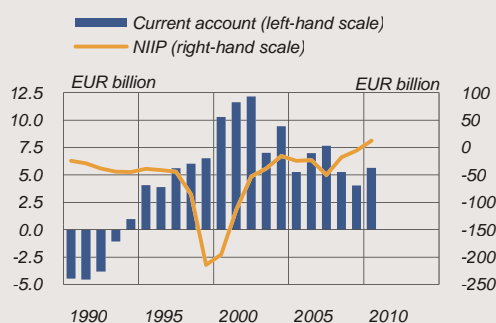
Finland's current account has long been in surplus

In annual terms, Finland's current account has been in surplus continuously from 1994 (Chart 22), peaking at close to EUR 12 billion a year at the turn of the millennium. Relative to GDP, this translates to more than 8%. In recent year, however, the surplus has shrunk to approximately EUR 5 billion, equivalent to some 3% of GDP.

Despite continuous surpluses, Finland's NIIP has not improved nearly as much. While aggregate surpluses in 1994–2010 totalled some EUR 112 billion, NIIP improved by only half as much, by EUR 56 billion. In addition, the structure of NIIP has undergone significant change in recent years. Net interest-bearing external debt has started to increase again; since 2007, it has grown by more than EUR 50 billion. In the same period, net equity receivables have increased even more, by nearly EUR 115 billion.

Chart 22.

Finland's current account and NIIP



Source: Bank of Finland.

Net interest-bearing debt has begun to increase

Net interest-bearing external liabilities/assets refers to NIIP excluding equity items such as equity related to direct investment, share-based securities holdings and mutual fund units. It is composed of different types of interest-bearing instruments, such as loans and debt instruments.²

Finland's net interest-bearing external debt expanded during the recession in the early 1990s, when the government took on additional external debt. Later, net external debt started to shrink gradually, when the current account went into surplus. By 2003, net interest-bearing debt had turned into net assets. However, from 2007 onwards, significant changes have again occurred. Net interest-bearing external debt has risen rapidly, to more than EUR 45 billion at the end of 2010, which is close to the figures seen at the end of the recession in 1993.

The recent rise in net interest-bearing external debt is explained by a number of factors (Table 7). Approximately half of the growth is connected with the public sector, as the central government rapidly added to its debt during the recession. The borrowing was primarily from foreign sources. Net interest-

bearing debt has also risen considerably in the corporate sector during the recession (included in 'Other sectors'). In addition to higher corporate borrowing from foreign banks, intra-group borrowing from foreign subsidiaries has also grown substantially.

Equity items on the rise

Equity items include capital related to direct investment, share-based securities investment and mutual fund shares. Their net value was negative from the mid-1990s until 2007. In other words, the value of direct investment in Finland by non-residents and their share holdings exceeded the corre-

sponding value for Finnish investors. At its peak, the difference was more than EUR 200 billion in 1999, largely a reflection of price developments in Nokia shares and a number of other listed shares.

Since 2007, the net value of equity items has changed dramatically. A negative NIIP of more than EUR 55 billion has nearly turned into a positive NIIP of the same magnitude (Table 8). This change in the NIIP originates primarily in the corporate sector (included in 'Other sectors'). While equity-based receivables from abroad related to direct investment have risen by nearly EUR 20 billion, the value of investment by non-

Table 7.

Net interest-bearing debt at the end of the year, EUR bn

	2007	2008	2009	2010	Change
<i>MFIs</i>	-11.0	-8.7	0.2	-0.3	10.7
<i>Public sector</i>	7.6	13.9	18.0	30.7	23.1
<i>Other sectors</i>	-2.9	16.3	18.0	15.3	18.2
<i>Whole economy</i>	-6.3	21.5	36.2	45.7	52.0

Note: - = net receivables, + = net debt.

Source: Bank of Finland.

Table 8.

Equity items at the end of the year, EUR bn

	2007	2008	2009	2010	Change
<i>MFIs</i>	15.2	15.6	14.6	14.9	-0.3
<i>Central and local government</i>	-8.2	-5.6	-8.0	-4.3	3.9
<i>Employment pension funds</i>	-40.7	-21.9	-30.3	-49.8	-9.1
<i>Other sectors</i>	90.2	8.3	-6.9	-18.8	-109.0
<i>Whole economy</i>	56.5	-3.5	-30.5	-58.1	-114.6

Note: - = net receivables, + = net debt.

Source: Bank of Finland.

² In this box, derivatives have also been included in net interest-bearing debt/assets.

residents in Finnish securities has decreased by almost EUR 85 billion. The latter is probably largely due to share price developments, with the impact of actual share sales and purchases being secondary.

The 'missing' current account surpluses

The change in NIIP is generally different from the current account surplus/deficit due to valuation differences in investment items and the error term in the balance of payments. Even if they are accounted for, the difference cannot be eliminated entirely, because data on the stock of liability and asset items is collected with a separate survey, ie they are not based on flow data.

Following the turn to surplus of Finland's current account in 1994, the surpluses have risen to approximately EUR 112 billion. In the same period, Finland's NIIP has improved by only half as much, by EUR 56 billion. Statistics show that changes in exchange rates and share prices and in other valuation items do not explain the 'disappearance' of

the current account surpluses, because they reduce the change in net assets during the aforementioned period by only a couple of billion euro. Instead, the error term of the balance of payments is a potential explanation for the missing amount. The error term covers not only erroneously entered data, but also other deficiencies and inaccuracies in the balance of payments statistics. In the Finnish balance of payments, the error term has generally been very low. It began to increase from the middle of 2000, and by 2008 it had risen to nearly EUR 14 billion. From 1994 onwards, the value of unrecognised items has risen to some EUR 54 billion, which is roughly equivalent to the value of the 'missing' surpluses. The error term is negative, which means that in practice, net capital exports in the financial account have not offset the current account surplus. It is also possible, however, that the current account surplus has been overstated in the statistics.

In many other EU countries, among them Holland and Sweden, error terms have

risen substantially in recent years,³ and the phenomenon is also known in the euro area.⁴ For some time already, economists at the Bank of Finland have been investigating the reasons for the rise in the error term.⁵ It is possible that growth in the use of derivatives as well as interbank money flows is partly excluded from the statistics. Furthermore, internationalisation of custodian services may have increased the term. Work is continuing in the euro area and at the Bank of Finland to further reduce the error term.

³ See De Nederlandsche Bank's *Statistical Bulletin 12/2010* (<http://www.dnb.nl/en/publications/dnb-publications/statistical-bulletin/index.jsp>).

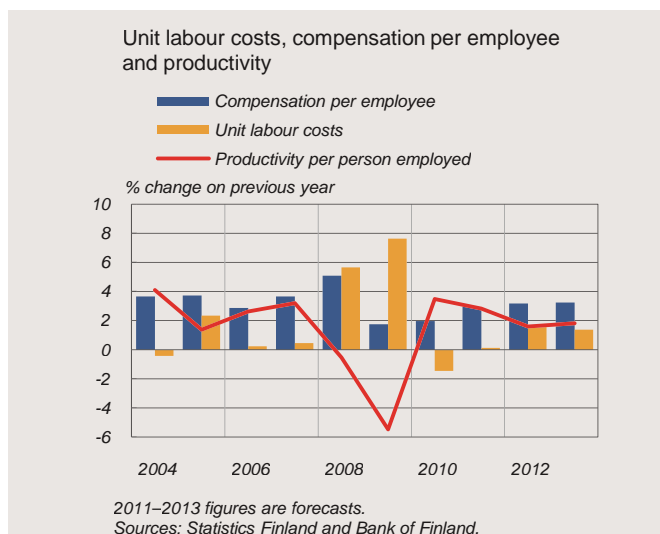
⁴ See the ECB's *Monthly Bulletin 12/2009, Box 11* (<http://www.ecb.europa.eu/pub/pdf/mobu/mb200912en.pdf>).

⁵ See Finland's *balance of payments, annual review 2008, Chapter 5* (<http://www.suomenpankki.fi/fi/tilastot/maksutase/Pages/vuosikatsaukset.aspx>).

of the goods and services balance will compensate the weakening of the income account. The contribution to GDP of the current account surplus is forecast to contract by close to 1 percentage point in the current year and to remain at slightly over 2% throughout the forecast period.

Finland's current account has remained in surplus throughout the financial crisis and the economic recession. The financial surplus of the private sector, and companies in particular, has been sufficiently large to cover the general government deficit that developed during the recession. Companies' financial balance (ie the difference between savings and investment) is forecast to improve in the forecast period. Households posted a financial surplus in 2009–2010, but lower savings are expected to move household's financial position into deficit again in 2011. The public sector balance is forecast to improve slightly but remain in deficit throughout the forecast period.

Chart 23.



Price and wage trends

Earnings growth will lag behind developments in inflation in 2011

Due to the acceleration in inflation, real earnings growth slowed at the end of 2010. In the spring 2011 round of pay negotiations, an agreement was reached on pay rises with a cost implication of slightly over 2% on average. In the current year, earnings will grow at a slower pace than inflation, and real earnings will decline. The decline in real earnings means an upward pressure on pay rises by the 2012 pay negotiations. The previous decline in real earnings took place in 1992 and 1993. Real earnings are expected to grow again in 2012 and 2013, about 1% annually.

Employee compensation per employee – ie average wages – will rise throughout the forecast period by approximately 3% per annum (Chart 23). The increase in production capacity utilisation in 2010, in connection with economic recovery, also boosted productivity and decreased unit labour costs by slightly more than 1%. Growth in unit labour costs is expected to accelerate over the forecast period. Towards the end of the forecast period, labour productivity growth will lag behind the rise in average wages, which will boost unit labour costs.

The rise in import prices has accelerated due to increases in energy and commodity prices

The pace of rise in import prices has picked up during the past year, fed par-

ticularly by increases in commodity prices. In April, import prices were 9.6% higher than a year earlier. The pace of import prices rises is, however, expected to level off, and in 2011 import prices will rise by 8% on average. Import price inflation is expected to slow further, to approximately 2% during the forecast period.

Higher import prices have been passed through into producer prices

Industrial producer prices continued to rise in April, due to the increase in energy and commodity prices. Producer prices of industrial goods sold in Finland rose by 7.8% and export industry producer prices rose by 6.7%. The rise in service sector producer prices has also picked up. The producer prices of business services provided by companies to other companies rose in January–March by 1.8%, year-on-year, due to the increase in the prices of goods transportation and higher rents of office and business premises.

The pace of rise in construction costs has accelerated considerably during the past year. Construction costs have been pushed up primarily by the higher prices of materials and construction services. Construction costs were in April 3.7% higher than a year earlier. Labour costs in construction have risen at a more moderate pace.

Consumer prices continue to rise at a rapid pace in 2011

The rise in consumer prices accelerated to 3.4% in the first quarter of 2011, as measured in terms of the harmonised index of consumer prices (HICP). HICP

inflation is expected to average 3.4% in 2011. Inflation is forecast to slow in 2012–2013, to close to 2%, as energy prices decline in accordance with market expectations and the impact of tax changes eases.¹² Inflation calculated according to the national consumer price index will be during the forecast period slightly higher than HICP inflation as interest rates on housing and consumption loans are expected to rise, in line with market rates (Chart 24).

In early 2011, inflation was pushed up mainly by the rise in energy prices. The rise in energy prices is expected to come to a halt in 2012, as crude oil prices decline and the impact of the hike in energy tax ceases.

The pace of rise in service prices has accelerated in the first half of 2011, and services inflation is expected to accelerate slightly further in the coming months. Service prices are affected by wages but also by increases in other production costs, eg energy and food

¹²Inflation differentials between Finland and the euro area are examined in Box 7.

Chart 24.



Inflation higher in Finland than in the euro area

Rising energy prices have fuelled global inflation in the last 12 months. In spring 2010, inflation as measured in terms of the Harmonised Index of Consumer Prices (HICP) still averaged 1.5% in both Finland and the euro area, but in December 2010 it picked up to almost 3% in Finland and to a good 2% in the euro area. The rate of increase in consumer prices has continued to rise in the current year. In April 2011, the annual rate of change in the HICP was 3.4% in Finland and 2.8% in the euro area.

Developments in food and services prices explain the inflation differential

During the last six months, inflation in Finland has been clearly higher than in the euro area on average. Finland's higher inflation is due mainly to bigger increases in food and services prices than in the euro area. In April 2011, the rise in food and services prices boosted HICP inflation by about 2 percentage points in Finland (Table 9) and only by 1.2 percentage points in the euro area. The impact of increases in the prices of other sub-components (energy and industrial goods) on headline inflation has been of the same magnitude in both economic regions. Tax changes implemented in 2010 also help to explain the higher inflation in

Finland: an increase in VAT rates by 1 percentage point in July 2010 and a simultaneous reduction in the VAT rate for catering services had a net effect of just under 0.2 percentage point on the rate of HICP inflation in Finland.

Rents rise faster in Finland than in the euro area

Housing rents have increased very rapidly in Finland in recent years. During the last three years, rents have risen by almost 12% in Finland, compared with a euro area average increase of 5% over the same period. In the first quarter of 2011, Finland experienced an average increase of 2.7% in rents on the corresponding period a year ago, but the euro area only 1.3%. The average euro area rate of increase in rents is dampened by very moderate rises in Germany. Other large euro area countries have also witnessed a definite decline in the rate of increase in rents in recent months.

Rapidly rising housing expenditure affects services inflation both directly and via higher rents. Elevated energy prices have promptly pushed up heating costs and passed through to maintenance fees. Moreover, water and sewerage fees and waste management fees have increased at an annual rate of more than 5% in Finland. The sensitivity of rents to cost increases is also related to the tightness of the rental housing market. In Finland, notably in growth centres, the supply of rental housing is low compared with the demand. In addition, the rise in housing prices has continued, feeding particularly through to the level of rents on new rental housing.

Compared with the rapid increase in services prices in 2008, the rise in these prices has been more broad-based in Finland in the last few months. The recent upturn in energy and food prices is projected to be still reflected, for example, in the

Table 9.

Impact of sub-components on HICP inflation in April 2011

	<i>Finland</i>	<i>Euro area</i>
<i>Energy</i>	1.2	1.3
<i>Services</i>	1.1	0.8
<i>Food, incl. alcohol and tobacco</i>	0.9	0.4
<i>Non-energy industrial goods</i>	0.2	0.3
<i>Total</i>	3.4	2.8

Source: European Central Bank.

prices of restaurant and café services in the next few months. The rise in services prices is therefore expected to be brisk, at least until the end of this year.

Taxes and commodities boost food prices

Differences in price developments in food (foodstuffs and non-alcoholic beverages) led to a 0.6 percentage point differential in average HICP inflation between Finland and the euro area in April 2011. In 2008–2009, food prices rose clearly faster in Finland than in the euro area (Chart 25). The reduction in the VAT rate on food by 5 percentage points in October 2009 brought Finnish food prices closer to the euro area price level. During the second half of last year the price rise regained momentum in Finland, partly due to an

increase of the VAT rate in July, and was considerably more rapid than in the euro area. The introduction at the start of this year of a sweets and ice cream tax and a higher soft drink tax had an impact of 0.1 percentage point on Finnish inflation. The surge in food commodity prices in the world markets is most apparent in coffee, which has become over 40% more expensive in a year. Price increases have also been driven by substantial rises in the prices of unprocessed food, such as vegetables, meat and fish.

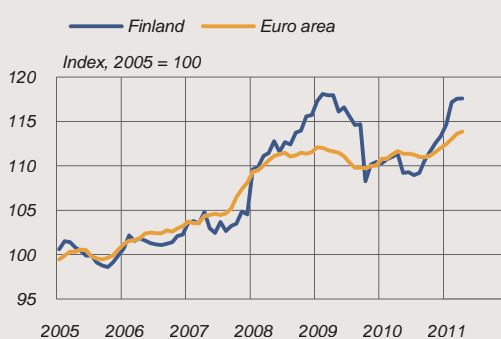
Larger food price increases may again lead to the decoupling of the domestic price level from European prices. In 2007–2008, food prices in Finland began to rise later than in the euro area, but now Finnish price developments lead euro area price trends. It is likely that the price

rises currently observed do not yet include the full impact of cost increases stemming from higher commodity prices for the domestic industry and energy tax increases.

Finnish inflation is also projected to remain higher than in the euro area on average over the next few months. In the longer term, the rate of inflation in Finland is expected to return to the average level of euro area inflation.

Chart 25.

Food and non-alcoholic beverage prices in Finland and the euro area



Source: Eurostat.

prices. These costs are passed through into consumer prices with a lag.

The pace of rise in food prices has picked up in 2011, to over 4%. Food prices were pushed up by rising food commodity prices and increases in excise duties and VAT. Higher energy prices have also increased producers' and retailers' costs. The rise in production costs is expected to continue to boost the upward trend in consumer prices of food in 2011.

Non-energy industrial goods prices began to rise in 2010 and the upward trend is forecast to continue in 2011. The upward trend is boosted by the rise in production prices and the prices of imported goods.

The risks to the inflation forecast are on the upside, both in the short term and towards the end of the forecast period. In the short term, the indirect impact of commodity price rises and energy tax hikes could be surprisingly strong. On the other hand, the expected decline in oil and commodity prices in the forecast period, in accordance with market expectations, may not take place if growth of the world economy remains robust. The forecast only takes account of tax changes already decided and their potential impact. Possible new increases in indirect taxation towards the end of the forecast period constitute an additional upside risk to the inflation forecast.

Risk assessment

Debt crisis the main external source of uncertainty

The risk of an escalation of the euro area debt crisis is the main factor bringing uncertainty to economic activity in Europe, and well as in Finland. Greek, Portuguese and Irish government bond yields have continued to rise in the first part of 2011, which points to distrust on the part of market participants about the ability of these countries to restore their public finances to a sustainable footing. Already last year, Greece and Ireland had to rely on emergency funding from the International Monetary Fund and the EU. Portugal negotiated a financing and support package in May this year.

The intensification of the global financial market crisis at the end of 2008 hit the demand for Finnish exports and the functioning of the financial markets hard. An uncontrolled escalation of the debt crisis would be a shock in quality different from but in magnitude potentially similar to the financial market crisis. Its precise spillover effects cannot be foreseen, just as it was impossible to predict the implications of the financial crisis. In any case, it is clear that a further escalation of the debt crisis would undermine economic activity in Europe and in Finland, too.

There is a risk that the functioning of European and possibly global financial markets would be seriously

disturbed. This would hamper global growth and thereby demand for Finnish exports. A weakening of the operational ability of the domestic financial sector would reduce domestic demand. The tax base to sustain Finland's public finances would shrink and fiscal consolidation would be increasingly difficult.

Unsustainable wage developments would erode competitiveness

Consumer price inflation in Finland will increase to clearly over 3% in the current year, resulting in a slight contraction in real wages in 2011. However, inflation is forecast to decline markedly as early as 2012. In the short term, inflationary developments will be strongly affected by fluctuations in the prices of commodities traded on the world market. If the already elevated commodity prices are to be passed through to Finnish consumer prices more strongly than anticipated, consumer price inflation may prove faster than forecast. In addition, the tightening of indirect taxation in order to reduce the general government fiscal deficit may fuel inflation. There is a danger that the temporary pick-up in inflation will lead to higher-than-forecast wage increases, which will erode Finland's competitiveness. The alternative scenario in Box 8 illustrates the effects of this type of development on the Finnish economy.

Lack of fiscal policy orientations to increase uncertainty in the economy

From the perspective of the realisation of the GDP growth forecast, an essential risk is that the stance of fiscal

policy to be observed over the next few years is not known. The absence of a fiscal consolidation plan from the forecast means that actual future economic developments are very likely to divert from the forecast.

Fiscal consolidation measures will have substantial implications for the development of the real economy.¹³ In the short term, retrenchment of public expenditure will reduce public-sector employment and domestic demand. Part of the reductions in public expenditure will generate substitute private output, but the effects on total demand will be negative. As a consequence, employment and payroll growth will weaken. Similarly, tighter labour taxation will constrain purchasing power, increase wage pressures, reduce employment and add to unemployment-related expenditure. VAT increases, in turn, will cut purchasing power and thereby subdue consumption growth.

A downward impact on growth will depend on the measures used to consolidate general government finances. It is, however, clear that the required strengthening of public finances will have a dampening effect on economic growth in the immediate years ahead. In the long term, the growth outlook for Finland will be impaired by population ageing and the related domination of services in the structure of the economy, which will be a drag on productivity performance. Population ageing presents a long-term

¹³ For an example of the impact of a fiscal plan on the real economy, see 'Alternative scenario: strengthening the public finances', Bank of Finland Bulletin: Economic Outlook, 1/2010.

challenge for Finland's general government finances. However, although higher cohort-specific labour force participation rates may slightly compensate for the ageing-induced lower supply of labour, population ageing will reduce output growth potential.¹⁴

If the challenges caused by population ageing could not be met and the long-term outlook for public finances were subject to a high degree of uncertainty, this would impact on the funding costs of both the Finnish government and banking sector. Finland must also curb its general government debt accumulation in order to ensure that confidence in the country's ability to manage its public finances remains in place and financing costs are kept at low levels. If markets begin to doubt the sustainability of public finances, the rise in government financing costs will also be passed on to the cost of funds for non-financial corporations and households.¹⁵

Failure to rein in the accumulation of public debt may also lead to the aggravation of financing problems in Finland and make it necessary to resort to emergency measures that have a strongly dampening impact on growth, such as a sizeable tightening of taxation.

¹⁴ See article by Helvi Kinnunen and Petri Mäki-Fränki 'Long-term supply of labour' in this Bulletin.

¹⁵ See 'Alternative scenario: a decline in confidence in Finland's ability to manage its public finances', Bank of Finland Bulletin: Economic Outlook, 2/2010.

Alternative scenario: an increase in domestic wage and price pressures

According to the forecast, the rise in the world market prices of oil and other commodities as well as food will lead to a temporary acceleration of inflation in Finland. Inflation as measured in terms of the Harmonised Index of Consumer Prices (HICP) will pick up to about 3.5% in 2011, but will subsequently ease back to about 2%. This temporary surge in inflation is not forecast to result in a higher rate of increase in wages and salaries. Labour compensation per employee is expected to rise at a steady pace of around 3% in 2011–2013.

On the back of the surge in inflation, labour compensation per employee will not grow in real terms in 2011, but decline slightly. As inflation expectations have increased in Finland at the same time, there is a danger that wage increases in Finland will be pronouncedly larger than expected. This would lead to a cost spiral where wage increases would push up production costs and firms would raise their prices in order to maintain their profit margins. Accordingly, wage and price increases would be mutually reinforcing.

Finland had last experienced accelerating growth in labour compensation in 2007–2008, just before the recession caused by the international financial crisis. At that

time, labour compensation per employee grew in nominal terms at an annual rate of about 4–5% (in real terms at an annual rate of about 1.5%). The current situation is in certain respects similar to the years 2007–2008. In those years, too, the rise in the prices of oil and other commodities caused inflation to climb to a good 3% and temporarily to even more than 4%. As at present, prior to the financial crisis, inflation expectations also increased markedly in Finland.

A clear difference with respect to the current situation was that, before the financial crisis, the economy even exhibited signs of an overheating.¹ GDP grew at a strong average annual rate of more than 4% in 2004–2007. The unemployment rate declined appreciably, staying at about 6% at its lowest point. The current unemployment rate in the aftermath of the recession is still about 8%, albeit on a declining trend. Although the economy is clearly growing at present, capacity utilisation rates are still slightly lower than pre-crisis, with no signs yet of a strong upturn in fixed investment in productive capacity. On account

¹ Hanna Freystätter and Veli-Matti Mattila (eds.) 'Finanssikriisin vaikutuksista Suomen talouteen' BoF Online 1/2011 (Implications of the financial crisis for the Finnish economy, in Finnish only).

of these factors, domestic inflationary pressures are currently lower than before the financial crisis.

A further acceleration in wage increases and inflation in 2007–2008 ended with the outbreak of the financial crisis and an 8% contraction in the Finnish economy in 2009. HICP inflation slowed to about 1.5% and the rise in labour compensation to about 2% in 2009. Despite a predicted slight deceleration in economic growth, a mild decline in growth would not be likely to stop a wage-price spiral if it were to emerge unexpectedly in Finland.

Using the dynamic general equilibrium model developed at the Bank of Finland (Aino), an alternative scenario has been produced to illustrate the effects on economic activity in 2011–2013 of wage increases that are larger than assumed in the forecast.² A summary of the results is presented in Tables 10 and 11. The alternative scenario assumes that the spiral of rising wages and prices will occur only in Finland. As Finland accounts for a small share of the euro area economy, the European Central Bank will not change its monetary policy.

² See the article by Elisa Newby, Jukka Railavo and Antti Ripatti 'A general equilibrium model for forecasting' in this Bulletin.

Table 10.

Alternative scenario: an increase in domestic wage and price pressures			
	2011	2012	2013
Wage and price developments			
<i>Labour compensation per employee, % change</i>			
Baseline forecast	3.0	3.2	3.2
Alternative scenario	3.4	4.1	4.3
Difference	0.4	0.9	1.1
<i>Private consumption deflator, % change</i>			
Baseline forecast	3.2	2.1	2.0
Alternative scenario	3.4	2.9	2.5
Difference	0.2	0.8	0.5
<i>Real average wage, % change</i>			
Baseline forecast	-0.2	1.0	1.2
Alternative scenario	0.0	1.1	1.7
Difference	0.2	0.1	0.5
GDP and employment			
<i>Real GDP, % change</i>			
Baseline forecast	3.8	2.6	2.4
Alternative scenario	3.7	2.0	1.8
Difference	-0.1	-0.6	-0.6
<i>Number of employed, 1,000 persons</i>			
Baseline forecast	2,472	2,497	2,512
Alternative scenario	2,470	2,477	2,472
Difference	-2	-20	-40
<i>Unemployment rate, %</i>			
Baseline forecast	7.9	7.4	7.0
Alternative scenario	7.9	7.8	7.8
Difference	0.0	0.4	0.8
External balance			
<i>Export prices, % change</i>			
Baseline forecast	5.5	1.3	1.3
Alternative scenario	5.6	1.8	1.7
Difference	0.1	0.5	0.4
<i>Exports, % change</i>			
Baseline forecast	8.0	7.0	7.2
Alternative scenario	7.7	5.9	6.4
Difference	-0.3	-1.1	-0.8
<i>Imports, % change</i>			
Baseline forecast	5.1	6.9	6.9
Alternative scenario	5.0	6.3	6.4
Difference	-0.1	-0.6	-0.5
<i>Current account, % of GDP</i>			
Baseline forecast	2.1	2.1	2.3
Alternative scenario	2.1	2.0	2.2
Difference	0.0	-0.1	-0.1

Source: Bank of Finland.

Table 11.

Implications of the alternative scenario for general government balance in 2011–2016

	2011	2012	2013	2014	2015	2016
General government balance						
<i>General government net lending, % of GDP</i>						
Baseline forecast	-1.2	-1.0	-0.7	-0.6	-0.9	-1.2
Alternative scenario	-1.3	-1.2	-1.2	-1.2	-1.5	-1.5
Difference	-0.1	-0.2	-0.5	-0.6	-0.6	-0.3
<i>General government debt, % of GDP</i>						
Baseline forecast	50.8	52.7	54.1	55.4	56.8	58.1
Alternative scenario	50.8	52.7	54.6	56.3	58.1	59.6
Difference	0.0	0.0	0.5	0.9	1.3	1.5

Source: Bank of Finland.

The scenario further assumes that nominal wages will rise about 1% faster than in the forecast, from the second half of 2011 until the end of 2013.³ The rate of increase in labour compensation will accelerate to about 3.5% in 2011 and to about 4% in 2012–2013. This corresponds to the average rate of increase in labour compensation in 2007–2008, just before the recession following the financial crisis.

Faster-than-forecast wage increases will lead to higher consumer price inflation. Consumer price inflation will not fade in line with the forecast

³ The scenario assumes that employees' negotiating power will increase from the third quarter of 2011 to the fourth quarter of 2013, returning thereafter slowly to normal, and that the rise in labour compensation will slow to correspond to the long-term rate of increase. However, the wage level will remain, over an extended period of time, higher than it would without this temporary change in negotiating power.

to about 2%, but will remain at almost 3% in 2012 and at about 2.5% in 2013. Accelerating consumer price inflation will, in fact, eat away part of nominal wage increases, meaning that the rate of increase in real wages will pick up only slightly relative to the forecast.

By contrast, rising wages and prices will cause a pronounced decline in economic growth. Higher prices will subdue domestic demand. Growth in both private consumption and investment will decelerate. GDP growth will remain at about 2%, instead of the forecast 2.5%, in 2012–2013. The rise in real wages will dampen demand for labour, the improvement in the employment situation will come to a halt and the unemployment rate will remain at around 8% in 2013. According to the alternative scenario, the number

of people employed in 2013 will be about 40,000 less than in the forecast.

Accelerating wage increases will also lead to a more rapid rise in export prices and an erosion of Finland's price competitiveness, causing export performance to be distinctly weaker than forecast. Meanwhile, growth in imports will also slow despite a relative decline in import prices, as domestic demand is muted. Another reason for a marked decline in imports is that the Finnish export industry uses plenty of intermediate inputs imported from abroad. As both exports and imports fall appreciably, the current account surplus will contract only slightly.

Higher inflation will not alleviate the problems related to the general government budget balance. The value of GDP will

temporarily rise to a slightly higher level than in the baseline forecast, which will have an upward impact on central and local government tax revenues and a downward impact on the general government debt-to-GDP ratio. However, these temporary favourable effects will be reversed because of a prolonged weakening in growth and employment, at the same time as rising public-sector wage costs increase public expenditure. For these reasons, higher inflation will not cause the general government debt ratio to decline.⁴ General government debt to GDP will rise by about 1.5 percentage points in 2016.

⁴ For a medium-term estimate of general government finances, see Box 4.

Changes from the previous forecast

The picture provided by the present Bank of Finland forecast for the performance of the Finnish economy in 2011–2013 is less favourable than in the forecast released in March 2011, in terms of price developments (Table 12). GDP growth will be only slightly slower throughout the forecast period than estimated in March. Based on statistical data from the early part of 2011, the forecast for GDP growth in 2011 is somewhat lower.¹ Due to the stronger-than-anticipated rise in consumer prices, particularly private consumption and thereby also, to a lesser extent, GDP growth will be more subdued throughout the forecast period than estimated in March.

The rise in world energy and commodity prices has strongly affected Finnish consumer prices in early 2011. Inflation as measured by the harmonised index of consumer prices (HICP) is expected to be 0.5 percentage points faster in 2011 than estimated still in March. Consumer price inflation is expected to ease after 2011 to approximately 2%, as in the previous forecast.

¹ The forecast is based on statistical data published by 24 May 2011.

The faster-than-forecast rise in consumer prices in March will dampen the growth in private consumption. In 2011, higher consumer prices are reflected as a decline in the savings ratio in comparison with the March forecast as consumption habits tend to adjust with a lag to the rise in prices. In 2012–2013, private consumption will adjust and the decline in the savings ratio will come to a halt.

According to market expectations, short-term interest rates will rise in the early part of the forecast period at a slightly faster pace than was expected in March. Markets are however expecting short-term interest rates to rise in 2013 to approximately 2.8%, as in the March forecast. The slightly stronger-than-expected rise in interest rates in the early part of the forecast period and the slightly weaker-than-anticipated production outlook will subdue somewhat the estimated growth in private investments in the forecast period.

Finnish export markets are expected to grow in the forecast period at a slightly stronger pace than was estimated in the March forecast, which will boost export growth in 2011–2013. Since,

Table 12.
Current and March 2011 forecast

	2010	2011	2012	2013
<i>GDP, % change</i>	3.1	3.8	2.6	2.4
<i>March 2011</i>	3.1	3.9	2.7	2.5
<i>Inflation (HICP), %</i>	1.7	3.4	2.1	2.1
<i>March 2011</i>	1.7	2.9	2.2	2.0
<i>Finland's export markets, % change</i>	13.7	8.4	7.4	7.1
<i>March 2011</i>	12.8	7.5	6.7	6.8
<i>Current account, % of GDP</i>	3.1	2.1	2.1	2.3
<i>March 2011</i>	2.9	1.5	1.1	1.1
<i>General government net lending, % of GDP</i>	-2.8	-1.2	-1.0	-0.7
<i>March 2011</i>	-2.8	-1.3	-1.0	-0.8

based on statistical data from the early part of the year, export prices are expected to rise in 2011 at a slightly stronger pace than anticipated in March, the goods and services account surplus will in 2011 be bigger than in the March forecast. Even though the growth forecast for the value of imports has also been revised upwards, particularly the value of exports will grow throughout the forecast period faster than estimated in March. Therefore also the current account surplus relative to GDP will remain throughout the forecast period higher than anticipated in March. The contraction of the current account surplus in the forecast period reflects changes in the income account.

GDP growth will be slightly more subdued throughout the forecast period than estimated in March and it will also slow employment growth moderately. The unemployment rate will decline at a slower pace than estimated in March, but the unemployment rate in 2013 is still estimated to be approximately 7%.

The financial position of general government will improve only slightly in the forecast period, as estimated also in March. At the end of the forecast period, general government debt relative to GDP will be approximately 54%, ie the same as estimated in March.

Long-term supply of labour

The reduction in the size of the labour force in response to the ageing of the population will impair the growth potential of the Finnish economy over future decades. Already the impending retirement of baby-boomers over the next few years threatens to reduce the labour force. Cohorts presently entering the labour market are clearly smaller than those reaching retirement age, and no major improvement in the demographic balance is to be expected from immigration either, judging from the population projection of Statistics Finland. This change in population structure – unique both historically and by international standard – presents a huge challenge especially for the financing of general government expenditures. There is a threat of a long-term economic growth slowdown and mounting public expenditure.

These developments have long been perceptible, and economic and structural policy actions have been taken to underpin the supply of labour. Incentives built into the pension scheme and closure of pathways to early retirement, together with the adoption of tax policies aimed at

growing the supply of labour, are among the key measures to encourage people of working age to remain in the labour force for as long as possible.

The higher labour force participation rate is also related to cohort-based trends, as well as to policy actions and business cycles. Participation in the labour force is influenced by a number of structural factors, including better working conditions, lower physical work load, better health conditions and a higher level of education. It is, for example, widely known that cohorts born in the 1940s are not as well-educated and healthy as younger cohorts. In step with the older cohorts being replaced by cohorts with higher levels of education and much longer life expectancies, the average labour force participation rate will rise. But it is also known that working career developments and labour market status over a whole working life may also be dependent on the cyclical situation prevailing at the time of labour market entry (path dependency). All of these factors may shape the pattern of labour supply in Finland.



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This article presents an analysis of cohort-based trends in labour force participation rates and looks at the implied long-term changes in the supply of labour. The analysis builds on calculations¹ undertaken at the Bank of Finland in 2008. Compared with earlier

calculations, the present analysis draws on a more recent population projection by Statistics Finland, with an estimation horizon extended to 2010 that better captures the participation of baby-boomers towards the close of their working lives.

Labour force participation rate model

The decision whether to participate in the labour market or not is essentially a choice between working or searching

¹ Kostiainen, J (2008) Työvoiman tarjonta pitkällä aikavälillä ('Long-term supply of labour'). BoF Online 14/2008. Bank of Finland. See also Box 3. Labour supply. Economic Outlook, special issue of the Bank of Finland Bulletin 1/2010. The same approach has been taken for instance by Balleer, A, Gomez-Salvador, R and Turunen, J (2009), Labour force participation in the euro area: a cohort based analysis. ECB Working Paper no. 1049.

for work or pursuing other activities. The latter typically means studying, looking after the home or retirement. Hence, the individual's labour market position is highly dependent on age, with the labour force participation rate (LFPR) being lower at both ends of working life. In addition, LFPRs differ for women and men.

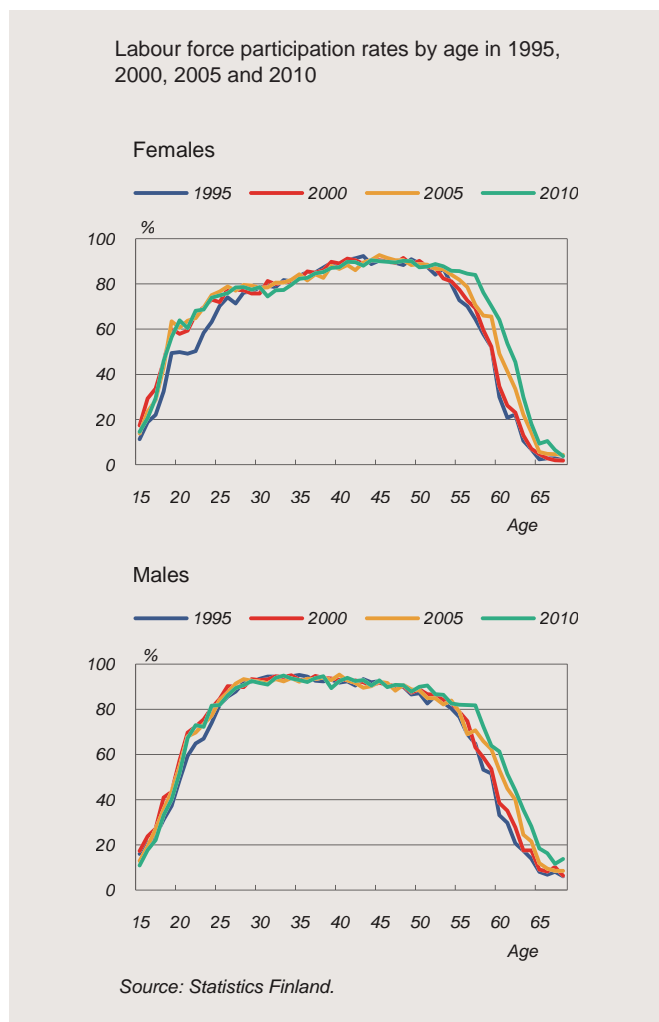
The LFPR is also dependent on the year of birth. The rates for different age groups have shown a high degree of variation over time. This is referred to

as the cohort effect, ie the effect of the year of birth on the LFPR, after controlling for the age effect. There are a number of institutional factors underlying the cohort effect, such as the rising level of education, better labour-market possibilities for women and changes in pension provisions. The cyclical situation prevailing at the time when a cohort enters the labour market may also play a part.

Participation decisions are also related to the prevailing cyclical situation. In a weak business cycle, the risk of unemployment is higher and salary prospects are worse. Moreover, at a certain point in the life cycle there may be competitive alternatives to working. In particular, people suffering from prolonged unemployment may increasingly respond by opting out of the labour market. In addition, elderly employees may find it difficult to re-enter the labour market once they have become unemployed. However, in an especially favourable employment situation, the labour market tends to attract entirely new groups of potential employees, such as housewives and students.

In Finland, participation behaviour has shown wide variation with age, gender and cyclical conditions. A cohort-based approach reveals the predominant trends in the annual variation in the LFPR. The LFPR for elderly employees has varied considerably, irrespective of gender. Since the mid-1990s, the rate for 60-year-olds has increased from 30% to close to 60% (Chart 1). In other respects, developments have been more gender-specific.

Chart 1.



The female participation rate shows a high degree of variation at fertility age, between the ages of 20 and 35. Even in their later years, the participation behaviour of women has varied relatively much, still reflecting the effects of the 1990s recession in a number of ways. For example, the LFPR for women over 40 had not yet in 2010 fallen back to pre-recession levels. During the years of the recession, young women, especially, were forced out of the workforce.² The male participation rate has been much quicker to recover. In fact, their LFPR shows very little variation after the age of 27.

Changes in LFPRs can be more accurately projected if actual experience is more finely disaggregated into age and cohort effects. The labour market status of the population depends on a variety of factors. For women, a low participation rate may reflect family policy or changes in local government day care provision, whereas for the young, lower participation rates may be related to higher levels of education and extended periods of study. Higher participation rates among elderly employees may in turn be explained by changes in pension provisions.

The following analysis of male and female 1-year cohorts aims to differentiate between the characteristic determinants of each cohort, gender, reference year and prevailing cyclical situation. The underlying mechanisms will, however, not be further elaborated.

² See Grönqvist, C and Kinnunen, H (2009) Taantuman vaikutus työvoiman tarjontaan: 1990-luvun kokemuksia ('Effects of the recession on labour supply: experiences from the 1990s'). BoF Online 1/2009. Bank of Finland (in Finnish only).

LFPR models were separately estimated for males and females for the period from 1994 to 2010. The time period was defined to exclude the years of the early 1990s recession, so that the coefficient estimates would more accurately reflect the employment flexibility of normal times, compared with previous analyses. The LFPRs for 1-year cohorts of employees between 21 and 64 was the dependent variable. The LFPRs and cohort-based unemployment rates used to measure business-cycle effects were derived from data from the Labour Force Survey of Statistics Finland.

The equation to be estimated is therefore:

$$LR_{i,t} = c + \alpha_i + \beta_{t-i} + \lambda_i X_t + \varphi_{t=2005-10} + \varphi_{t=1994-97}$$

Here $LR_{i,t}$ denotes the LFPR for cohort i in year t . The variable c is a constant (independent of both age, year of birth and business cycle), α_i is an age-dependent factor, and β_{t-i} represents the cohort effect of birth in $t-i$. The effect of the business cycle is controlled for by the unemployment rate X_t , whose coefficient estimate, λ_i , is age-dependent. The yearly dummy variables $\varphi_{t=2005-10}$ and $\varphi_{t=1994-97}$ were employed to account for abnormal years during the period of estimation. During the first years of the estimation period, the labour market was recovering from the severe recession of the 1990s, with the mid-1990s being marked by abnormal developments in the labour market. In addition, the estimation period coincided with many reforms of the pension scheme, which is

likely to have influenced the participation rates of older cohorts. Of these pension reforms, the model captures the 2005 reform, which introduced an accelerated rate of accrual to encourage employees to remain in the labour force after age 64 up to 68.

The annual fluctuations in LFPRs were broken down into age, cohort and cyclical components by estimating the above equation using the fixed effect model. The coefficient estimates for these components represent the effects of individual factors on the average variation in participation rates.

Chart 2.



Estimation results

There is a clear association between labour force participation rates and life cycle phase. This is reflected in the age-related components when one examines how many percentage points of LFPR for the 1-year cohorts is explained by age alone, if the other influences are accounted for (Chart 2). Men are in their prime working age between 25 and 50, after which their LFPRs start to fall sharply. Female participation rates peak only after the age of 35, as child care and studies keep younger female cohorts outside of the labour market until then. For women approaching 60, participation rates start to decline markedly. However, for men labour market exit seems to start already after the age of 50, some five years earlier than for women. The labour market exit of older cohorts is facilitated by the pension scheme. Female participation rates are significantly reduced at the ages of 30–40, as compared with men of similar age.

An analysis of cohort effects points to rising participation rates for males and females alike up to the cohorts born in the early 1960s (Chart 3). Even cohorts born thereafter have shown higher participation than younger cohorts. According to the model, the increase in the LFPRs for women would continue until the 1990s. However, owing to the scarcity of observations during the last years of the estimation period, the model seems to overestimate the female cohort effects of the last cohorts. Male participation rates seem to show a slightly downward trend among younger cohorts, but this

coefficient estimate is not reliable, either. The coefficient estimate for younger cohorts is unreliable because it is based only on incomplete working careers. A striking feature of cohort-based trends is the shifting of female LFPRs closer to those of males.

In the model, the cyclical conditions were represented by annual averages of age-related unemployment rates. However, the model was not so useful in identifying the business-cycle effect on age-related employment rates because unemployment rates did not fluctuate greatly during the estimation period between 1994 and 2010. For most cohorts, we did not get statistically significant estimates of the unemployment coefficient, and, contrary to expectations, the estimate was in most cases positive. However, inclusion in the estimation of the years of the early 1990s recession, which is reflected in both unemployment and labour force participation, fundamentally changes the estimated cyclical effects. Here, the results confirmed with expectations.

Long-term supply of labour

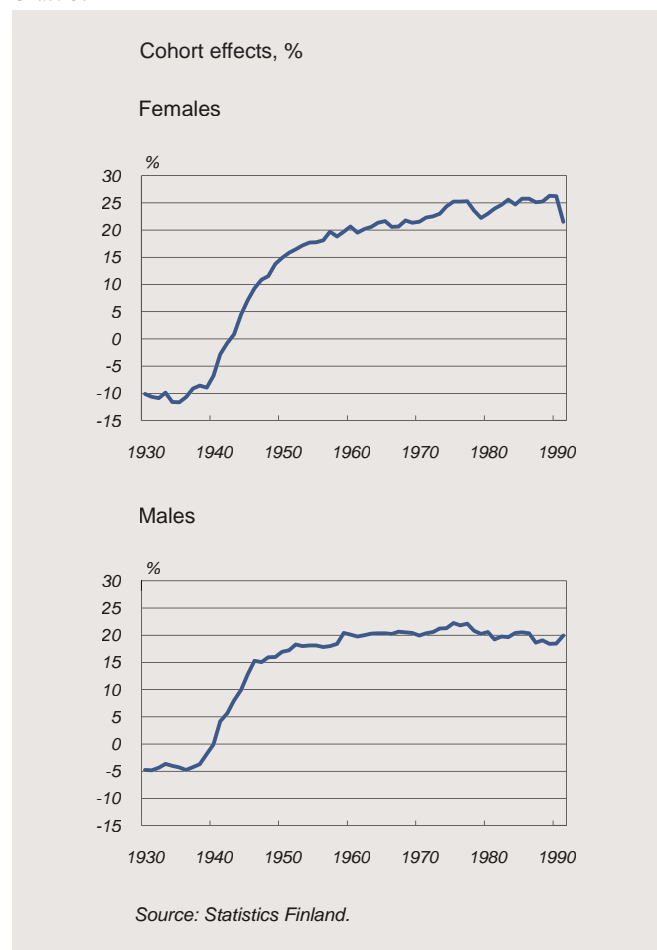
The labour force participation rate model can be used to forecast labour supply. For this purpose, assumptions are made regarding long-term changes in cohort effects, age effects and business-cycle effects. Forecasts for cohorts are weighted by average LFPRs, obtained from population projections.

It was assumed that the age effects will remain at the same level in the long run as in the estimation period 1994–2010. This was, in effect, a stance taken in respect of several structural

factors. The assumptions include that the periods of study of the young do not change, that fertility rates remain unchanged and that working lives are not extended. At the same time, it was implicitly assumed that no changes will be made to social security benefits or taxation that will have a bearing on labour supply incentives.

The cohort effects were assumed to remain on the same level as for the cohort born in 1970. The cohort effect should be higher for younger age groups, but the coefficient estimate is

Chart 3.



not reliable. Insofar as LFPRs for older cohorts presently in the labour market diverge from average developments, they will influence the labour supply analysed here up until the cohorts born in 1970 attain the age of 64.

In the estimations, the business-cycle effects on the supply of labour did not get a statistically significant estimate and continued at odds with

expectations. Hence, a gradual fall in the unemployment rate towards the expected long-term equilibrium value has no bearing on the results.

Under these assumptions, the model produces a projection path where the LFPR increases in the long term by around 1.5 percentage points (Chart 4). The increase in the participation rate is 0.4 percentage point higher for women than for men. The average LFPR should peak in the 2030s, until which time age-related factors offset the decline in labour supply due to demographic factors. Until then, the average participation rate of those born in the 1950s and 1950s is replaced by the higher-than-average participation rate of younger cohorts. After this, the cohort effects will disappear and the participation rate will reflect only demographic shifts.

The supply of labour generated by the LFPR model is much smaller than that assumed in the Finnish Stability Programme³ According to the Ministry of Finance projections, the labour force participation rate of persons aged 20–64 will be 1½ percentage points higher in 2015 and 3 percentage points higher in 2030 than the figures obtained in this study.

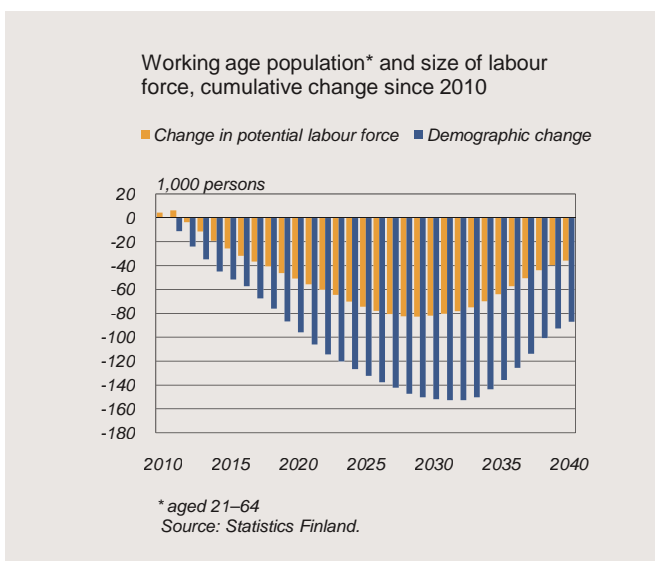
Labour supply and potential output

The cohort-based LFPR projections show that the reduction in the labour force would amount to half of the decline in the working age population.

Chart 4.



Chart 5.



³ The Finnish Stability Programme update, 2011 Economic and economic policy surveys 16s/2011. Ministry of Finance publications.

According to the population forecast, the working age population is projected to fall by around 150,000 persons by the mid-2030s (Chart 5).

Changes in labour supply can also be analysed in regard to changes in potential output. Chart 6 shows changes in labour supply, including the constituents of change, ie the effects of LFPR and demographic shifts. In the labour supply projections, cohort-based factors account for part of the increase in the labour force over the next five years. However, the changing demographic structure is the major influence at work. The rise in the old-age dependency ratio will hold back the growth in labour input until the start of the 2030s, after which the working age population will begin to expand gradually. The effect of a declining labour supply on potential output will be most pronounced over the years 2013–2016. The situation will change fundamentally, compared with recent developments. In the early 2000s, the population structure still supported the growth of potential output.

The pension reform introduced in 2005 did not affect the labour force participation rates generated by the LFPR models. Hence, the developments in LFPRs witnessed over the years 2005–2010 did not show any statistical divergence from developments over the whole reference period. The higher participation rates of elderly employees were, thus, attributable to age and cohort effects alone. It is, nevertheless, possible that the pension reform will later result in longer working lives for elderly employees. As well as an

accelerated rate of accrual for those retiring between 64 and 68, the pension reform also provides for a life expectancy coefficient, which is not yet reflected in the retirement benefits of the cohorts of the sample period.

The objective of the economic policy strategy is to increase retirement expectancy by 3 years by 2025. The significance of this strategy for economic growth was demonstrated by the assumption, based on previous calculations, that age-related participation rates always rise to the level of three year younger cohorts.⁴ The change was assumed to apply to people over the age of 59.⁵

Extension of working lives would offset the decline in labour input due to

⁴ See Kostiainen (2008).

⁵ As the highest age covered by the model is 64, it was assumed for the baseline calculation that the participation rate would be the same as in 2010 from the age of 65 onwards.

Chart 6.

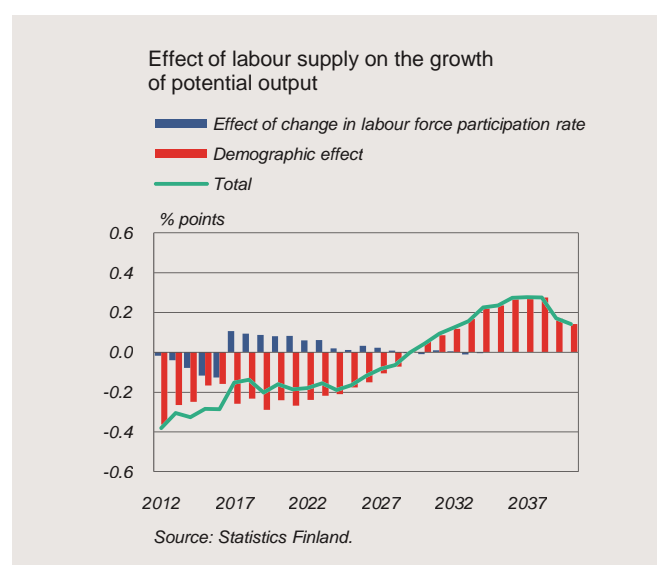
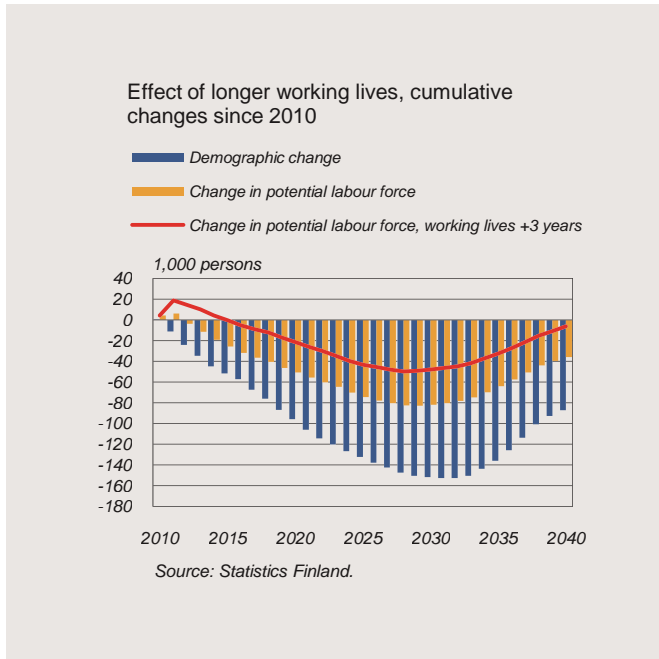


Chart 7.



the contraction of the working age population. If working lives were to be extended immediately, as assumed in the calculation, the supply of labour would not start to decline until 2015 (Chart 7). If working lives are extended, the potential labour supply would, at most, decline by around 50,000 persons. However, if working lives remain unchanged, the labour force will contract by as many as 83,000 persons. Hence, not even a substantial extension of working lives will make up for the loss of output growth potential due to population ageing.

Output growth hinges on productivity

In Finland, both cohort-based factors and changes in the population structure have a strong impact on changes in labour supply. Cohorts born in the

1940s and early 1950s differ in many respects from more recent cohorts, with average labour force participation rates clearly below those of younger cohorts. Differences in cohort sizes and variations in participation rates by age introduce dynamics into the supply of labour, which will operate until the end of the next decade.

Our findings demonstrate that the long-term supply of labour does not decline as much as indicated by demographic factors alone. The fall in the supply of labour in response to population ageing is, to some extent, offset by a cohort-based increase in participation rates. If the projection of labour supply proves accurate, the decline in labour input will reduce the growth potential of the economy until the end of the 2020s. After this, annual changes in labour supply would be positive, albeit very small.

When examining the changes in the labour force participation and employment rates of people of various age, cohort-based factors are easily forgotten. This may lead to false conclusions on the effects of policy measures. The higher labour force participation and employment rates for elderly employees have been interpreted as reflecting the financial incentives built into the pension scheme. The present analysis shows that the increase in their LFPRs is rather a product of the replacement of cohorts born in the late 1940s by cohorts with higher participation rates over the whole working life. This conclusion is also supported by survey findings, as health and level of education, as well as workplace charac-

teristics, seem to be the major determinants of the participation rate.⁶

The structural shifts in the labour market will absorb some of the decline in the supply of labour resulting from demographic change. Despite these structural changes, the long-term increase in the supply of labour could easily remain close to zero, unless working lives are extended. The situation looks gloomy, especially with regard to the financial base for public services. If economic growth has to rely solely on productivity growth, this is readily reflected fully in public sector pay developments. In this case, not even robust economic growth will eliminate the sustainability problem related to public finances. Longer working lives are essential for ensuring a larger supply of labour and hence long-term economic growth. However, not even this will fully address the problem of receding growth of potential output in the wake of population ageing.

Key words: population ageing, labour supply, cohorts, potential output

⁶ See eg Uusitalo, H (ed.) (2011) Työurat pidemmäksi – selvityksiä työuraryhmälle. ('Longer working careers - reports to the working career task force'). Reports of the Finnish Centre for Pensions 2011:1.

An estimated general equilibrium model for forecasting



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The purpose of economic forecasts is to support economic agents' decision-making by providing a coherent picture of the present state of the economy and the outlook for the future. Since 2004, a key tool for preparing the Bank of Finland's forecast has been the Aino model.¹ It is employed as a tool for integrating forecast information. The new version of the Aino model was introduced in the preparation of the March 2010 forecast. This article describes the features of the model and its use in the preparation of forecasts.

Describing business cycle fluctuations with general equilibrium models

In developed economies, business cycle fluctuations, ie fluctuations around trend economic growth, occur at fairly regular intervals. These fluctuations are the result of shocks, often described as impulse-like, that are reflected in the economy either rapidly or after a lag. An individual shock typically has a short-term effect on the economy. If the economy is not hit by new disturbances, the impact of the shock eases over time and the economy returns to the original equilibrium. General equilibrium models such as the Aino model have been developed mainly for analysing cyclical fluctuations.

The various schools of economic thought emphasise different factors as causes of shocks and cyclical fluctuations. According to the real business cycle (RBC) theory, business cycles are

driven primarily by fluctuations in the pace of technological development. Economic history is full of examples of how major innovations, eg the micro-computer, have boosted productivity and thus given a positive and long-term impetus to economic growth.

In addition to innovations affecting the production capacity of the economy, fluctuations on the demand side may also cause cyclical movements. For example, exchange rate movements or changes in consumer preferences affect the structure of demand in the economy and trigger adjustment processes that may induce business fluctuations. Some of the shocks, eg unexpected changes in interest rates or tax rates, are measurable and observable, whereas the majority of shocks, eg preference shocks, are unobservable and not directly measurable in occurrence or impact. Modern general equilibrium models can also be used to examine unobservable shocks and their transmission between sectors of the economy. The development of statistical methods and software has enabled the quantitative analysis and numerical observation of these shocks. An example of this type of exercise is presented in the last paragraph of this section.

In general equilibrium models, shocks typically have both direct and indirect effects on real variables or relative prices. For example, an unexpected rise in domestic wages will result in an increase in production costs. The direct effect of pay increases is a rise in costs and subsequent upward pressure on prices. If at the same time, wages remain unchanged in the rest of the world, Finnish companies' competi-

¹ The Aino model is described in the article 'Aino: the Bank of Finland's new dynamic general equilibrium model of the Finnish economy' by Juha Kilponen, Antti Ripatti and Jouko Vilmunen. Bank of Finland Bulletin 3/2004.

tiveness will decline. A large relative increase in domestic wages may induce Finnish companies to relocate production abroad. The total indirect effect of a wage increase may be more significant for the economy than the direct impact on costs.

The original Aino model still useful in analysing fiscal policy

The Aino model that was introduced in 2004 was developed for analysing fiscal policy issues related to demographic change, the increasing proportion of pensioners and the resulting fiscal policy challenges. The model has also been used for integrating forecast information and in preparing alternative projections.

In the model, the lifespan of an economic agent consists of time spent in the labour force during which savings are accrued for pension years, and time in retirement during which consumption is financed with income transfers in the form of pensions, savings and, to an extent, by working. The public sector is modelled so that key taxes and income transfers are allocated between the working-age population and pensioners. Employment pension funds and the related pension scheme are modelled in line with that in Finland, ie as a partly-funded scheme.

Aino has been used to analyse ways of funding pension and public expenditure caused by population ageing. The model takes into account many of the indirect effects of the various funding methods on economic

developments, eg the effect of an increase in pension contributions on labour supply. The indirect effects are clearly stronger than expected and thus provide a clearer picture of the challenges to public finances due to population ageing.²

A key indirect effect is due to the fact that pension contributions are comparable to taxes. Pension contributions have the same behavioural effects as income taxes, and pensions work like income transfers. Increases in pension contributions will reduce labour supply and thus slow the accrual of pension contributions. Calculations made using the Aino model show that the labour supply effect causes an extra burden of several percentage points on employment pension contributions if the distribution principles of the pension scheme are unchanged.

Another interesting outcome of economic policy analysis is that the pension contribution burden of the retirement of baby-boomers should be smoothed over time using accrued employee pension contributions as a buffer. As a result of this smoothing, the distortions are reduced.³

Apart from fiscal policy analysis, Aino has been used in other studies and surveys on the structure of the economy. The importance of competition in the labour and product

² Kilponen, J. – Kinnunen, H. – Ripatti, A. (2006) Population ageing in a small open economy – some policy experiments with a tractable general equilibrium model. Bank of Finland Discussion Papers 28/2006.

³ Kinnunen, H. (2008) Government funds and demographic transitions – alleviating ageing costs in a small open economy. Bank of Finland Discussion Papers 21/2008.

markets was one of the first areas of research where the Aino model was used.⁴ The model enables the examination of developments in a company's pricing margins and the effects of margin changes on the economy. Competition in the labour market can be linked to wage formation and developments in the world economy in an examination of the importance of Finland's price competitiveness for exports and economic growth.⁵

Structure of the Aino model

The structure of the new estimated Aino model corresponds fairly closely to the original Aino model as regards the structure of output. The structure of the model has been embellished, with a view to inflation forecasting.

The description of households' lifespan has been simplified to make the use of the model in forecasting more straightforward. The retirement period has been excluded from households' lifespan. Instead, households' consumption behaviour has been enriched with habit formation. Habit formation means that consumers try to maintain habitual consumption behaviour. For example, an unexpected decline in income does not immediately cause households to adjust their level of

consumption to the changing income outlook. This gives aggregate consumption a sluggishness that is more consistent with the observations than does a modelling technique that allows for sudden changes in the level of consumption.

In the model, wages are assumed to be fairly rigid because, although they are adjusted regularly and mechanically for inflation, the average length of wage agreements is two years.⁶ This together with the monopolistic elements in labour supply leads to inefficient restrictions on the use of labour that vary over time.

An important change to the original Aino model is the more precise modelling of Finland as a small part of the euro area. Moreover, a distinction is made between the euro area financial market or in the financial markets of the rest of the world. Economic agents can invest in the euro area financial market and the financial markets of the rest of the world. A key difference is of course that investments in the euro area are not affected by exchange rate movements. Investors want to be compensated also for the riskiness of investments. In the model, this compensation is the risk premium. The risk premium for an investment in Finland is assumed to depend on Finland's net external debt⁷ and the risk premium does not depend on the currency area from which the investment is made. In

⁴ Kilponen, J.– Ripatti, A. (2006) Labour and product market competition in a small open economy – Simulation results using a DGE model of the Finnish economy. Bank of Finland Discussion Papers 5/2006.

⁵ Railavo, J. – Rantala, A. – Ripatti, A. (2008) Suomen viennin odottamattomat vaihtelut, palkat ja kokonaistaloudellinen kehitys: Laskelmia Aino-mallilla. BoF Online 6/2008. (Unexpected fluctuations in Finnish exports, wages and macroeconomic developments: calculations with the Aino model. BoF Online 6/2008, in Finnish only).

⁶ The average length of wage agreements is a parameter that is estimated from statistical data, based on the structure of the model.

⁷ This is consistent with the observation on the recent euro area crisis that the current account deficit correlates with the risk premium of a country's public debt.

addition, Finland is assumed to be such a small part of the euro area that economic developments in Finland do not affect economic developments in the euro area and thus do not affect euro area monetary policy.

In the Aino model, the corporate and production sector is constructed so that the model is more consistent with statistical data – particularly inflation data. The model is still based on a single representative product produced in Finland. The product is priced assuming monopolistic competition and stickiness as in the labour market. This domestic intermediate good is used, together with imported goods, to manufacture consumer, investment and export goods. Export companies are large and have gained pricing power in the international markets through specialisation.

In the model, the production of consumer goods comprises three product groups: domestic intermediate goods, imported consumer goods and imported oil-based energy products. Domestic intermediate goods and imported goods have strong substitutability. In addition, the price formation of imported goods is rigid, as a result of which changes in world market prices are transmitted slowly into domestic inflation. As a result of strong substitutability, changes in domestic and foreign relative prices are reflected in sizeable shifts in demand between domestic and foreign consumer goods. In the model, this channel is restricted by costs related to changes in the import ratio of consumer goods. The situation is very different for

oil-based products. Firstly, oil-based products, eg motor fuels, are difficult to replace in the short-term. Secondly, changes in the world market price for oil are very quickly transmitted to domestic prices of oil products. The relative change is however slightly dampened by the fact that the fuel tax is measured in cents. Due to this structure, the model should be able to forecast more precisely how changes in oil prices are transmitted to the Finnish economy via consumer price inflation.

The public sector is smaller than in the previous version of the Aino model because of the simple fact that the taxes and income transfers from households are no longer divided between working-age population and retirees. However, the key taxes, eg income tax, corporate tax and indirect taxes, are part of the general government budget constraint. Income transfers are tax-exempt and hence free lump sums, and in the model they do not affect household behaviour. Public sector consumption is also divided into two parts. The first part consists of public sector purchases, ie the part of public expenditure where the producer is the private sector. The second part is public sector output. Public sector output is created by public sector employment. Fluctuations in public sector employment have a significant impact on the labour market and thus on the whole economy.

The model as a forecasting tool

In addition to policy analysis, the Aino model is used as a forecasting tool and for calculating alternative projections.

The Bank of Finland was the first central bank, after the Bank of England, to use a dynamic stochastic general equilibrium (DSGE) model in the preparation of forecasts.

In preparing forecasts, the outcomes are controlled based partly on discretion as to factors external to the model. The actual published outcome of the forecast is thus never a mechanical model forecast; instead it is based on both the model and these exogenous factors. The model helps to assess the macroeconomic importance of these exogenous factors as they are systematically taken into account.

Due to the nonlinearity of the original Aino model, the initial values of the unobservable variables had a significant impact on the outcome of the forecast. Forecasting techniques have been greatly improved and so enable richer and more efficient forecasting and use of the model than in 2004 when the Aino model was introduced.

The vast quantitative uncertainty inherent in the forecast is described via alternative scenarios. Without the macroeconomic model, it would be impossible to prepare alternative scenarios as consistent calculations. On the one hand, the model leads one to systematically consider the sources of economic uncertainty, and also provides a fairly extensive picture of the macroeconomic effects of the uncertainty. The model also helps us to understand the various impact channels of the variables and their interrelated strengths for assessing macroeconomic effects.

The new Aino model facilitates preparation of forecasts and analysis of forecast errors

The strengths of the new Aino model are in forecasting. Firstly, the model has a linear structure.⁸ Secondly, linearity enables the use of methods that facilitate the preparation of forecasts. For example, the calculation of unobservable variables becomes a simple mechanical procedure. Thirdly, linearity means that the parameters of the model can be estimated using Bayesian estimation methods.⁹

In dynamic macroeconomic models, economic agents react optimally to economic disturbances. The model is a description of such optimisation by economic agents. When the structure of the model is fixed and the parameter values are known, disturbances in the linear model can be calculated from historical data, using the Kalman filter. Disturbance processes can be linked to economic phenomena, eg technological advancement, price margins, or consumers' preference for foreign products. Disturbance processes can be forecast because they work slowly.

Discretion is introduced into the forecast with the help of these disturbance processes with close observance of the behavioural norms of economic agents included in the model. For example, if the forecaster believes that economic growth will pick up as a

⁸ The model is log-linearised around the deterministic stable growth path. The linearity of the model is hence the result of approximation.

⁹ The estimation method was developed by Smets and Wouters in the article 'An estimated stochastic dynamic general equilibrium model of the euro area'. *Journal of the European Economic Association* 1/2003.

result of faster-than-normal productivity growth, the projection for technological advancement can be adjusted accordingly. As the pace of technology growth has an impact on most economic variables, we need a model for calculating the macroeconomic response.

In the preparation of forecasts, indicator data usually give a very clear picture of economic developments in the current or next quarter. The model however rarely captures the same situation; instead, it must be guided to produce it. A model can be given a resultant situation; then based on its internal structure, the model selects the outcome of the disturbance processes that will produce that situation. This selection can of course still be influenced. The linearity of the model enables this and thus enhances the effectiveness of the model for preparing forecasts.

Shock processes in the Aino model

The number and types of shocks chosen for a general equilibrium model depend on the purpose of the model. Of the shocks applied to the Aino model, only five are linked to measurable observed variables – eg the oil price shock and the interest rate shock – and they all are foreign variables. The other shocks, eg to capital-saving technology and to the price margin on exports, are unobservable.

As the Aino model includes so many types of shocks, it is reasonable to separate them into groups. The shocks were divided into five categories. The category ‘technology shocks’ includes shocks affecting technological advancement. These either improve or

weaken productivity by affecting the efficiency in the use of production factors such as labour, capital or oil. Price shocks include price and wage margins: the price margins on domestic and imported capital and consumer goods, price margins on exported goods, and wage margins. The third category includes exogenous, foreign shocks that spread to Finland as a result of international economic developments, eg oil price shock, commodity price shock and price shock in export markets. Policy shocks include interest and exchange rate changes, and fiscal policy shocks to public consumption and taxation. Preference shocks include consumer preference shocks and preference shocks affecting the utilization of production factors by companies. The latter can best be described with the following example. In Aino, it is assumed that companies producing eg export goods use in their production process intermediate goods manufactured in Finland and imported raw materials. A positive preference shock to raw materials increases export companies’ use of raw materials relative to domestic intermediate goods. This will lead to an increase in raw material imports into Finland and reduce the demand for domestic intermediate goods. Preference shocks also affect the relative prices of final products.

Example: an analysis of the recession, using the shock processes in the Aino model

The features of the new, estimated Aino model include the possibility of decomposing the observed time series

into shock processes, as described by the model. The calculation can also be solved the other way round, in which case the model gives the impacts of the various shocks on each observed variable. The shocks are weighted based on the impact channels described by the model and as a result the weighted shocks add up to the original time series. Quarterly changes in the three observed variables – output, volume of consumption, and average wages – and the shocks caused by these changes between 2005 and 2010 are shown below in Charts 1 to 3. The solid curves describe the quarterly changes in the variables.¹⁰ The bars show the groups of shocks that affect the observed variable. If the shock caused an increase the variable, the bar is on the positive side of the axis; if a decrease, the bar is on the negative side of the axis. The net sum of these negative and positive areas gives the final growth rate of the variable. The size of the bar shows the magnitude of the shock category and its total impulse effect.

The effects of the shocks on various variables differ from each other. Both of the real variables examined are mainly affected by the preference shock, technology shock and the foreign shock. The price shock has a strong effect on average wages. Policy shocks have smaller effects. The decomposition of shocks illustrates well a feature of general equilibrium theory: for example, the effect of a technology shock on production factors is not restricted to production but spreads to

¹⁰ In the charts, the solid curves show the variables' algorithmic changes.

consumption and other areas of the economy.

The financial market turbulence that started in the US mortgage market in 2008 quickly expanded into a global economic crisis. The crisis spread to Finland via international trade. Exports collapsed by 20% in 2009, and output aimed at the domestic and foreign markets shrank by 10%. Gross domestic product declined by 8% in 2009.

Total output collapsed with exports (Chart 1). Output declined in the fourth quarter of 2008, as a result of a negative technology shock and a foreign shock. The effects of these shocks continued in the first quarter of 2009, but weak demand, appearing as a preference shock, slowed output growth in 2009. Without public demand – stimulus measures – domestic output would have declined even more.

Private consumption started to decline already in the second quarter of 2008 as consumers were frightened by gloomy economic news (Chart 2), and the contribution of the preference shock diminished. Private demand started to expand already in mid-2009. The monetary and fiscal policy stance changed to become supportive of private consumption at the end of 2008, which was appeared as a positive policy shock up until 2010. The sharp fall in oil prices slowed the decline in private consumption in 2009, which appeared as a positive foreign shock (Chart 2).

Chart 3 shows how slowly average wages per hour reacted to the collapse of output. In 2008, average wages rose by nearly 5% and the growth in wages

did not slow down until the second quarter of 2009. In early 2009, the wage margin shock – in the price shock category – still gave a strong boost to wage growth, which is shown in Chart 3 as a positive price shock. In contrast, the technology shock dampened wage growth. The policy shock – in the period under review it is affected mainly by the easing of income taxation – is systematically below the horizontal axis, thus indicating a dampening of wage growth.

Shock categories can affect the real variables in a number of ways (Charts 1–3). For example in 2008–2010, the preference shock category has opposite effects on private consumption and output, whereas a negative technology shock reduces output, consumption and wages.

The story told by the shock processes reaches the same conclusion as the Bank of Finland’s macroeconomic forecasts, although the shock processes are not discussed in the forecast publication at the same level of detail. In the analysis of the outcome of the forecast and the writing of the forecast, in particular, the economists’ view is emphasized, rather than a model-driven forecast. Contribution decompositions however provide the user and developer of the model with an abundant amount of additional information on the workings of the model. A good example of a similar analysis is that of Christiano, Motto and Rostagno, who use a shock contribution distribution to compare the monetary policy of the ECB and the US Federal Reserve and the effects of

Chart 1.

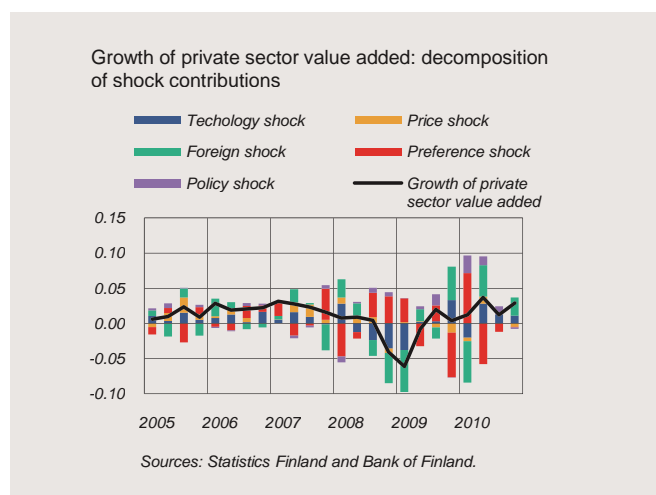


Chart 2.

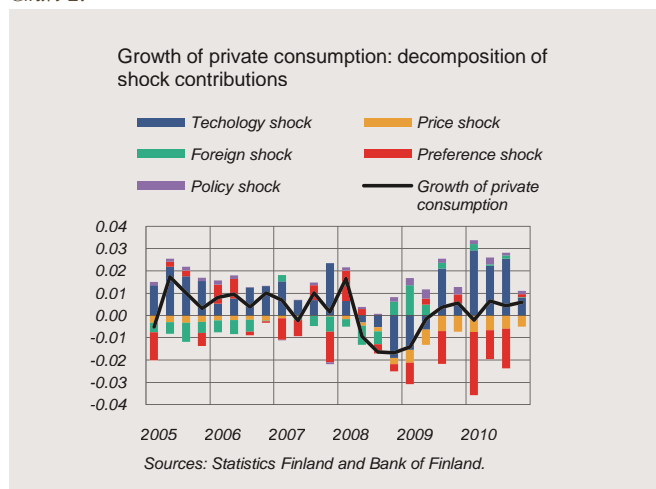
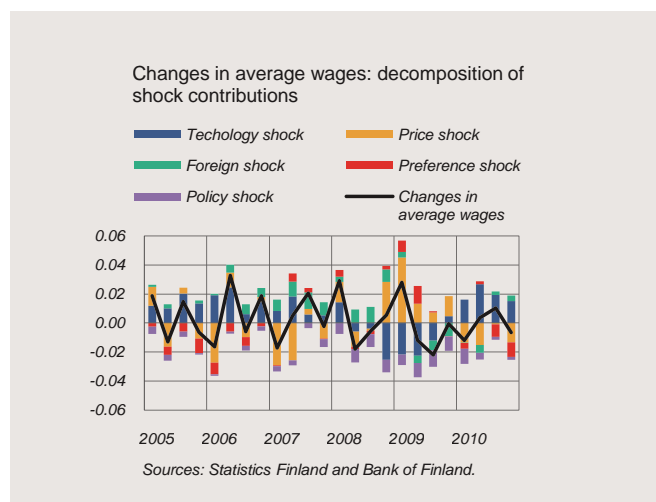


Chart 3.



various shocks on euro area and US economic growth in 1999–2005.¹¹

The old and new models serve different needs

The new estimated version of the Aino model was introduced in the preparation of the March 2010 forecast, and the Bank of Finland will continue to use the model in forecasting and analysis. A linear model enables the production of shock exercises like the ones presented in this article also for the forecast period, and the exercises will facilitate more comprehensive rationale for the forecast. The new

¹¹ Christiano – Motto – Rostagno (2008) Shocks, structures or monetary policies? The Euro Area and US after 2001, *Journal of Economic Dynamics and Control*. Elsevier, vol. 32(8).

model and the unobservable variables that are more easily identifiable enable a more systematic analysis of staff projections and a more embellished economic interpretation.

The old version of the Aino model has already been replaced by the new one in the preparation of forecasts, but the old model is still used extensively in policy exercises. The detailed description of fiscal policy in the model will be further developed, and the model will be used mainly in fiscal policy analysis.

Key words: prices, wages, costs, economic growth, monetary theory, inflation, business cycle theory, econometrics

Bank of Finland's forecast errors in 2004–2010

The Bank of Finland's Monetary Policy and Research department prepares a macroeconomic forecast twice a year for the current calendar year and the following two years. The forecast describes the most probable developments in the economy at the forecast date. In addition to the Finnish economy, the forecast also examines international developments. However, interest and exchange rates are assumed to develop in line with financial market expectations, and no forecast is prepared for them.

This article examines the accuracy of forecasts with respect to GDP, inflation, unemployment and the components of GDP. An analysis of forecast errors is topical, as the Bank of Finland forecast model has recently been updated. In 2004–2009 the Bank prepared its forecasts using a general equilibrium model of the Finnish economy named Aino.¹ In spring 2010 the Bank introduced a new estimated version of the Aino model.²

The Bank of Finland forecasts are point estimates, ie the most probable single values of each economic variable, eg private consumption and investment. The forecasts are naturally conditioned on the underlying assumptions. The Bank's forecasts are also based on as accurate a picture of the present situation as possible. In addition to statistical data, the overall picture also relies on preliminary data and assumptions on a

number of variables. A high degree of uncertainty is associated eg with price forecasts, which are based on market assumptions for the forecast period. Assumptions for oil price movements, interest rates and exchange rates change daily. The forecast of exports, which is important for forecasting Finnish economic developments, is based on the best available projection for the global economy and developments in the key export countries.

Forecast errors are affected by revisions and errors in the available statistics and related preliminary data. The Bank of Finland forecasts draw on the latest releases and revisions to National Accounts published by Statistics Finland. In this forecast-error analysis, the annual forecasts for different variables are compared with the first preliminary data from the National Accounts published in the beginning of March of the following year. However, the National Accounts are revised on a number of occasions after the initial data have been published, and the time series are revised even many years after the first data release.

The Bank of Finland forecasts are prepared using the Aino stochastic general equilibrium model developed by the Bank. Economic models are always simplified descriptions of interdependencies between economic phenomena and cannot therefore include all the relevant factors. However, using of a general equilibrium model for forecasting guarantees that the projected economic developments are internally consistent. The forecasts also



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¹ The Aino model is presented in the article 'Aino: the Bank of Finland's new dynamic general equilibrium model of the Finnish economy' (Kilponen, J. – Ripatti, A. – Vilmunen, J., Bank of Finland Bulletin 3/2004).

² The new Aino model is discussed in this issue in the article 'A general equilibrium model for forecasting' by Elisa Newby, Jukka Railavo and Antti Ripatti.

draw on information not derived from the model, eg a large variety of economic sentiment indicators and information on economic structures. The forecasts are also always subjected to a good dose of deliberation.

Even though the economists' perspective plays a central role in the forecasts, the Bank of Finland forecasts are not actually scenarios. For instance, the Bank's economists do not try to anticipate the behaviour of economic policy decision-makers, but take account only of political decisions already made by the forecast date. Ongoing structural changes, such as the baby-boomers' retirement, are taken into account.

How are forecast errors measured?

This article uses a statistical approach to estimate the accuracy of forecasts and focuses on the analysis of forecast errors. The two key concepts in the measurement of forecast errors are unbiasedness and accuracy. An estimate is unbiased if it does not systematically over- or underestimate the true value of an economic variable – ie it is correct on average. Accuracy means that the predicted value is as close as possible to the actual outcome. A good prediction is therefore both accurate and unbiased.

A forecast error is the difference between the actual and predicted value of an economic variable. The closer the predicted value is to the actual outcome, the smaller the forecast error. Consequently, the forecast error for an exact prediction is zero. There is no unambiguously best measure for assessing forecast accuracy. In this analysis, forecast errors are measured

by three indicators: the mean of forecast errors, ie the mean error (ME), the mean of absolute forecast errors, ie the mean absolute error (MAE) and the root mean square error (RMSE).

A positive mean error indicates underestimation: the actual value of the economic variable has in most cases been higher than the predicted value. A negative ME denotes overestimation. The ME falls where the errors are concentrated, so that forecast accuracy may seem good on average even if up- and downside errors are substantial.

The mean absolute error (MAE) indicates whether forecasts have varied considerably around the actual outcome, without taking account of under- versus overestimation. The third statistical indicator is the root mean square error (RMSE), which is the mean of the squared forecast errors. The RMSE is sensitive to large individual forecast errors. The closer to zero the three error indicators are, the more accurate the forecast. This analysis cannot exhaustively assess systematic over- or underestimation in the Bank's forecasts, as this would require observations from more than the six years included here.

Of course, there are other metrics for the usefulness of macroeconomic forecasts in supporting economic policy besides statistical indicators and numeric data. A good forecast is also solidly based and internally consistent.

Growth and inflation forecasts for 2004–2010

The Bank of Finland publishes two forecasts every year. The forecasts

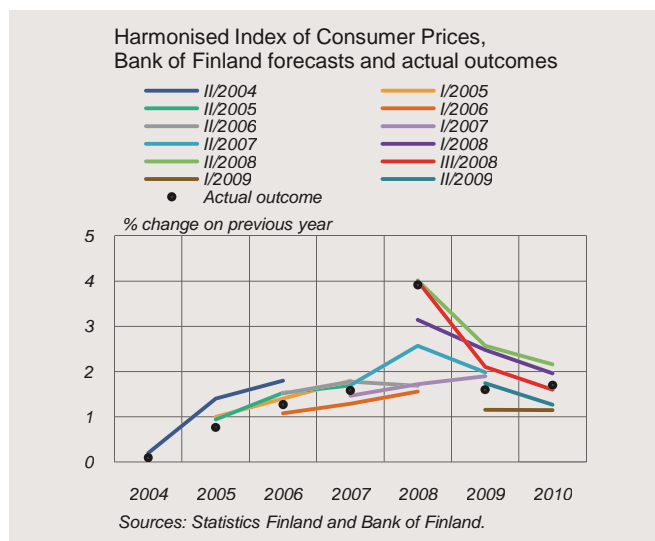
included in this analysis were prepared between September 2004 and September 2009. The variables discussed are the first growth forecast for GDP and its semiannual revisions from one forecast round to another (Chart 1) and, correspondingly, the development of inflation forecasts (Chart 2). Forecasts published each year are shown using curves of different colour, and the small circles indicate the growth rates in Statistics Finland's first preliminary data release for National Accounts. The smaller the difference between the circle and the curve, the more accurate the forecast. If GDP growth or inflation was underestimated (overestimated), the curve is below (above) the circle. The statistical forecast errors are presented in Tables 1 and 2, covering the periods 2004–2010 and 2004–2008. As the Tables show, an exceptionally sharp decline in GDP in 2009 led to considerably enlarged forecast errors.

In the period 2004–2010 GDP grew by 1.8% on average a year. The largest forecast error occurred in 2008. Even in early September, there were no signs of a sharp fall in output due to the global financial crisis, albeit growth was projected to moderate slightly in 2009. In the later forecast published at the end of 2008, however, growth was already expected to decline. The real situation became apparent in spring 2009 when output was already projected to contract strongly. Nevertheless, the contraction in output was still slightly underestimated. Revisions moved the predictions towards the actual outcomes only slowly, which

Chart 1.



Chart 2.



reflects the uncertainty of the economic situation. On the other hand, the recovery from the recession began sooner and was stronger than expected. The year-2009 forecasts for 2010 considerably underestimated output growth, and actual growth in 2010 was stronger than the forecasts for 2010 made prior to the recession.

Table 1.

Growth forecast errors, predicted percentage changes for 2004–2010								
Forecast error and horizon	GDP		HICP		Unemployment rate		Number of forecasts	
	2004–2010	2004–2008	2004–2010	2004–2008	2004–2010	2004–2008	2004–2010	2004–2008
Mean error, current year	-0.3	-0.1	0.0	0.0	0.0	0.0	12	10
Mean error, 1 year	-1.5	0.2	0.1	0.4	-0.1	-0.5	12	7
Mean error, 2 years	-1.4	0.4	0.2	0.7	0.3	-1.1	10	5
Root mean square error, current year	1.4	1.2	0.3	0.3	0.2	0.2		
Root mean square error, 1 year	4.9	1.8	0.9	1.0	1.2	0.6		
Root mean square error, 2 years	4.9	2.0	1.1	1.5	1.6	1.2		
Mean absolute error, current year	1.1	1.0	0.2	0.2	0.2	0.2		
Mean absolute error, 1 year	3.8	1.7	0.7	0.7	1.0	0.5		
Mean absolute error, 2 years	3.5	1.9	0.7	1.1	1.5	1.1		

Source: Bank of Finland calculations.

The indicators are calculated as follows (f denotes the forecast for period t , y the actual outcome and h the number of forecasts):

Mean error (ME) = $\sum_{t=1}^h \frac{(y_t - f_t)}{h}$, mean absolute error (MAE) = $\sum_{t=1}^h \frac{|y_t - f_t|}{h}$, root mean square error (RMSE) = $\sqrt{\sum_{t=1}^h \frac{(y_t - f_t)^2}{h}}$.

Table 2.

Growth forecast errors, predicted percentage changes for 2004–2010												
Forecast error and horizon	Imports		Exports		Private consumption		Private investment		Public consumption		Public investment	
	2004–2010	2004–2008	2004–2010	2004–2008	2004–2010	2004–2008	2004–2010	2004–2008	2004–2010	2004–2008	2004–2010	2004–2008
Mean error, current year	-0.5	-0.3	-1.1	-1.1	-0.1	-0.2	0.5	0.7	-0.1	0.2	-1.1	-1.6
Mean error, 1 year	-6.4	-2.3	-5.9	-1.1	-0.5	0.0	-1.4	0.5	-0.5	-0.2	-1.4	-2.7
Mean error, 2 years	-8.0	-3.7	-6.5	-2.0	-0.9	-0.2	-3.4	1.2	-0.7	-0.1	-0.4	0.4
Root mean square error, current year	3.6	3.6	3.3	3.2	0.9	1.0	2.2	2.4	0.8	0.5	3.3	3.6
Root mean square error, 1 year	13.3	4.8	13.8	4.5	2.3	0.7	9.1	2.6	0.7	0.4	4.6	5.3
Root mean square error, 2 years	13.0	4.8	13.9	5.0	2.1	0.9	8.5	2.5	1.0	0.4	2.9	2.4
Mean absolute error, current year	3.3	3.3	2.8	2.7	0.8	0.9	1.7	1.9	0.6	0.5	2.3	2.6
Mean absolute error, 1 year	9.6	4.1	9.9	3.9	1.7	0.6	6.9	2.2	0.6	0.4	3.4	4.2
Mean absolute error, 2 years	8.1	3.9	8.4	4.0	1.4	0.8	5.4	2.3	0.8	0.3	2.8	2.4

Source: Bank of Finland calculations.

Forecasts for 2004–2010 have overestimated GDP growth by 1 percentage point on average. However, forecasts for 2009 and 2010 have a significant impact on forecast errors. Excluding these forecasts, growth forecasts have underestimated the actual GDP outcome by 0.2 percentage point on average.

Looking at demand components, forecast errors diverge considerably. The contributions to GDP of individual components – private consumption and investment, public consumption and net exports – are of different magnitudes and react to cyclical changes in very different ways. Public consumption typically smoothens GDP fluctuations. Consequently, the recession is clearly reflected in the growth of the public-consumption contribution to GDP, which was 21% in 2004 and 25% in 2010. Public investment has remained above 2% of GDP.

Private consumption is the largest component of GDP in terms of value: its GDP contribution averaged 52% in the period studied. In 2004–2010 private consumption grew on average by 2.4 percentage points a year. Previous-year forecasts have overestimated private consumption growth by 0.5 percentage point on average. In current-year forecasts, the error was marginal.

Public consumption increased by 1.3% on average in 2004–2010. In 2008 the growth was 2.5% and has subsequently remained below 1%. Public consumption predictions have overestimated actual growth by an average of 0.4 percentage point. Excluding forecasts for 2009 and 2010,

the forecasts have been unbiased. The central government and local government municipalities were projected to initiate stimulus measures in 2009, and public consumption was generally anticipated to increase by almost 2%. However, local government spending decreased, and consequently public consumption only increased by 1% in 2009.

Since private investment is very sensitive to the business cycle and gyrates from year to year, it is a difficult component to forecast. The mean error for private investment growth forecasts was –1.3 percentage points, which indicates overestimation. The current-year forecasts underestimated private investment by an average of 0.5 percentage point. In the period studied, the contribution of private investment to GDP was 17% on average.

Public investment has also fluctuated greatly over the years: public investment increased by 7.9% in 2007, as opposed to a contraction of 11.3% in 2005. Public investment has proved challenging to forecast and has been subject to overestimation: the mean error for public investment growth forecasts is –1.0 percentage point. Individual forecast errors have been large, as is reflected in considerable root mean square errors for all the forecast horizons.

Annual changes in imports and exports fluctuate the most of all the GDP components, which makes prediction challenging. Imports have grown at an average annual rate of 3.6% in the period studied, and import forecasts have been 4.8 percentage

points higher on average than the actual outcomes. The annual growth rate of exports was about 3.8% in 2004–2010, and export forecasts have overestimated actual growth by 4.4 percentage point on average.

The unemployment rate averaged at 7.8% in the period studied. The Bank of Finland's unemployment-rate predictions have underestimated actual growth by just 0.1 percentage point. In addition, the current-year forecasts have deviated only marginally from the actual outcomes.

In 2004–2010 Finland's inflation rate averaged 1.6%. The Bank's forecasts have underestimated inflation by just 0.1 percentage point.

Chart 3 shows the Bank of Finland forecasts published in 2005–2010 for consumer price index, GDP and its components. In 2010 the forecasts were prepared using the new version of the Aino model. As the Chart shows, with new data for the forecasted year, revisions move the forecasts closer to the actual outcomes. The spring and autumn forecasts for the next year have not greatly deviated from each other. The current-year forecasts have drawn on indicators and preliminary National Accounts data. The September forecasts already come close to Statistics Finland's first preliminary data release. The Chart also shows the difference between the preliminary data and the final statistics. However, it is worth noting that growth figures for 2009 and 2010 will be revised in connection with the final National Accounts release.

Chart 3 also enables an examination of the larger-than-usual

forecast errors for 2009. GDP and its components were still assumed to grow almost normally in the September 2008 forecasts. Even though growth forecasts prepared in 2009 were revised towards the actual outcomes, these forecasts also had exceptionally large forecast errors. Excluding forecasts for 2009, a slightly different picture is gained from the Bank of Finland forecast errors. GDP and its components were often underestimated in the forecasts produced in the years of a relatively strong growth prior to 2009.

Conclusions

This forecast-error analysis does not compare the Bank's forecasts with macroeconomic forecasts of other institutions. In addition to the Bank of Finland, macroeconomic forecasts are published in Finland by the Ministry of Finance, commercial banks and research institutions. However, previous comparisons have shown how hard it is rank forecasters.³

As this forecast-error analysis shows, it is particularly difficult to predict cyclical turning points and to make forecasts around the time of such turning points, since these reversals are typically caused by an unanticipated change or shock in the economy. This is connected with a paradox known among forecasters: if markets are assumed to be efficient, a forecast that includes a cyclical reversal is internally inconsistent. A

³ Forecasts published by various institutions have been compared eg in the article 'Valtion talousarvioiden verotuloennusteiden osuvuus' (Accuracy of tax revenue forecasts in government budgets) (Lahtinen, M. – Mäki-Fränki, P. – Määttä, K. and Volk, R., Audit Committee of the Parliament publication 1/2009).

Chart 3.



surprise itself cannot be predicted. Nevertheless, it is possible to make forecasts, because economic agents and a number of variables react to economic disruptions with a time lag. Viewed from the perspective of those who develop models and other research tools, it is useful that forecasts are commonly known to be subject to uncertainty, but it is also important that explanations are found for the surprises that occur.⁴ Forecast errors were exceptionally large in 2009–2010. The financial crisis surprised domestic and global forecasters alike. The economic environment changed rapidly, and economic forecasts for 2009 and 2010 were revised gradually. A number of forecasting institutions – including the Bank of Finland – produced additional forecasts as the crisis became more severe.

⁴ Challenges of economic forecasting are discussed in separate articles eg by Mörttinen, L., Pekkarinen, J., Suvanto, A. and Vartiainen, J. The articles have been published in the Finnish Economic Journal 3/2008.

The Bank of Finland's published forecasts explain in detail why assessments of economic developments have changed between forecast rounds. A forecast is a most probable set of outcomes for economic developments, but since changes in the global environment in particular are rapidly transmitted to a small open economy such as Finland, it is important in the context of a published forecast to assess and predict alternative factors that could affect the economy. The Bank of Finland publishes risk assessments of the key uncertainties relating to its forecasts. The alternative calculations in turn diversify the baseline scenario by presenting alternative projections that deviate from the forecasted path.

Key words: forecasts, errors, business cycles

Articles and boxes from previous publications

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Finland's economic outlook 2011–2013. Bank of Finland Bulletin 1/2011.

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Forecast tables

1. Balance of supply and demand, at reference year 2000 prices

<i>% change on previous year</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
GDP at market prices	-8.2	3.1	3.8	2.6	2.4
Imports of goods and services	-17.6	2.6	5.1	6.9	6.9
Exports of goods and services	-20.1	5.1	8.0	7.0	7.2
Private consumption	-2.1	2.6	2.7	2.0	1.8
Public consumption	1.0	0.4	1.2	0.7	0.9
Private fixed investment	-17.4	0.9	6.3	6.4	5.5
Public fixed investment	6.2	0.1	0.8	0.2	0.1

2. Contributions to growth¹

	2009	2010	2011 ^f	2012 ^f	2013 ^f
GDP, % change	-8.2	3.1	3.8	2.6	2.4
Net exports	-2.0	0.9	1.3	0.3	0.3
Domestic demand excl. inventory change	-4.0	1.6	2.7	2.3	2.1
of which Consumption	-0.9	1.5	1.7	1.3	1.2
Investment	-3.1	0.0	1.0	1.1	0.9
Inventory change + statistical discrepancy	-2.3	0.6	-0.2	0.1	0.0

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

3. Balance of supply and demand, price deflators

<i>Index, 2000 = 100, and % change on previous year</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
GDP at market prices	111.7	114.1	116.1	118.4	120.8
Imports of goods and services	100.9	106.6	115.5	117.8	119.4
Exports of goods and services	90.5	94.2	99.4	100.7	102.0
Private consumption	113.5	114.6	118.3	120.8	123.2
Public consumption	138.5	141.1	144.2	148.1	151.9
Private fixed investment	117.7	116.4	118.7	120.7	123.3
Public fixed investment	126.9	127.2	129.6	132.2	134.6
Terms of trade (goods and services)	89.7	88.4	86.1	85.5	85.5
	0.6	-1.4	-2.7	-0.6	-0.1

4. Balance of supply and demand, at current prices

<i>EUR million and % change on previous year</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
<i>GDP at market prices</i>	171,193	180,295	190,456	199,183	208,300
	-7.3	5.3	5.6	4.6	4.6
<i>Imports of goods and services</i>	60,178	65,215	74,229	80,872	87,649
	-24.1	8.4	13.8	9.0	8.4
<i>Total supply</i>	231,371	245,510	264,685	280,055	295,949
	-12.3	6.1	7.8	5.8	5.7
<i>Exports of goods and services</i>	64,169	70,200	79,904	86,645	94,065
	-26.0	9.4	13.8	8.4	8.6
<i>Consumption</i>	137,144	141,539	148,858	154,678	160,469
	0.1	3.2	5.2	3.9	3.7
<i>Private</i>	93,867	97,297	103,086	107,361	111,487
	-1.6	3.7	5.9	4.1	3.8
<i>Public</i>	43,277	44,242	45,772	47,317	48,982
	3.9	2.2	3.5	3.4	3.5
<i>Fixed investment</i>	33,454	33,412	35,951	38,609	41,316
	-15.9	-0.1	7.6	7.4	7.0
<i>Private</i>	28,606	28,546	30,952	33,498	36,109
	-18.7	-0.2	8.4	8.2	7.8
<i>Public</i>	4,848	4,866	4,999	5,110	5,207
	4.8	0.4	2.7	2.2	1.9
<i>Inventory change + statistical discrepancy</i>	-3,396	359	-28	124	99
<i>% of previous year's total demand</i>	-1.4	1.6	-0.2	0.1	0.0
<i>Total demand</i>	231,371	245,510	264,685	280,055	295,949
	-12.3	6.1	7.8	5.8	5.7
<i>Total domestic demand</i>	167,202	175,310	184,781	193,410	201,884
	-5.7	4.8	5.4	4.7	4.4

5. Balance of supply and demand

<i>% of GDP at current prices</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
<i>GDP at market prices</i>	100.0	100.0	100.0	100.0	100.0
<i>Imports of goods and services</i>	35.2	36.2	39.0	40.6	42.1
<i>Exports of goods and services</i>	37.5	38.9	42.0	43.5	45.2
<i>Consumption</i>	80.1	78.5	78.2	77.7	77.0
<i>Private</i>	54.8	54.0	54.1	53.9	53.5
<i>Public</i>	25.3	24.5	24.0	23.8	23.5
<i>Fixed investment</i>	19.5	18.5	18.9	19.4	19.8
<i>Private</i>	16.7	15.8	16.3	16.8	17.3
<i>Public</i>	2.8	2.7	2.6	2.6	2.5
<i>Inventory change + statistical discrepancy</i>	-2.0	0.2	0.0	0.1	0.0
<i>Total demand</i>	135.2	136.2	139.0	140.6	142.1
<i>Total domestic demand</i>	97.7	97.2	97.0	97.1	96.9

6. Prices

<i>Index, 2000 = 100, and % change on previous year</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
<i>Consumer price index, 2005=100</i>	108.4	109.7	113.6	116.2	118.7
	0.0	1.2	3.5	2.3	2.2
<i>Harmonised index of consumer prices, 2005=100</i>	108.7	110.5	114.2	116.6	119.0
	1.6	1.7	3.4	2.1	2.1
<i>Private consumption deflator</i>	113.5	114.6	118.3	120.8	123.2
	0.5	1.0	3.2	2.1	2.0
<i>Private investment deflator</i>	117.7	116.4	118.7	120.7	123.3
	-1.6	-1.1	2.0	1.7	2.1
<i>Exports of goods and services deflator</i>	90.5	94.2	99.4	100.7	102.0
	-7.4	4.1	5.5	1.3	1.3
<i>Imports of goods and services deflator</i>	100.9	106.6	115.5	117.8	119.4
	-8.0	5.6	8.4	2.0	1.4
<i>Value added deflators</i>					
<i>Value added, gross at basic prices</i>	113.0	115.7	118.9	121.6	124.2
	0.8	2.4	2.7	2.3	2.1
<i>Private sector</i>	106.2	108.3	111.2	113.6	115.9
	0.1	2.0	2.7	2.2	2.0
<i>Public sector</i>	153.4	158.6	163.3	167.6	172.3
	4.1	3.4	2.9	2.7	2.7

7. Wages and productivity

<i>% change on previous year</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
<i>Whole economy</i>					
<i>Index of wage and salary earnings</i>	4.0	2.5	2.9	3.4	3.2
<i>Compensation per employee</i>	1.7	2.0	3.0	3.2	3.2
<i>Unit labour costs</i>	7.6	-1.5	0.1	1.5	1.4
<i>Labour productivity per employed person</i>	-5.5	3.5	2.8	1.6	1.8

8. Labour market

<i>1000 persons and % change on previous year</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
<i>Labour force survey (15–74-year-olds)</i>					
<i>Employed persons</i>	2,457	2,449	2,472	2,497	2,512
	-2.9	-0.3	0.9	1.0	0.6
<i>Unemployed persons</i>	221	224	212	199	190
	28.2	1.6	-5.4	-6.2	-4.6
<i>Labour force</i>	2,678	2,673	2,684	2,695	2,702
	-0.9	-0.2	0.4	0.4	0.2
<i>Working-age population (15–64-year-olds)</i>	3,547	3,555	3,540	3,521	3,501
	0.3	0.2	-0.4	-0.5	-0.6
<i>Labour force participation rate, %</i>	66.5	66.1	66.1	66.2	66.1
<i>Unemployment rate, %</i>	8.2	8.4	7.9	7.4	7.0
<i>Employment rate (15–64-year-olds), %</i>	68.3	67.8	68.7	69.8	70.6

9. General government revenue, expenditure, balance and debt

<i>% of GDP</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
<i>General government revenue</i>	53.4	52.3	52.7	52.7	52.5
<i>General government expenditure</i>	56.3	55.1	54.0	53.7	53.3
<i>General government primary expenditure</i>	54.8	53.7	52.5	52.0	51.5
<i>General government interest expenditure</i>	1.4	1.4	1.5	1.6	1.7
<i>General government net lending</i>	-2.9	-2.8	-1.2	-1.0	-0.7
<i>Central government</i>	-4.8	-5.4	-4.2	-3.8	-3.6
<i>Local government</i>	-0.6	-0.3	-0.1	-0.1	-0.1
<i>Social security funds</i>	2.6	2.9	3.1	2.9	3.0
<i>General government primary balance</i>	-1.5	-1.4	0.3	0.7	1.0
<i>General government debt</i>	43.8	48.4	50.8	52.7	54.1
<i>Central government debt</i>	37.5	41.7	44.3	46.4	48.0
<i>Tax ratio</i>	43.0	42.1	42.3	42.4	42.2

10. Balance of payments

<i>EUR million</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
<i>Exports of goods and services</i>	64,169	70,200	79,904	86,645	94,065
<i>Imports of goods and services</i>	60,178	65,215	74,229	80,872	87,649
<i>Goods and services account (SNA)</i>	3,991	4,985	5,675	5,773	6,416
<i>% of GDP</i>	2.3	2.8	3.0	2.9	3.1
<i>Investment income and other items, net</i> <i>(+ statistical discrepancy)</i>	1,720	2,270	291	368	456
<i>Current transfers, net</i>	-1,689	-1,618	-1,907	-2,009	-2,115
<i>Current account, net</i>	4,021	5,636	4,059	4,132	4,757
<i>Net lending, % of GDP</i>					
<i>Private sector</i>	5.2	5.9	3.4	3.0	3.0
<i>Public sector</i>	-2.9	-2.8	-1.2	-1.0	-0.7
<i>Current account, % of GDP</i>	2.3	3.1	2.1	2.1	2.3

11. Interest rates

<i>%</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
<i>3-month Euribor¹</i>	1.2	0.8	1.5	2.3	2.8
<i>Average interest rate on new loans</i>	3.6	2.9	3.5	4.1	4.6
<i>Average rate of interest on deposits</i>	1.2	0.7	1.0	1.2	1.4
<i>Bank lending rate, average</i>	3.1	2.3	2.8	3.5	3.9
<i>Yield on Finnish 10-year government bonds¹</i>	3.7	3.0	3.5	3.8	4.1

¹ Technical assumption derived from market expectations

12. International environment

<i>Bank of Finland forecast</i>					
	2009	2010	2011 ^f	2012 ^f	2013 ^f
GDP, % change on previous year					
Whole world	-0.8	4.9	4.1	4.2	4.3
USA	-2.6	2.9	2.6	2.7	2.8
Euro area ¹	-4.1	1.7	1.5–2.3	0.6–2.8	
Japan	-6.3	4.0	-0.4	2.8	1.9
Imports, % change on previous year					
Whole world	-11.2	12.0	8.0	7.8	7.6
USA	-13.8	12.6	5.6	6.9	5.0
Euro area ¹	-11.9	9.3	4.3–7.9	2.6–10.0	
Japan	-15.4	9.8	6.6	6.8	5.8
Index, 2000 = 100, and % change on previous year					
<i>Import volume in Finnish export markets</i>					
	145.2	165.1	179.0	192.3	206.0
<i>Export prices (excl. oil) of Finland's trading partners, national currencies</i>					
	-13.5	13.7	8.4	7.4	7.1
<i>Export prices (excl. oil) of Finland's trading partners, in euro</i>					
	112.8	114.9	119.2	121.6	123.7
	-1.4	1.9	3.7	2.0	1.7
<i>Industrial raw materials (excl. energy), HWWA index, in US dollars</i>					
	91.5	98.4	102.5	104.2	105.9
	-4.7	7.5	4.1	1.6	1.7
	153.5	212.9	238.2	239.1	251.4
	-27.0	38.7	11.9	0.4	5.2
Oil price, USD per barrel					
	61.9	79.6	111.1	108.0	103.7
Finland's nominal competitiveness indicator^{2,3}					
	-36.6	28.7	39.5	-2.7	-4.1
	107.6	103.6	103.1	103.5	103.5
	0.6	-3.8	-0.5	0.4	0.0
US dollar value of one euro²					
	1.39	1.33	1.42	1.43	1.43
	-5.2	-5.0	7.0	1.1	0.0

¹ The Eurosystem staff projections for macroeconomic developments in the euro area are prepared for the years 2011–2012. The uncertainty related to the estimates is illustrated by presenting them as ranges. The ranges are based on differences between estimates made in previous years and actual developments. The breadth of the ranges is the mean of the absolute values of these differences, multiplied by two.

² Technical assumption derived from market expectations

³ Narrow plus euro area, 1999 Q1 = 100

Organisation of the Bank of Finland

3 June 2011

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