Eesti Pank

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ECONOMIC FORECAST FOR 2012–2014

Eesti Pank's economic forecast is prepared by experts of the central bank's Economics and Research Department and Financial Stability Department. The forecast is based on the Macro Model of the Estonian Economy, devised and regularly updated by Eesti Pank.

The forecast assumptions are based on information available as at 17.05.2012 and the economic indicators on data available as at 24.05.2012. The forecast is also published in the central bank's publication Estonian Economy and Monetary Policy No 1/2012.

SUMMARY

Estonia's 2012 economic growth will be slower than a year ago due to the unfavourable external environment. The expansion will nevertheless be faster than expected at the end of 2011, since the low in the external environment has not been considerably weighing on domestic demand. Inflation in Estonia has slowed from the last year's level, but whether this trend will continue depends on global-market oil price developments and on domestic wage growth. The euro area economy is yet to find a steady growth footing. In order for the spring forecast to materialise, growth in the external environment needs to pick up in the second half of 2012. Risks to euro area financial stability must be held in check. Estonia needs strong external demand to keep up income level convergence towards that of Europe. Though domestic demand may drive growth for a while, it is accompanied by higher vulnerability, and imbalances are also more likely to develop.

External demand growth will slow this year, along with the slowdown in the economic growth of our main trading partners. The sovereign debt crisis in some euro area countries still affects growth outlooks in Europe and the large price fluctuations of financial assets, which refer to low confidence, have not subdued. Several euro area countries have entered an adjustment path to alleviate imbalances, but it will take time for these processes to bear fruit. Based on joint decisions taken in the second half of 2011 and at the start of 2012, the EU fiscal agreement will enter into force and the European Stability Mechanism starts functioning this summer. The objective of the institutional rearrangements is stronger control over fiscal policies and the provision of assistance to Member States in financial difficulty. Irrespective of the measures taken, markets still fear that some euro area countries may find their government's debt burden too heavy to bear. Besides, the ongoing adjustment process in the real sector has only added to insecurity, posing an extra threat to financial stability (in addition to the sovereign debt crisis).

The European Central Bank's monetary policy decision of end-2011 to provide three-year refinancing operations alleviated the situation to a great extent, but the step will not solve structural problems. The forecast's baseline scenario rests on the assumption that risks to euro area financial stability remain contained and the growth outlook will start improving in the second half of the year. The main risks to the accuracy of the forecast stem from the external environment, though so far, the Estonian economy has remained relatively unscathed by the euro area sovereign debt crisis. Estonia has very limited economic ties with the problematic Member States, but the risk of contagion is still there, which means economic developments in the euro area and thus also several forecast assumptions may change.

Driven by domestic demand, the Estonian economy continued to expand moderately (but still beyond expectations) at the start of 2012. Last year, private consumption was driven by export income, higher household confidence and a decline in unemployment. In 2011, the number of the employed grew by 40,000 compared to 2010. Fixed-asset investment showed robust growth at the end of 2011 and it was likely to

have continued into the beginning of 2012. At the same time, some recent large-scale projects involving extensive investment in transport and machinery and equipment have complicated the extraction of a longer-term trend in fixed-asset investment. Looking ahead, both investment and private consumption growth will slow from the level of the start of the year and a new pickup is projected to occur only when the external environment recovers and export growth re-accelerates. In sum, economic growth during the forecast horizon will be the lowest in 2012, after which we expect a slight pickup, provided that the euro area sovereign debt crisis eases.

The Estonian labour market has responded to the economic revival with an increase in both employment and wages. Though economic growth slackened already in autumn 2011, wage growth kept accelerating at the start of this year as well. This is a largely cyclical development, where companies share their earlier profit growth with employees in the form of higher base pay and performance-related pay. Wage growth has been faster among lower-income earners, whose propensity to consume is apparently higher. Since 2010, wage growth has been more robust in the private sector, meaning that the public sector will probably have to face stronger wage pressures. At the same time, there are signs of a more active on-the-job search, which may also contribute to upward wage pressures in an environment of emerging labour shortages. The tendency will cause concern, if the gap between wages and economic growth widens. The forecast expects wage growth to decelerate somewhat in 2013 and to quicken again once economic growth picks up. Unemployment continues to decline, but at a more sluggish pace. However, the share of labour costs in GDP will not change much over the forecast horizon.

Wage growth may start surpassing productivity growth if the employment rate falls below the non-accelerating wage rate of unemployment. The risk is further amplified by the fact that economic expansion has so far failed to alleviate the long-term unemployment problem. More attention in the design of active labour market measures is needed to address the skill and knowledge mismatch problem in the economy. The past has shown that although companies do manage to contain wage costs over the business cycle, this may come at the cost of considerably higher unemployment once growth slows. A more efficient rein-in on wage growth in an expansionary stage of the cycle may, on the other hand, alleviate a later increase in unemployment.

Inflation is currently somewhat lower than last year, but it has moderated more sluggishly than assumed due to volatile oil prices, which were higher than projected in the first months of the year, but fell back to the expected level in May. Half of the 2012 first-quarter 4.6% increase in consumer prices is attributable to energy price growth. The inflation differential between Estonia and the euro area has been around 2 pp in 2012. Rapid wage growth has, on the one hand, stepped up people's purchasing power, but, on the other hand, also augmented companies' costs, thus preventing price growth from slowing. The food price growth rate is for the most part withdrawn and it should remain rather modest in light of the global-market food commodities price expectations. The rise in electricity prices at the start of 2013 will boost inflation and increase household spending. The opening of the market will complete the convergence of energy prices towards the international level. A considerable share of Estonia's inflation has derived from price decisions of companies in low-competition areas. Thus, attention should be paid to a more transparent price setting there. Provided that oil prices develop in line with the assumptions and wage growth slows, the forecast expects inflation in Estonia to keep lowering. If, however, the inhibition in wage growth is delayed, inflation will be faster than forecasted.

The current account posted a deficit again at the start of this year, mainly due to the launch of some large import-intensive investment projects. The deficit is likely to persist also in the coming quarters, but once the large projects come to an end, the current account balance can be expected to improve. A slight current account deficit is justified in an economy in the middle of the income convergence process. The banking sector has always been and still is the primary provider of credit to Estonia's economy. However, since several major companies have borrowed directly from abroad, the importance of the banking sector in financing our economy has been on the decline since 2010. Part of the loan money has moved back across the border, but some of it has been used to fund transactions supporting Estonia's domestic demand. An escalation in the sovereign debt crisis may limit external financing. The contraction in the debt burden of the Estonian economy (that is, the improvement in the debt to GDP ratio) is expected to continue throughout the forecast horizon.

The euro area sovereign debt crisis has so far not affected banks operating in Estonia and lending activity has picked up as assumed, which means the long-term shrinkage in banks' loan stock could end in the coming years. The exceptionally low interest rate levels will contribute to credit activity throughout the entire forecast horizon. The forecast expects loan margins to remain unchanged in the next years. Financial markets have maintained high confidence in the well-capitalised parent banks of the banks operating in Estonia. Thus, the forecast does not foresee credit supply constraints. Nevertheless, even if the sovereign debt crisis escalates, banks in Estonia will have access to favourable monetary policy loans. The support of the banking sector is important not only in financing the expanding economy but also in smoothing short-term adverse shocks.

The forecast projects the general government budget to post a deficit again in 2012 and to move into a balance thereafter. To this end, growth in budgetary expenditure should not exceed that in income. Otherwise, the structural budget balance (that is, balance without business cycle effects and one-off factors) may easily deteriorate. The uncertainty deriving from the external environment calls for caution in making permanent expenditure increases and requires vigilance from the authorities to be ready for imminent cost adjustments, should the economic situation deteriorate. According to the forecast assumptions, the interest rate will be low in the coming years and may thus need balancing by fiscal policy measures. Strong and sustainable fiscal policy underpins the credibility of national economic policy.

The baseline scenario of the economic forecast is supplemented by five boxes of background information. The first box treats developments in euro area monetary policy. The second and the third box are based on accelerating wage growth. The first one treats wage growth across different income groups based on Statistics Estonia's Estonian Labour Force Survey. The second one focuses on assessing Estonia's potential GDP growth and offers a quantitative analysis of the non-accelerating inflation unemployment rate. The fourth box discusses problems in measuring structural budget deficit – an indicator becoming increasingly important in assessing fiscal policies. The last box provides a quantitative estimate of the sensitivity of the Estonian economy to oil price fluctuations.

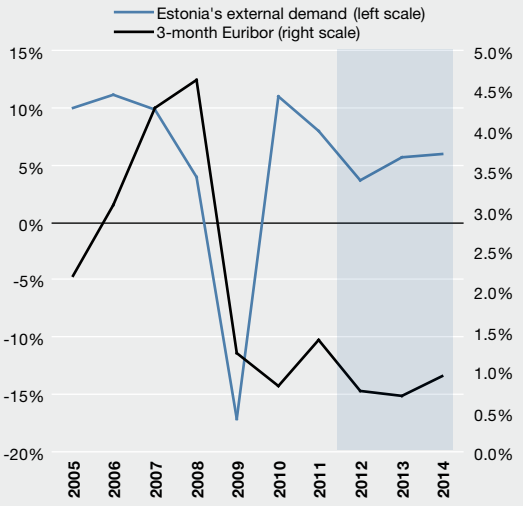
EXTERNAL ENVIRONMENT

Global economic growth slowed in the second half of 2011, but recovered somewhat at the beginning of 2012, as shown by foreign trade figures. Future global growth is projected to be uneven across regions. Eesti Pank's forecast expects less favourable growth in external demand for Estonia over the forecast horizon, compared to the past two years. In 2010 and 2011, external demand picked up by 11% and 7.9%, respectively, while a growth of 3.6% is forecasted for 2012, to be followed by stronger expansion later on (see Figure 1).

The euro area economy has come close to stagnation in the past four quarters. The Estonian economic forecast draws on the assumption that the euro area economy will improve and growth will pick up gradually starting from the second half of 2012. Nevertheless, there is a risk that the sovereign debt crisis in the euro area may escalate. The crisis may damage part of the euro area through the banking sector or force some countries make larger adjustments. In case of a more negative scenario, the Estonian economy will probably also be affected. Even though local companies have relatively weak economic relations with the crisis-stricken euro area countries, Estonia's foreign trade partners may be exposed to contagion from these countries (see Figure 2).

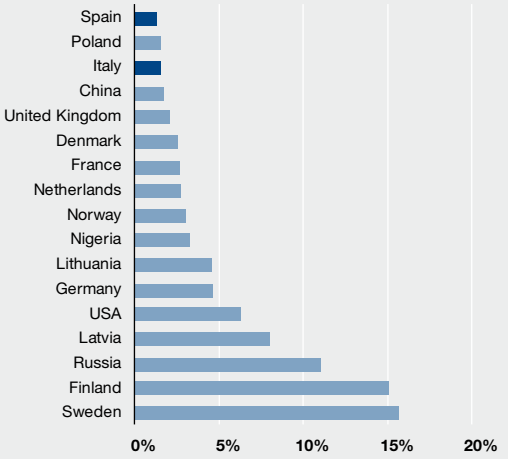
The past few years have seen a shift in global growth with a new focus on emerging economies, given that the growth figures in advanced countries are below their historical averages due to structural factors. This trend is likely to continue over the forecast horizon, as advanced economies need to reduce their debt burdens, both in public and private sectors. The use of funds for repaying existing loans, instead of launching new projects, will curb demand in many countries over the next years. Emerging economies will witness further rapid growth, if they manage to avoid overheating, and income convergence

Figure 1. Estonia's external demand growth and 3-month Euribor



Source: European Central Bank

Figure 2. Destination countries, share in Estonia's exports in 2011



Source: Statistics Estonia

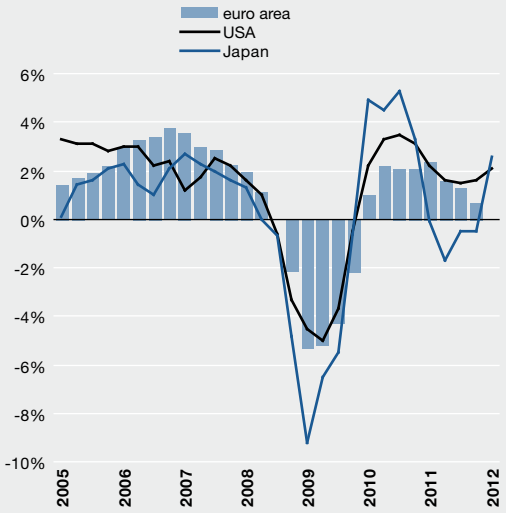
towards the levels of more advanced countries will continue, too.

The U.S. economy gained quite considerable momentum at the end of 2011, but slowed down again at the beginning of 2012. Year-on-year, though, growth accelerated in the first quarter, to 2.1% (see Figure 3). The labour market, which had been sluggish for quite some time, started to show signs of recovery, as more and more people found jobs. In 2013, the biggest challenge for economic policy planners will be the reduction of public-sector fiscal deficit. The U.K. economy has been contracting for two consecutive quarters, the volume of the economy, however, is unchanged from a year ago.

The euro area economy has come close to stagnation as a result of the sovereign debt crisis. The GDP for the first quarter of 2012 remained unchanged from a quarter ago and also from the previous year. Industrial production (excluding construction) in the euro area has been shrinking since September 2011, except for in February 2012. In March, the drop was 2.2% in annual terms. There is a large growth difference in domestic- and export-oriented production, because of a marked decline in domestic sales. This drop has also affected Estonia's industrial companies.

The euro area economy has come to a halt, but developments across countries vary. Economies unscathed by the sovereign debt crisis continue to grow, while crisis-stricken countries are facing a recession, mostly due to shrinking domestic demand. Markets have serious concerns regarding the crisis countries, fearing that they cannot cope with their high public debt burdens. Economic adjustments have brought about also additional sources of uncertainty. The growth outlook is further dampened by risks to financial stability that stem from the sovereign debt crisis and economic adjustments. The situation was

Figure 3. Economic growth in the euro area, the USA and Japan



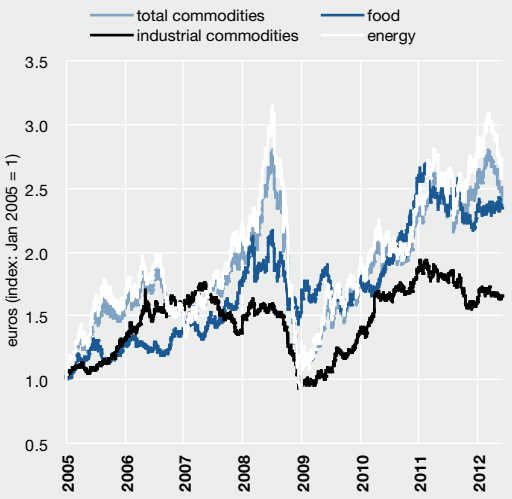
Source: Eurostat

alleviated by the European Central Bank's decision from end-2011 to provide three-year monetary policy loans, but this measure will not solve the structural issues. Thus, the crisis-stricken countries should make use of the current situation and improve the functioning of their economies.

In the present global economic situation, Estonia's economic success has been drawing on the fact that most of our main trading partners have managed to avoid recession so far. Sweden is an exception here: its GDP contracted by 1.1% at the end of 2011, quarter-on-quarter, but is now picking up again. In the first quarter of 2012, GDP in Finland, Sweden, Latvia, Lithuania and Russia had increased by 2.9%, 1.5%, 5.5%, 4.3% and 4.9% respectively from a year ago. When interpreting these figures, we must take into account that the end-consumers of goods exported by Estonia are usually not in the five countries mentioned above, but most probably somewhere further away.

Global inflationary pressures have been subdued in spring 2012, and the current forecast rests on the assumption that this tendency will continue (see Figure 4). On the one hand, advanced economies still have unutilised production capacity, which will contain price pressures even if production volumes increase modestly. On the other hand, global commodity prices have not risen that much over the past six months, which is why the resulting consumer price pressures are easing. The forecast relies on oil price futures, which expect the average price of oil to be 114.6 USD per barrel in 2012 and somewhat lower in 2013–2014. Food commodity prices will presumably remain unchanged this year, marking an end to the over 20% rise in prices in both 2010 and 2011. Thus, commodity prices will not exert additional price pressures over the forecast horizon.

Figure 4. World market commodity price indices



Source: HWWI

The current interest rate environment is favourable for demand, since monetary policy interest rates are very low in all key economic regions. Market expectations underlying the forecast foresee a drop in the three-month Euribor to 0.8% in 2012 and to 0.7% in 2013, and then a rise to 0.9% in 2014. Changes in the three-month interest rate are expected to instantly pass through to the six-month Euribor, the most important interest rate that dictates the cost of loan capital in the Estonian credit market. This forecast includes also a technical assumption that the dollar-euro exchange rate is fixed at 1.30 during the entire forecast horizon (see Table 1).

The monetary policy environment is described in detail in Box 1.

Table 1. External assumptions in the forecast

	2010	2011	2012	2013	2014	2012*	2013*
Foreign demand growth (%)	11.0	7.9	3.7	5.6	6.0	4.9	6.4
Oil price (USD/barrel)	79.6	111.0	114.6	107.9	102.0	109.4	104.0
Interest rate (3-month Euribor, %)	0.8	1.4	0.8	0.7	0.9	1.2	1.4
EUR/USD exchange rate	1.33	1.39	1.30	1.30	1.30	1.36	1.36

* 2011 Autumn forecast

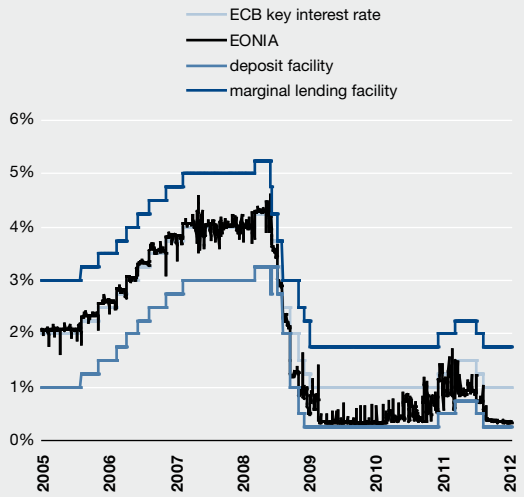
Sources: Reuters, Eesti Pank

Box 1: Monetary policy environment in the euro area

At the beginning of the year, the euro area monetary policy interest rates had remained favourable. To support the euro area real sector in times of sluggish economic activity, the Eurosystem has kept the main policy rate at 1% since December 2011.[1] This is the lowest level in the history of the single currency. Although the high global commodity and energy prices have also spilled over to euro area inflation, inflationary risks in the euro area have generally remained in balance and in accordance with the Eurosystem's objective to keep the inflation rate close to but below 2% in the medium term.

To ensure the effective functioning of the euro area financial sector and monetary policy transmission channels, the Eurosystem has used non-standard monetary policy measures in addition to the standard ones in 2012. Namely, another longer-term refinancing operation[2] with three-year maturity took place in February, enabling euro area credit institutions to borrow from the Eurosystem for three years at an exceptionally low interest rate[3]; the volume of liquidity supplied reached 530 billion euros[4]. Furthermore, the Eurosystem promised at the end of last year to continue offering unlimited liquidity to the euro area banks at a fixed rate at least until 10 July 2012. According to preliminary assessments, the longer-term refinancing operations with three-year maturity that took place this year and in December 2011 have had a positive impact on euro area banks, since both their financing conditions and access to money market have improved. Although as a result, the tightening of credit conditions[5] by banks has clearly decreased in the first quarter of 2012, the effect of these measures on the euro area real sector on the whole will probably still take some time to manifest.

Figure a. Euro area key interest rates



Sources: European Central Bank, Reuters

In March 2012, money supply continued to grow in the euro area. The annual growth rate of the broad money or monetary aggregate M3 accelerated from 2.8% in February to 3.2%. Thus, the three-month average of the annual growth rates of M3 (January to March) accelerated as well, reaching 2.8% in annual terms. Of the M3 components, the annual growth rate of M1 picked up, too, reaching 2.7% by the end of March (2.5% in February). The increase in real sector deposits and marketable instru-

[1] The minimum bid rate on the main refinancing operations is 1%, the interest rate on the marginal lending facility is 1.75% and that on deposit facilities 0.25%.

[2] Longer-term refinancing operations may have a maturity of 3, 6, 12, 13 months and 3 years. The refinancing operations with three-year maturity were introduced in the last quarter of 2011.

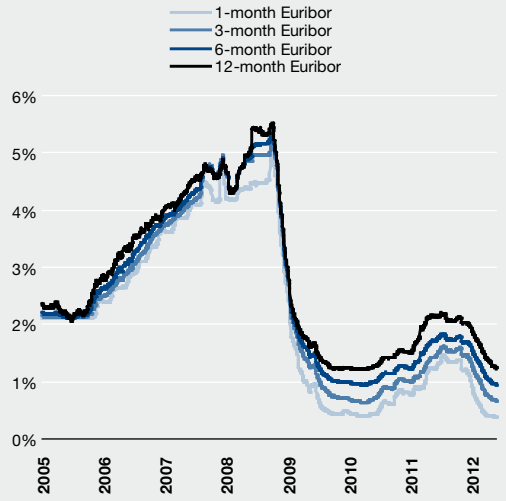
[3] At an interest rate that is equal to the bid rate on the main refinancing operations.

[4] The first refinancing operation with three-year maturity of a total of 489 billion euros took place in December 2011. Hence, a total of 1.02 trillion euros have been lent to euro area credit institutions with two longer-term operations with three-year maturity. The credit institutions that have borrowed also have the option to repay the loan after a year.

[5] http://www.ecb.int/stats/pdf/blssurvey_201204.pdf?6b4b24c6e69884aafca84547c1396caa

ments[6] contributed the most to the growth. This indicates that euro area banks are still able to expand their deposit base by offering an attractive interest rate. On the counterparts' side, money supply growth mainly reflected the purchase of government bonds and the reduction of long-term liabilities by the financial sector. At the same time, lending to the real sector has remained modest: the annual growth rate stood unchanged from its previous level of 1.2%[7] at the end of March. On the other hand, the real sector loan demand is also modest due to the high debt burden of the previous periods, as well as because of the prevailing uncertainty.

Figure b. Euro area money market interest rates



Source: Reuters

The Eurosystem's longer-term refinancing operations with three-year maturity have, among other things, entailed fast growth in base money[8] in the euro area, since many euro area credit institutions hold more reserves with the Eurosystem than are needed to comply with the compulsory reserve requirement. The results of the analysis[9] show, however, that credit institutions using the Eurosystem's deposit facility are often not the same as those borrowing from the Eurosystem. Since the deposit facility rate is low (currently 0.25%), it is not very attractive in terms of income generation. Hence, banks may start investing in higher-return asset classes and offering loans more actively, which may, in turn, create inflationary pressures. This would also be reflected in monetary aggregates, both in the broad money aggregate M3 and in its sub-components. No such tendencies have been discernible until now. Furthermore, since euro area economic activity is currently very low, a slight acceleration in money supply growth would probably not be directly spilled over to consumer prices. Therefore, base money expansion does not cause inflationary pressures in the euro area at the moment.

Since the central bank influences short-term interest rates[10] through monetary policy interest rates, and long-term interest rates depend on short-term interest rate expectations, it is important to monitor the development of money market interest rates. The euro area money market interest rates have been mainly decreasing since the beginning of the year. Thus, by the start of May 2012, the 1-, 3-, 6- and 12-month Euribor had fallen to 0.4%, 0.7%, 0.99% and 1.3%, respectively, having declined by 60, 64, 61 and 63 basis points from the beginning of January. The spread between the 1-month and 12-month Euribor that indicates the shape of the money market yield curve has decreased only

[6] Money market funds, bonds, repo transactions.

[7] Adjusted for loan sales and securitisation.

[8] Base money consists of banknotes and coins in circulation, money held by the banks with the central bank to comply with the compulsory reserve requirement and banks' deposits with the central bank that are held in addition to the deposits required to comply with the compulsory reserve requirement.

[9] http://www.ecb.int/pub/pdf/mobu/mb201205en.pdf

[10] Interest rates for instruments with a maturity of up to one year.

marginally, to 90 basis points (93 basis points at the beginning of January). Eonia has also remained at low levels since the start of the year, reaching 0.34% at the beginning of May, hovering around 10 basis points higher than the Eurosystem's deposit facility rate. The small spread between the deposit facility and Eonia reflects a large scale of excess liquidity in the euro area interbank money market after another longer-term refinancing operation with three-year maturity at the end of February.

BASELINE FORECAST SCENARIO

Economic activity

Estonia's economic growth has slowed, since the effect of short-term growth factors has come to an end and the external environment is weak. The reutilised production capacity and a resurgence in international trade boosted growth in 2011, to 7.6%. The rapid export-driven expansion was especially apparent in the first half of the year, when the exporting manufacturing sector accounted for more than half of growth. Domestic demand growth was still relatively modest at the time. In the second half of the year, economic growth slowed, on the one hand, due to the fading out of one-off growth factors, and on the other hand, because of weaker external demand caused by a drop in confidence accompanying the sovereign debt crisis in Europe. Investment activity, which has gradually recovered after the recession of 2008 and 2009, and the existing production capacity would have allowed for even faster growth at end-2011. This is confirmed by the industry survey, which recorded a fall in capacity utilisation in the first half of 2012.

The euro area sovereign debt crisis, which escalated in summer 2011, damaged investment courage in several regions of the world, reducing demand for capital goods (including those produced in Estonia). However, the adverse effect of the debt crisis on the Estonian economy was notably smaller than the damage of the downturn following the collapse of Lehman Brothers in 2008. Industrial production, which contracted sharply in the early autumn of 2011, started picking up again, month-on-month, towards the end of the year. With consumption and investment still recovering from the post-crisis low levels, domestic demand supported growth at end-2011. Data on the first months of 2012 signalled an improvement in the situation. Spring, on the other hand, has seen escalating uncertainty regarding the ability of some countries to carry out economic policy reforms and this may dampen further growth.

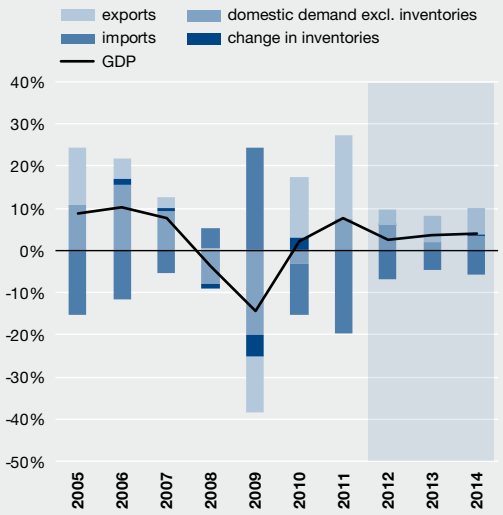
Year-on-year, exports supported growth rather heftily in the first quarter, irrespective of the weak external environment. According to the flash estimate of Statistics Estonia, GDP increased 3.9% in the first quarter in annual terms, and goods exports 8%. At the start of the forecast horizon, economic expansion is mostly supported by domestic demand, since the factors causing rapid export growth after the recovery are no longer there. Uncertainty due to the debt crisis also weighs on export growth. The contribution of expenditure components to GDP growth are presented in Figure 5.

Estonia's growth is nevertheless very dependent on export income and when the external environment improves, exports will start contributing to it again. If the external environment recovers faster than assumed, exports may also pick up more rapidly, since the relatively low capacity utilisation enables some producers to quickly step up their production volumes. On the other hand, if unfavourable external conditions persist, the development of domestic demand may be inhibited due to insufficient export income.

In the coming years, economic growth will remain below the historical average. Estonia's past 15 years' economic expansion has been impressive. In mid-90s, the country's income level (adjusted for purchasing power) made up about a third of the EU average, whereas now it accounts for two-thirds. As a result, since the relative lagging behind of Europe has decreased, the pace of convergence-driven growth may slow in the future. To achieve rapid growth in the future, Estonia needs to focus on more technologically advanced production.

Estonia's past ten years' growth was supported by increased labour participation and hefty investment in production capital. But since population growth was low in the 90s, the working-age population will start to shrink within a few years. The increasing popularity of working abroad may also harm the local production potential. Therefore, in order to preserve rapid growth, more attention should be paid to developing labour force and management processes.

Figure 5. Economic growth



Sources: Statistics Estonia, Eesti Pank

Table 2. Economic forecast by key indicators*

Difference from previous forecast

	2011	2012	2013	2014	2011	2012	2013
Nominal GDP (EUR bn)	16.0	17.0	18.1	19.4	0.0	0.3	0.3
GDP, chain-linked volume change (%)	7.6	2.6	3.6	4.1	-0.3	0.7	0.0
HICP, change (%)	5.1	3.9	3.2	2.7	0.0	1.1	0.3
GDP deflator, change (%)	3.7	4.0	2.6	2.9	-0.2	1.8	-0.2
Current account (% of GDP)	3.2	-2.6	-0.3	-0.4	0.5	-4.6	-1.2
Private consumption expenditures, chain-linked volume change (%)	4.4	4.2	3.1	3.7	0.7	1.9	-0.3
Government consumption expenditures, chain-linked volume change (%)	1.6	2.4	1.2	1.7	-0.3	-1.0	-0.8
Fixed capital formation, chain-linked volume change (%)	26.8	15.6	1.2	5.6	9.9	8.9	-4.5
Exports, chain-linked volume change (%)	24.9	3.9	6.4	6.6	1.4	2.3	0.0
Imports, chain-linked volume change (%)	27.0	7.9	4.5	6.5	3.1	5.2	-2.7
Unemployment rate (%)	12.5	10.5	10.1	9.0	0.4	0.1	0.3
Domestic employment, change (%)	6.7	2.0	0.3	0.9	-0.6	0.0	0.4
Productivity per employee, change (%)	0.7	1.3	3.0	3.2	0.0	0.6	-0.1
Compensation per employee, change (%)	1.5	6.2	5.9	6.2	-0.2	2.5	0.9
Real compensation per employee, change (%)	-3.1	2.4	2.7	3.3	0.6	1.4	0.7
Private sector debt, outstanding amount change (%)	-4.3	-0.8	2.0	4.4	-0.6	0.6	-0.2
Gross external debt (% of GDP)	98.0	98.6	95.1	91.0	…	…	…
Budget balance (% of GDP)	1.0	-1.5	-0.5	0.0	0.3	0.5	0.2

Sources: Statistics Estonia, Eesti Pank

* GDP and its components are chain-linked.

Box 2: Changes in the potential growth solution of the Macro Model and NAWRU

Eesti Pank's Macro Model for the Estonian economy (EMMA) calculates the potential GDP with the help of the Cobb-Douglas production function (see equation 1). The production function helps establish several other indicators as well.

$$Y^* = K_t^{\alpha}(H_t A_t)^{1-\alpha}, \alpha = 0{,}4 \quad (1)$$

The potential GDP (Y^*) depends on capital, labour and production technology development. Production capital forms according to the capital accumulation expression (see equation 2), where production capital entity depends on investment in production capital (I) ant the rate of amortisation (δ). The previous period's investments affect the current period's capital.

$$K_t = (1-\delta_t) K_{t-1} + I_{t-1} \quad (2)$$

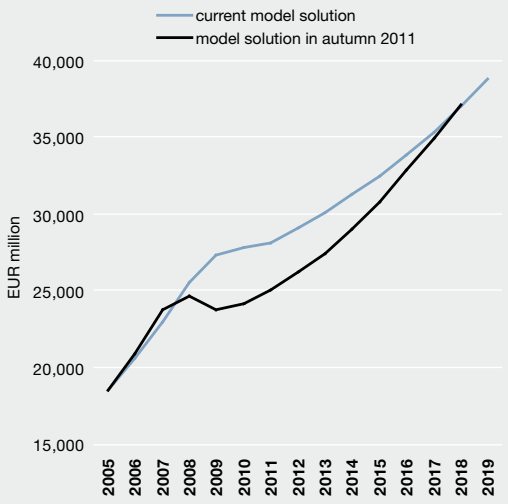
Labour input in the economy is expressed by working hours (H), which depend on the working-age population (N), the equilibrium labour participation rate (l^*), the commuting rate (m^*), the non-accelerating wage rate of unemployment (u^*) and equilibrium number of working hours per employee (h^*).

$$H_t = h_t^*(1-u_t^*)(1-m_t^*) l_t^* N_t \quad (3)$$

There are no data on the capital stock of the economy, which has thus been calculated by the state space model. The amortisation rate is variable, referring to changes in the capital structure and to developments in depreciation over time. We used to calculate the capital stock, using the fixed amortisation rate capital accumulation equation, and adjusted the level of capital in relation to the crisis of 2008 and 2009 in order to show the decline in potential GDP due to the crisis. Comparison of the earlier and the current method is presented in Figure c.

The technology level of the economy is calculated as Solow residual, further smoothed by the HP filter. This way, the shrinkage in potential GDP during the crisis is mostly expressed by changes in technology. Earlier, we linked a decrease in the potential to a contraction in the capital

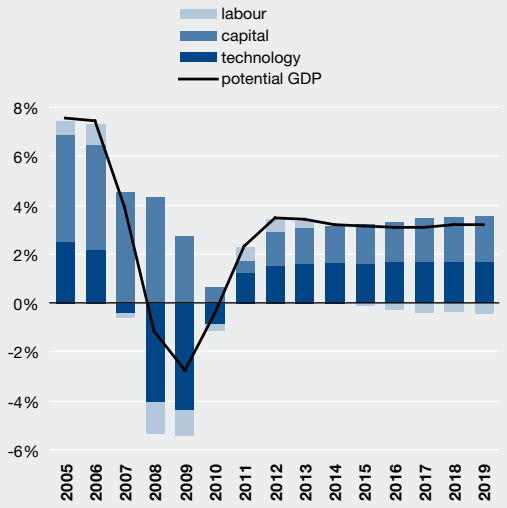
Figure c. Productive capital stock (in 2005 prices)



Source: Eesti Pank

stock. Now we presume that the capital stock rendered useless by the changing economic environment still exists, but with a low level of productivity in the new market conditions. The new approach is also more in line with the national accounts methodology.

Figure d. Potential GDP growth



Source: Eesti Pank

Labour input is strongly shaped by developments in the non-accelerating inflation unemployment rate and by the amount of working-age people. The latter is based on Statistics Estonia's population forecast. The non-accelerating inflation unemployment rate is discussed below. The equilibrium labour participation rate has been forecasted according to changes in the age structure of the population. The share of people in their prime working age will increase over the forecast horizon, and so will the participation rate. Looking ahead, the equilibrium participation rate will decline due to ageing population. Pendulum migration in the EMMA expresses the difference between domestic and total employment. The equilibrium number of working hours per person is a constant. Figure d presents the model solution of potential GDP growth.

Alternative estimates of structural unemployment rates for Estonia

Our assessment of the structural unemployment rate in the computation of potential output follows the definition of the non-accelerating wage rate of unemployment (NAWRU), which is conceptually very similar to the notion of NAIRU, the non-accelerating inflation unemployment rate. According to both concepts, cyclical pressures in the labour market – understood as deviations of the actual unemployment rate from the corresponding structural rate, the unemployment gap – induce equilibrating nominal adjustment: in the case of NAIRU, the adjustment is associated with changes in inflation, while in the NAWRU context it implies changes in nominal wage growth. In a small and very open economy like Estonia, where price inflation is strongly influenced by various external factors, it is likely that the inflationary or deflationary effects of the unemployment gap can be more easily detected in the dynamics of wages rather than prices. Mainly for this reason, our empirical analysis will be more closely related to the NAWRU methodology.

More formally, consider the Phillips curve

$$\pi_t = \sum_{j=1}^{m} \beta_j \pi_{t-j} - \theta(u_t - u_t^*) + \sum_{j=0}^{n} \alpha_j z_{t-j} + \varepsilon_{1,t}\,, \qquad (4)$$

where is either price inflation or nominal wage growth[11], u_t is the unemployment rate, z_t is a vector of relevant supply-side factors, such as oil and import price shocks, productivity shocks, etc. (normalised so that $z_t = 0$ means an absence of supply shocks), and $\varepsilon_{1,t}$ is a normally distributed disturbance with zero mean and variance $\sigma^2_{\varepsilon 1}$.

If $\sum_{j=1}^{m} \beta_j = 1$ and $\theta \geq 0$, u_t^* corresponds to the unemployment rate that is consistent with constant π_t, say π, provided that all of the supply-side shocks are absent (the *z* terms are zero). In other words, depending on whether π_t is wage growth or inflation, u_t^* defines the NAWRU or NAIRU, respectively.

Since the u_t^* is a patent time-varying process, statistical inference of NAIRU/NAWRU typically relies on unobserved-component models, whereby u_t^* the is estimated by the Kalman filter. To do so, a stochastic process needs to be assumed for u_t^*, which in our case is a simple random walk without a drift:

$$u_{t+1}^* = u_t^* + \varepsilon_{2,t}\,, \qquad (5)$$

where $\varepsilon_{2,t}$ is a white noise disturbance with variance $\sigma^2_{\varepsilon 2}$. From the economic point of view, equation (5) can be interpreted as saying that the structural unemployment rate is driven by unknown, possibly many factors that have very persistent effects on it. The variance $\sigma^2_{\varepsilon 2}$, in turn, can be interpreted as a volatility parameter because it controls the typical amount by which u_t^* can change from one period to the next (if $\sigma^2_{\varepsilon 2} = 0$, u_t^* is constant).

The estimation of NAWRU for Estonia using the above setup turned out to be surprisingly difficult, and one of the key reasons for that appeared to be high volatility in quarterly nominal wage growth. As a result, attempts to establish negative relation between changes in wage growth and unemployment were not successful. A more promising way forward seemed to be, first, to consider (i) year-on-year rather than quarter-on-quarter growth rates, and (ii) to switch from the Phillips curve relationship based on nominal wage inflation to the Phillips curve formulated in terms of real wage growth, simultaneously accounting for the relationship between real wage growth and productivity growth, that holds quite strongly in the Estonian data.

The selected specification for the real wage growth Phillips curve was:

$$\pi_t^w = \beta_1 \pi_{t-1}^w + \beta_2 \pi_{t-2}^w + \beta_3 \pi_{t-3}^w + \alpha_0 \gamma_t + \alpha_1 \gamma_{t-1} - \theta(u_t - u_t^*) + \varepsilon_{1,t}\,, \qquad (6)$$

[11] See, for example, P. Richardson, L. Boone, L. Giorno, M. Meacci,D. Rae ja D. Turner (2000). The concept, policy use and measurement of structural unemployment: estimating a time varying NAIRU across 21 OECD countries, OECD Economics Department Working Paper No 250.

where π_t^w is real wage growth and γ_t is productivity growth. Importantly, the restriction that real wage growth and productivity growth are equal in the long run ($1-\beta_1-\beta_2-\beta_3=\alpha_0+\alpha_1$) was not rejected by the data and thus was imposed[12]. The system consisting of equations (6) and (5) was estimated by the Kalman filter, using quarterly data series running from the first quarter of 1997 to the third quarter of 2011. The smoothness parameter $\sigma_{\varepsilon 2}$ was set at one per cent, which is about five times the level used by Gordon (1997) in the case of the U.S.[13] In what follows, the model consisting of equations (5) and (6) is referred to as Model 1.

As emphasised by Laubach (2001),[14] a two-equation system like Model 1 has the property that only information contained in π_t^w and γ_t is used to infer the unemployment gap $u_t-u_t^*$. That is, some law of motion for the unemployment gap itself needs to be assumed if information about the actual unemployment rate is to be used in estimating the unemployment gap.

To explore the implications of extending the empirical setup in this direction, we have estimated three additional systems, each consisting of three rather than two equations. Thus, our Model 2 consists of equation (5), a somewhat more restricted version of the wage equation

$$[\pi_t^{rw}-\gamma_t-\alpha\Delta\gamma_{t-1}-\theta(u_t-u_t^*)]=\beta[\pi_{t-1}^{rw}-\gamma_{t-1}-\alpha\Delta\gamma_{t-2}-\theta(u_{t-1}-u_{t-1}^*)]+\varepsilon_{1,t}\,, \quad (7)$$

and a very simple measurement equation for the unemployment gap:

$$u_t=u_t^*+\varepsilon_{3,t}\,. \quad (8)$$

The remaining two models share the same equations (5) and (8), but have different specifications of equation (7): real wage growth (π_t^w) is replaced by nominal wage growth (π_t^w) in Model 3 and by the change in nominal wage growth ($\Delta\pi_t^w$) in Model 4. Put differently, equation (7) in Models 2 and 3 aims at establishing a negative link between the unemployment gap and the growth rate of real and nominal unit labour costs, respectively, whereas in Model 4 it tries to capture a negative relation between the unemployment gap and changes in the growth rate of nominal unit labour costs.

The structural unemployment rates estimated using Models 1-4 are compared in Figure e.[15] The flattest series for u_t^* is produced by Model 1, but the estimate is very imprecise: its confidence interval of +/–2 standard deviations exceeds +/–3 pp (not shown). The estimate also appears

[12] Whelan, K. (2000) discusses that an equation similar to (6) represents one of the key assumptions of Friedman's natural rate theory, namely, that workers bargain in terms of real wages. Together with additional assumptions about adaptive inflation expectations and mark-up pricing, it leads to the standard accelerationist Phillips curve, like equation (4) above, which implies that there can be no long-run trade-off between unemployment and inflation. Whelan, K. (2000) "Real wage dynamics and the Phillips curve," FRB Finance and Economics Discussion Series, 2000-2.

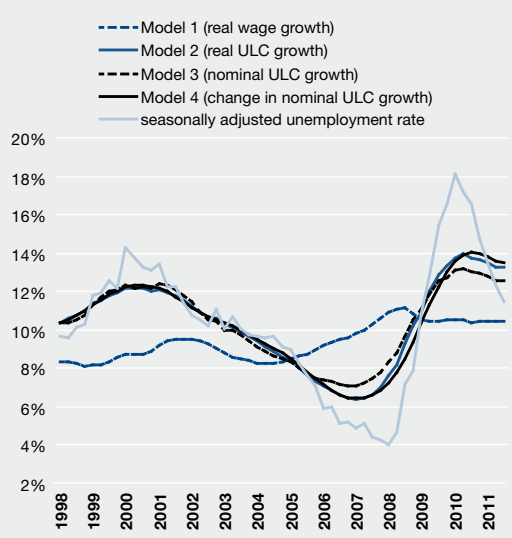
[13] Gordon, R.J. (1997) "The time-varying NAIRU and its implications for economic policy," Journal of Economic Perspectives, 11(1), 11-32.

[14] Laubach, T. (2001) "Measuring the NAIRU: Evidence from Seven Economies," The Review of Economics and Statistics, 83(2), 218-231.

[15] Models 2–4 were estimated using quarterly data running from 1998Q1 to 2011Q3. The standard deviations and were estimated, while was set at 4 per cent.

to suffer from considerable end-point problems; for example, the level of at the end of the sample period is sensitive to whether the last three data points are used in the estimation or not. The series corresponding to Models 2–4 are notably more cyclical and remarkably similar to each other. The latter point suggests that the estimates are mostly driven by the evolution of the actual unemployment rate rather than by the dynamics of real or nominal unit labour costs. All said, the analysis has revealed that the estimates are surrounded by a very high degree of uncertainty and that they should therefore be considered with great caution. And, since none of the estimates stand out as preferable, an average across several estimates is used as the structural unemployment rate when assessing potential output.

Figure e. Estimated structural unemployment rates with different models



Source: Eesti Pank

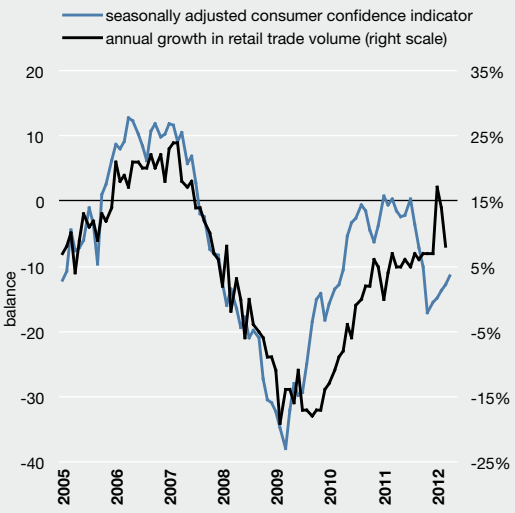
Domestic demand

Private consumption

Private consumption grew by 12% last year. 2011 started with robust growth in employment and average wages, which, in turn, increased compensation to employees and household disposable income. Income grew more rapidly than consumption, supported by strong confidence and households' positive expectations that their economic situation would improve. Consumer confidence stood at a historically solid level in the first half of 2011, but started shrinking at the end of summer (see Figure 6). The crisis in the euro area made consumers in Estonia more pessimistic about the future, but this did not have a significant impact on their income and the labour market situation improved gradually.

In 2011, private consumption growth was mainly driven by durable goods, the acquisition of which surged by 27.5% at constant prices, year-on-year.

Figure 6. Consumer confidence indicator



Sources: Statistics Estonia, European Commission

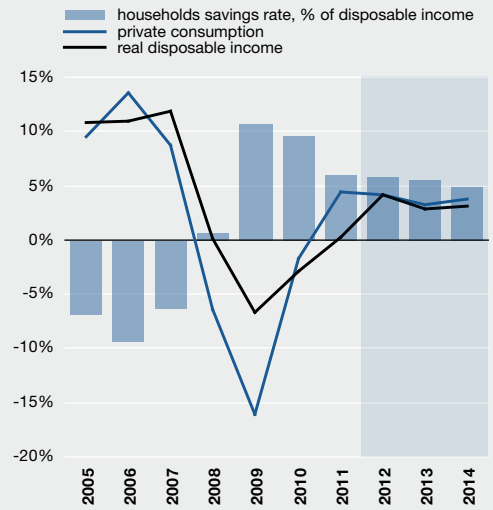
Growth gained momentum in the second half of the year, even though consumer confidence decreased somewhat. Although food prices and housing costs rose, the share of compulsory expenditure in the household consumption basket dropped in 2011, after having increased since 2008.

Wages continued to grow at the beginning of 2012, confidence regarding the future income outlook improved, and households increased consumption. In the first quarter of 2012, retail trade volume expanded by about 13% at constant prices from a year ago. This was partly due to the modest sales volumes recorded at the beginning of 2011, when Estonia adopted the euro, but growth was strong also without that technical effect. Growth was once again boosted by the sales of commodity groups considered durable goods by households (vehicles, household appliances, construction goods, etc.), while the biggest contribution came from sales in supermarkets.

The first-quarter results have elevated private consumption growth expectations for 2012, compared to the 2011 autumn forecast. Nevertheless, growth in consumer expenditure is slowing and will primarily depend on wage and employment developments in the coming years. This is in line with slowing annual growth in the retail sales volume index in the first quarter of 2012. The rise in the price of electricity at the beginning of 2013 will lower households' real disposable income. According to the forecast, private consumption will grow by 4% in 2012, by 3.1% in 2013 and by 3.7% in 2014, and it is to grow somewhat faster than disposable income, so there will be less saving compared to the years of recession (see Figure 7).

In 2009–2010, Estonia's households saved around 10% of their disposable income. This applies to households that were able to build financial buffers in fear of difficult times. When the recession ended, the precautionary motive for saving lost some of its effect, and the household saving rate fell by 4 pp in 2011. The rate will drop even further during the forecast horizon, to 5.2% of disposable income in 2014, provided that these consumption patterns continue.

Figure 7. Real growth of private consumption



Sources: Statistics Estonia, Eesti Pank

Gross fixed capital formation

In 2011, gross fixed capital formation grew by 27% in Estonia. This figure is comparable to the boom levels, whereas the level of gross fixed capital formation in the Estonian economy is only comparable to that in 2003. The decline in gross fixed capital formation during the recession has brought the percentage of investment in GDP considerably below the boom levels.

Although the global economic situation aggravated in 2011, Estonia's companies and households appeared to be less susceptive than expected and many decided to not discard their investment plans. Investment growth was boosted primarily by the business sector, where gross fixed capital formation increased by 32.2%,

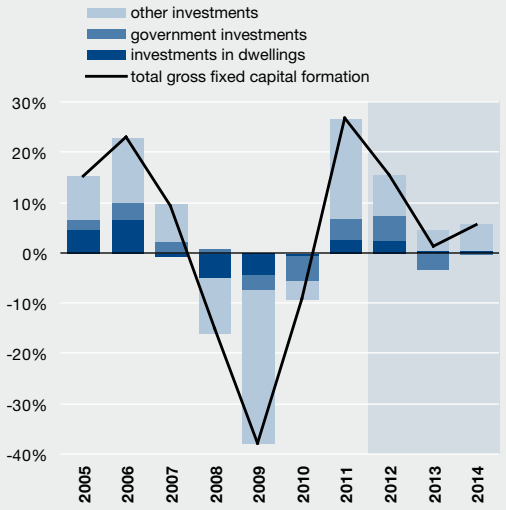
year-on-year. The majority of investments were made in the industrial sector, which also contributed the most to value added growth, and in the energy sector, where several large development projects were implemented. To a lesser extent, investment picked up also in other fields of activity, except for construction and real estate, which recorded a drop in gross fixed capital formation in annual terms.

Corporate investment has grown hand in hand with a rise in the use of production capacity. As the investment survey by the Estonian Institute of Economic Research shows, in 2011, the main purpose for acquisition of fixed assets was to restore production capacity. To achieve this, companies invested mainly in machinery and equipment. Construction investments started to increase only in the second half of 2011.

In the first quarter of 2012, domestic demand was driven by private consumption and investment, regardless of the low levels of the economic confidence indicator and a fall in production capacity utilisation. Capital goods imports remained strong at the beginning of the year, and the rising number of issued building permits points to ongoing recovery in the construction sector. The latter can greatly rely on investments that are funded from CO_2 projects, and on the future plans of major companies.

Corporate investment growth in 2012 will be more modest than in 2011. The strong growth in 2011 came from the exporting industry and the energy sector, but the latter's contribution to growth will decline this year. The slowdown in Estonia's economic growth and weaker external demand will hinder the expansion of businesses, while investment growth is expected to become more broad-based. Gross fixed capital formation in the business sector will grow more rapidly than GDP in the coming years, as the low levels of fixed asset acquisition and interest

Figure 8. Real growth of gross fixed capital formation



Sources: Statistics Estonia, Eesti Pank

rates will foster investment. The forecast shows that corporate gross fixed capital formation will increase 12.5% in 2012, 6.3% in 2013 and 8.1% in 2014 (see Figure 8). This relies on the assumptions that uncertainties in the external environment will recede and the growth outlook will improve. Borrowing is expected to pick up as well.

General government investment

The general government's projects related to selling CO_2 emission quotas were implemented faster than initially planned and expected during the preparation of the autumn forecast. Consequently, gross fixed capital formation by the general government grew by 20% in 2011. The general government's contribution to investment growth will remain significant also this year: 24.7% based on the forecast. Once the CO_2 projects terminate, the general government investment will shrink sizably due to the high base effect: to 15.7% in 2013 and to 1.9% in 2014.

Housing investment

The housing market regained momentum in 2011 and the real-estate price (average price per square metre) rose by about 10%, as stated by the Land Board. Even though prices grew rapidly, housing capital formation (chain-linked volume) increased by 15.8%, with especially strong growth recorded in the second half of 2011. The rapid growth in housing investment did not entail a rise in the housing loan stock and much of the value of transactions was covered by own funds. Household investment continued to grow also at the start of 2012, though at a much more modest pace than at end-2011. Based on Land Board data, demand for apartments picked up in the first quarter of 2012, as households purchased twice the value of real estate compared to a year ago.

In the coming years, housing investment will be fostered by the improving labour market, low interest rates and also the option of using the general-government sector's help for insulating dwellings. Looking at the first-quarter data, housing capital formation will grow faster in 2012, compared to 2011. Thereafter, the housing market will normalise along with the slowdown in economic and wage growth, and housing investment is expected to grow by 2.7% in 2013 and by 3.3% in 2014, according to the spring forecast.

Inventories

Inventories contributed 2.6 pp to GDP growth in 2011. Industrial companies reduced their raw material inventories in the fourth quarter of 2011. The inventories of merchandise purchased for resale decreased over the quarter in the industrial and energy sectors and trade. The volume of inventories is projected to grow in the coming periods, along with general economic activity. The share of inventories as a ratio to GDP, which is currently above Estonia's historical average, is expected to decrease somewhat.

External balance and competitiveness

In the past few years, the economic growth structure has been reflected in the external balance. Domestic demand contracted more than exports during the recession in 2008 and 2009. Thus, the use of imported goods decreased more than the exports of goods, so trade balance improved and the current account deficit turned into a surplus. The economic recovery in 2010 and 2011 was first driven by export growth, with domestic demand improving somewhat later. On the one hand, export growth increased the current account surplus, while on the other hand, the increased profits of foreign-owned companies added to the deficit on investment income.

In 2010–2011, exports were boosted by favourable market conditions and the reutilisation of idle production capacity. These positive factors helped the Estonian exporters to regain momentum and increase their market share. The heightened tensions in summer 2011, which stemmed from the European sovereign debt crisis, curbed the export volumes of some businesses, as indicated by relatively slow export growth in 2012. The export forecast relies on the assumption that foreign markets will gradually regain momentum in 2012 and Estonia's exports will increase in line with external demand growth. The current account will be in deficit over the whole forecast horizon (see Figure 9), as domestic demand growth will contribute to imports. The surge in domestic demand and weaker exports due to the sovereign debt crisis led to a current account deficit already in the first quarter of 2012. This is, however, mostly due to one-off factors, which will abate in the coming quarters, and so the current account deficit will shrink. The improving domestic market may affect a few exporters. For instance, the share of construction services in total services exports has risen over the past few years. Stronger demand for construction works in Estonia may shift the focus

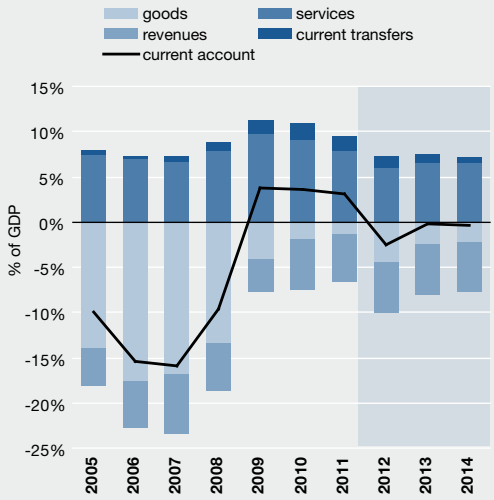
of companies that are currently operating abroad back to the domestic market. One of the risks surrounding the services account forecast lies in the tightening competition among Baltic Sea harbours, which may curb transport services exports.

Over the past ten years, the surplus on current transfers, which has resulted from the inflow of European structural funds, has contributed to the current account surplus. The forecast projects a drop in that inflow, which will reduce the surplus on current transfers over the forecast horizon.

The deficit on the income account, as recorded in the past, has stemmed mainly from investment income. This is partly due to the fact that foreign investment in Estonia exceeds Estonia's investment abroad. Another reason is the higher investment yields in Estonia, compared to the yields on Estonia's investment abroad. Thus, the income account forecast is surrounded by high uncertainty. The outflow of investment income is expected to be slightly smaller in the forecast horizon than it was in 2011. In case the yields on investment in Estonia and Estonian investment abroad level off, the income account deficit may contract significantly.

Estonia's external debt has been declining after the recession, which points to a decrease in the debt burden as well as to some one-off determinants. The latter include Estonia's accession to the euro area, which reduced the reserve requirement for commercial banks, and also changes in banks' ownerships. The stock of loans has decreased, while deposits have grown, which means that banks operating in Estonia have been able to reduce their liabilities to parent banks. At the same time, direct corporate borrowing from external markets has increased. Estonia's external debt is expected to grow in the forecast horizon. This will be due to a negative external balance and Estonia's participation in the European Financial Stability Fund. Estonia's

Figure 9. Current account



Sources: Statistics Estonia, Eesti Pank

improving credibility and reputation may affect gross external debt in the coming years. It is possible that it will increase in statistical terms in the coming years, should some major foreign company move its financial unit to Estonia, but this will not affect the country's net external debt (assets less liabilities).

Labour market

In 2011, the Estonian labour market saw a strong recovery from the previous year's low and an acceleration in labour costs growth. Annual employment growth was robust, while quarter-on-quarter growth rates decelerated within the year. In the second half of the year, business confidence about employment developments in the coming months quickly turned more pessimistic because of the worsening sovereign debt crisis in Europe. The same applied to households: the number of those expecting unemployment to increase exceeded the number of optimists. The slowdown in economic growth in the fourth quarter was reflected in a drop in season-

ally adjusted employment, compared to the third quarter.

At the time of preparing the autumn forecast we expected that low confidence would be temporary, but it actually lasts for several quarters. The data for the first quarter of 2012 were, however, more positive than forecasted: confidence continued to recover and employment responded to that faster than expected, which means that the fall in employment at end-2011 was temporary. Compared to the autumn forecast, the current labour market outlook for 2012 is more optimistic owing to the upward revision of economic growth forecast.

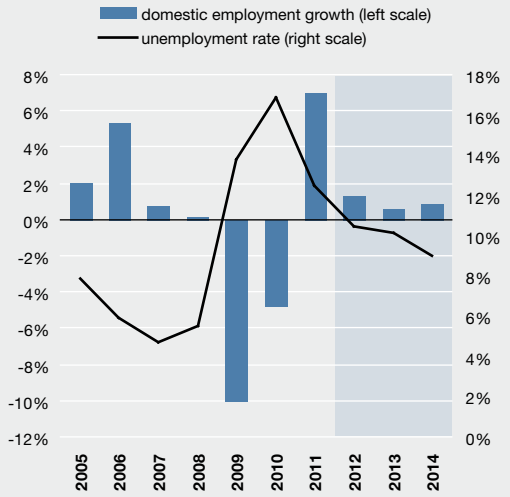
The current projection for labour costs is higher than the December 2011 projection. This is due to improved economic activity on the one hand, and public sector wage pressures (the strike of school teachers in the first quarter) on the other. Thus, we expect the share of labour costs in total value added to rise slightly in 2012 and remain at that level in the subsequent years.

Employment and productivity

Total employment grew by 6.7% in 2011, and by 3.9% in the first quarter of 2012 in annual terms. Throughout that period, the biggest contributors to growth were domestic market-oriented services. The contribution of the exporting sector, however, diminished as a result of a decline in external demand. Compared to the peak levels of the boom period, employment in Estonia was still about 6.4% lower in the first quarter of 2012.

Quarter-on-quarter, employment fell somewhat at end-2011, but growth recovered in the first quarter of 2012. The extent of the fall largely depends on the estimate of the seasonal factor, given that the third quarter of 2011 was exceptionally favourable for construction works. We expect employment growth to slow in 2012, after the temporary fluctuations recorded in the past few quarters. This will be due to slowing

Figure 10. Employment and unemployment



Sources: Statistics Estonia, Eesti Pank

economic growth and rising wage pressures. Public sector payroll growth will be curbed by the need for state budget consolidation. Public sector wages have been growing at a much slower pace than private sector wages in the past few years, leaving very little room for hiring additional workforce. Private sector employment will be more and more shaped by the shrinking number of available prospective employees, and by the gap between the qualification and geographical location of the workforce and the needs of employers. We expect a 1.3% employment growth for 2012 and the growth pace should slow to below 1% in 2013 and 2014 (see Figure 10).

While employment showed a strong recovery in 2011, labour productivity growth decelerated throughout the year and even posted negative results in annual terms in the third and fourth quarter. The reason for this is the higher inertia of employment compared to GDP dynamics: in part, new jobs were created due to the rapid rise in production volumes in 2010. In the fourth

quarter of 2011 and the first quarter of 2012, labour productivity did not change much from the year before. In the forecast horizon, productivity will regain momentum along with economic growth, reaching 3.2% in 2014, which is considered to be a long-term average growth rate in view of technological and human capital developments.

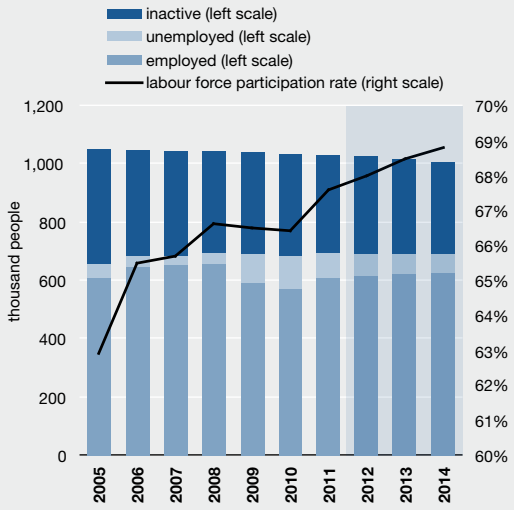
Unemployment

In spite of the increasing share of the long-term unemployed in 2011, the labour participation rate was nevertheless historically high and grew even further in the first quarter of 2012. The number of the discouraged, i.e. those who have given up hope of finding a job, stayed stable at around 10,000 people. The April 2012 Labour Market Review[16] included a box on the age structure of the working-age population and labour force participation. The analysis showed that the rise in participation rates in the past few years was largely due to changes in the age structure, which, in turn, stemmed from fluctuating birth rates at end-1980s and in the first half of 1990s. All other factors being equal, the participation rate is expected to rise further until 2016, which will partly offset the decline in labour force due to a decrease in population. The current forecast anticipates the participation rate to increase to 68.8% in the coming years, which is in line with the impact of changes in the age structure within the working age population (see Figure 11).

Unemployment was at 11.5% in the first quarter of 2012, having declined by 2.9 pp over the year. From 2012 to 2014, unemployment will be following a downward trend, but the number of the unemployed will drop at a slower pace than was set out in the autumn forecast, because the labour participation rate will be higher than expected. Unemployment will fall to 8.7% by 2014; that is, it will be lower than the non-accelerating wage rate of unemployment (NAWRU),

[16] http://www.eestipank.info/pub/en/dokumendid/publikatsioonid/seeriad/tooturu/tooturu_112.pdf?ok=1

Figure 11. Working age population by labour market status



Sources: Statistics Estonia, Eesti Pank

potentially causing wage pressures. Thus, in a few years, wage pressures will stem from supply-side constraints. The labour market policy will have to focus on the skill and knowledge mismatch problem in the economy.

Wages and labour costs

Annual growth in average monthly gross wages accelerated throughout 2011 and stood at 6.4% in the second half of the year. Real wage growth was positive for the first time over a long time. Private sector wage growth outpaced that of the public sector; wages in the manufacturing sector increased in line with average wage growth. Wage growth accelerated slightly also in the first quarter of 2012 and stood at 6.9%.

Similar wage developments will continue also in the future: growth will be 6.1% in 2012, 5.9% in 2013 and 6.2% in 2014 (see Figure 12). The public sector's contribution to wage growth will be larger than in the last couple of years, especially as regards local government fields, including education and healthcare. Trade unions

play a more significant role in wage formation in these fields than in other sectors of the economy. Competition from the neighbouring countries exerts strong wage pressures in healthcare, where wage negotiations are currently under way.

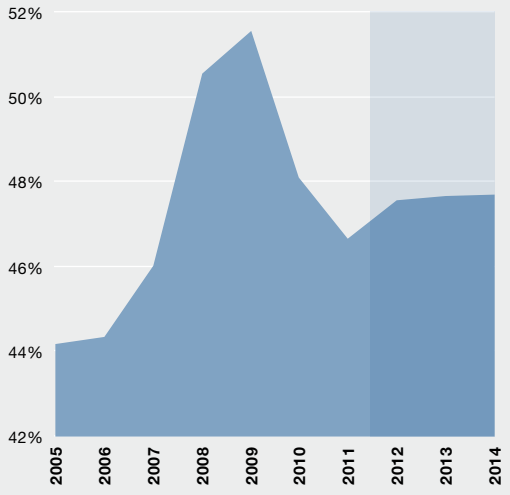
The lack of qualified workforce has already given rise to wage pressures in certain fields of activity, such as information and communication. This tendency will deepen over the forecast horizon along with a decrease in available workforce. Another factor to be stepping up pressure on the labour market is the location of available workforce away from hubs with stronger than average labour demand growth. For instance, unemployment in Ida-Viru County (north-eastern Estonia) was 9 pp higher than in Tallinn in the first quarter of 2012. In the construction sector, the past quarters' data point to a stronger than average wage growth, which is partly due to the recent recovery from recession, but also because of cross-border wage competition.

Real labour cost growth exceeded productivity growth in both the fourth quarter of 2011 and the first quarter of 2012, resulting in a rise in real unit labour costs[17]. These developments are common in periods of slowing economic growth and will last until companies bring their labour cost growth in line with the weaker demand. The wage-productivity gap that emerged at the peak of the last economic cycle narrowed considerably in 2010–2011. In 2013–2014, real unit labour costs are expected to remain close to 2012 levels, meaning that the wage and productivity gap will not shrink any further. The share of the wage fund in GDP will be somewhat higher than prior to the boom, but nevertheless much lower than during the boom (see Figure 13).

Figure 12. Wage growth

Sources: Statistics Estonia, Eesti Pank

Figure 13. Share of compensation to employees in GDP



Sources: Statistics Estonia, Eesti Pank

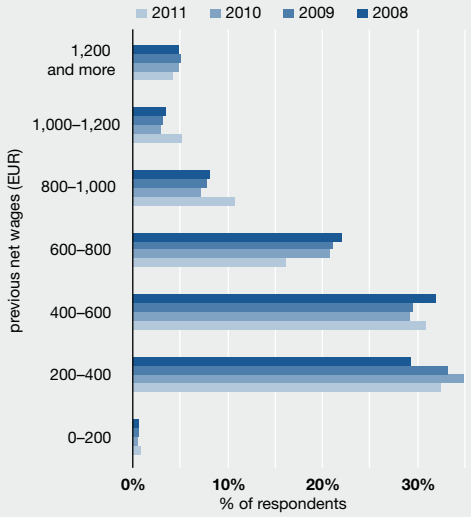
[17] The real unit labour cost indicator shows labour costs per unit of GDP. Wage growth boosts unit labour costs, while productivity growth curbs them.

Box 3: Wage growth in Estonia after recession

Wages growing faster than productivity was one of the key elements of the boom-period overheating in the Estonian economy. Hence, wage developments require special attention during the following upward cycles. By the second half of 2011, annual growth in the average monthly gross wages reached 6.4% and accelerated even further in the first quarter of 2012, to 6.9%. However, average wage rate statistics provides only a partial overview of wage growth, since it does not include information on the dispersion of wage distribution, nor does it allow extracting the effects of employment structure changes on wage growth. With the help of wage data from the Estonian Labour Force Survey (LFS), we analyse in the present box, how wage distribution has changed in the past years, how changes in the characteristics of the employed have impacted the average wage growth and how the different characteristics of an employed person affect his wages. It must be noted, however, that the wage data from the LFS is based on interviews. It cannot be adjusted for changes in working time, e.g., holidays. Furthermore, answering or not answering the wage question probably depends on both the wage level as well as on the characteristics influencing the wage level.

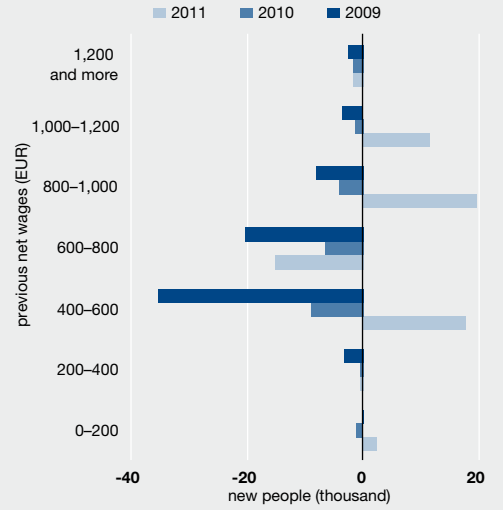
The distribution of net wages based on data from the 2008–2011 LFS indicates that the share of employees receiving a net wage between 200 and 400 euros increased at the expense of all the other wage groups during the crisis. The biggest drop was observed in the number of employees whose wages were close to the median wage. Figure g depicts changes in the number of

Figure f. Wage distribution based on ELFS net wages



Sources: Estonian Labour Force Survey, Eesti Pank

Figure g. Change in the number of employees by wage range



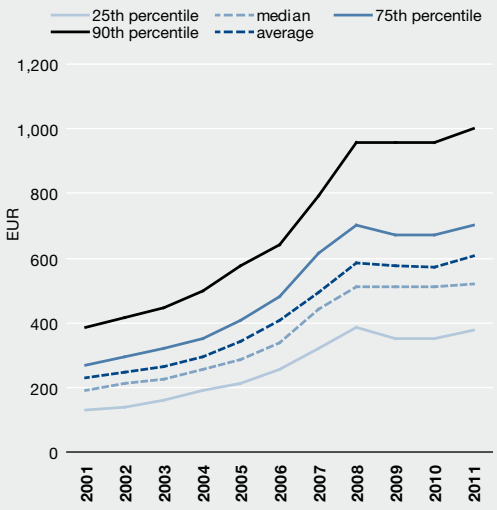
Sources: Estonian Labour Force Survey, Eesti Pank

* The sample consisted of only full-time wage earners in Estonia.

employees in absolute terms. The relative change was broad-based, however, and approximately the same across the entire wage distribution, starting from 400 euros. A strong recovery in employment along with wage growth took place in 2011 and the number and share of people earning an above-average wage (between 800–1,200 euros) increased.

The LFS database also enables to monitor changes in the median wage and quantiles, depicted in figure h. The dispersion of wage distribution increased at the end of the boom period, in 2008, since the higher wage quantiles increased more compared to the median. Wage adjustment in 2009 entailed a drop in the 25th percentile of the wage distribution, while the wage level of the top 10% earning employees did not decrease. Although in 2011, wages grew the most in the 25th percentile of the wage distribution, compared to 2008, only the 90th percentile of the wage distribution has increased by now. This indicates a slight rise in inequality in recent years.

Figure h. Percentiles and average of wage distribution



Sources: Estonian Labour Force Survey, Eesti Pank

Table a. Average net wage growth

	2009	2010	2011	2011 vs 2008
Occupation				
Military personnel	4.7%	-5.6%	11.0%	4.7%
Top executives	-1.7%	-0.7%	4.2%	1.7%
Top specialists	2.4%	0.2%	7.1%	9.8%
Technicians and mid-level specialists	0.5%	1.8%	8.1%	10.5%
Officials	-2.9%	-4.7%	6.9%	-1.1%
Service and sales personnel	-5.0%	1.8%	7.6%	4.1%
Skilled workers in agriculture, forestry, hunting and fishing	0.4%	4.8%	-3.7%	1.3%
Artificers and skilled workers	-9.1%	-2.6%	2.2%	-9.5%
Machinery and equipment operators	-5.2%	-2.3%	7.7%	-0.3%
Unskilled workers	-4.8%	4.0%	4.6%	3.5%
Education level				
Basic education	-5.8%	-2.4%	6.3%	-2.2%
Secondary education	-5.7%	-0.6%	4.9%	-1.6%
Higher education	-0.2%	0.3%	3.5%	3.6%

Sources: Estonian labour force survey; Eesti Pank's calculations.

Table a indicates that the wages of artificers, skilled workers, machinery and equipment operators, and officials decreased the most during the recession. The wages of skilled workers were considerably higher in 2011 than in 2008, during the boom period, while the wages of unskilled workers have still not recovered. This is also confirmed by the rise in the average wages by educational levels.

Knowing that in 2009–2010 employment fell particularly at the expense of low-skilled workers and employees earning less than average wages and that in 2011 a faster than the average recovery took place in the same segment, it can be stated that changes in average wages underestimate the actual labour cost dynamics. Without a structural change, a somewhat sharper decline in wages would have occurred but also a stronger wage growth in 2011.

Prices

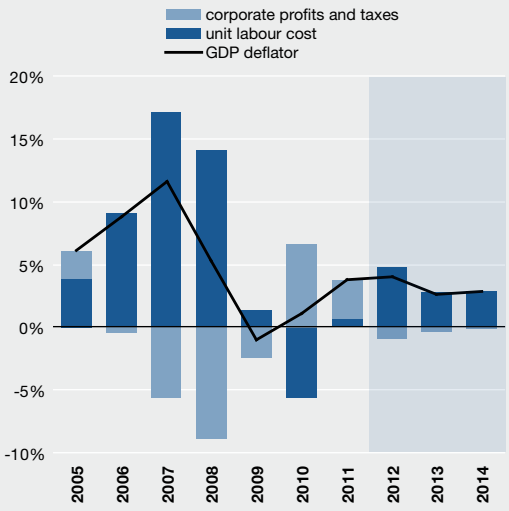
Inflation in Estonia[18] has been volatile in recent years, accelerating to 5.1% after the exit from recession in 2011. Inflation slowed in the second half of 2011, but price growth in the first quarter of 2012 was nevertheless more rapid than expected in the autumn forecast. This was primarily due to the price hike of energy and the weakening of the euro exchange rate vis-à-vis the U.S. dollar. Food, which makes up another significant part of the consumer basket, has not caused strong price pressures over the past quarters, rather the contrary. The cheapening of several food groups in the global market has not yet passed through to Estonia's consumer prices. Inflation stemming from the domestic economy was weak in the first quarter, since the economy has unutilised capital and labour resources. As a result, core inflation remained below 3%.

The spring forecast sees Estonia's inflation slowing to 3.9% in 2012 and to 3.2% in 2013. Inflation will continue to be markedly faster than the euro area average, but the difference will narrow in the second half of the forecast horizon. The price level will be lifted by the opening of the electricity market in 2013, which will complete the convergence of energy prices. In 2014, inflation is projected to slow to 2.7%, partially owing to rapid nominal convergence in recent years.

[18] The text refers to HICP throughout.

Domestic inflation will accelerate along with improving economic activity. Wage pressures were weak in 2010 and 2011, so companies were able to restore their profit margins (see Figure 14). Wage growth accelerated at the end of 2011, and the increase in labour costs exceeded productivity growth. Wage growth will be mainly reflected in the inflation services sector that is closed to external competition. Core inflation is projected to accelerate to 3.5% by 2014 because

Figure 14. Contributions to GDP deflator growth



Sources: Statistics Estonia, Eesti Pank

of wage growth and structural bottlenecks in the labour market.

Food

Food prices went up by 8.6% last year, posting the steepest price hike in the EU. Global-market developments were the main reason behind the increase. Partly, inflation could be attributed to the structure of the Estonian food market, which made it easier to raise prices in the supply chain. Food inflation slowed markedly at the start of this year due to the high reference base, but the price shocks of single food products gave rise to new inflationary pressures. The spring forecast expects food prices, which may be affected, among other factors, by the EU agricultural policy and Russia's accession to the WTO, to increase by 3.5% this year.

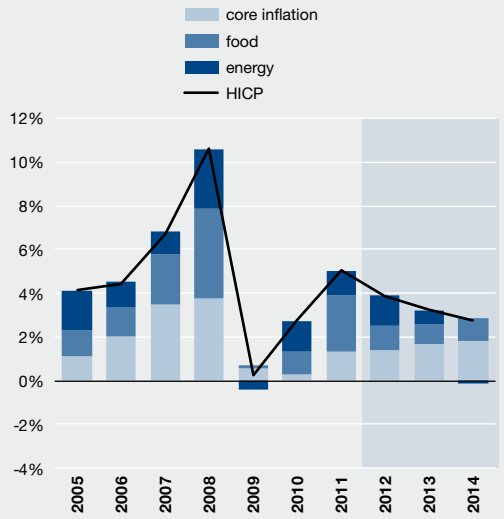
Energy

The price of energy has been very volatile, and this has been further amplified by exchange rate fluctuations. Markets expect the oil price level to remain in the range of 100–115 USD per barrel. Pessimistic scenarios project the oil price increase to continue at a fast pace during the entire decade. The energy inflation forecast for 2012 has been revised upwards to 9.8%, because of both the motor fuel and the thermal energy component. Electricity prices will soar at the start of 2013 due to the opening of the market. The forecast assumes the electricity price to rise about 20%, which will affect consumer price inflation by 0.7 pp (see Figure 15). Additional indirect effects may amount up to 0.3 pp, according to the input-output table.

Core inflation

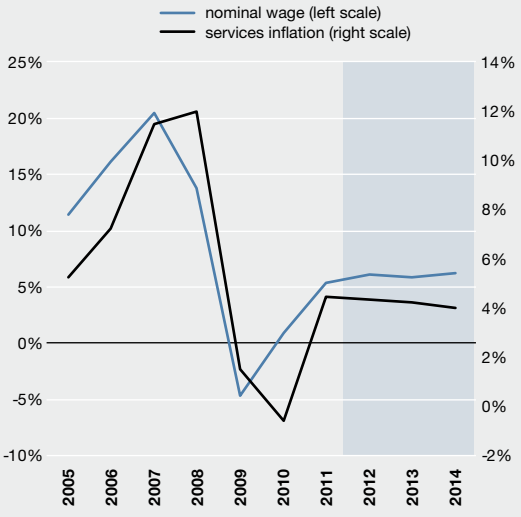
Core inflation was relatively low in 2011, just 2.4%, but it will increase gradually in the years to come. Last year, core inflation mostly reflected the ongoing rapid expansion of the tourism sector and the post-crisis normalisation of rental prices. Services inflation, in turn, has been contained by the cheapening of communication services:

Figure 15. Contributions to HICP annual growth



Sources: Statistics Estonia, Eesti Pank

Figure 16. Services inflation and annual wage growth



Sources: Statistics Estonia, Eesti Pank

Table 3. Impact of administrative factors in inflation forecast*

Measure	Enforcement	Price change (%)**	Contribution to annual consumer price growth (pp)
Tobacco excise duty	Jan 2011	9.0	0.2
Electricity	Aug 2011	8.0	0.2
Tobacco excise duty	Jan 2012	8.0	0.2
Alcohol excise duty	Feb 2012	2.5	0.2
Electricity	Aug 2012	2.6	0.1
Opening of the electricity market	Jan 2013	20.0	0.7
Alcohol excise duty	Jan 2013	2.5	0.2
Tobacco excise duty	Jan 2013	8.0	0.2
Alcohol excise duty	Jan 2014	2.5	0.2
Alcohol excise duty	Jan 2015	2.5	0.2
Alcohol excise duty	Jan 2016	2.5	0.2
Total 2011			0.4
Total 2012			0.5
Total 2013			0.5
Total 2014			0.2

* Includes measures with the estimated impact higher than 0.1 percentage points.
** Price change in product groups subject to measures.

Sources: Eesti Pank, Ministry of Finance

by –7.3%, year-on-year, in the first quarter, contributing –0.3 pp to the annual consumer price growth. In the forecast horizon, core inflation is primarily influenced by the accelerating wage growth. The forecast projects services inflation to reach the level of long-term convergence in a few years (see Figure 16). Non-energy industrial goods, the second core inflation component, will go up in price approximately at the same pace as in the euro area countries on average.

Administrative measures

Looking at tax changes, alcohol and tobacco excise duties will be raised at the start of 2013. The effect of the tobacco excise duty rise is likely to pass through to the HICP only in March or April, due to companies' stocks. The increase in indirect taxes will accelerate inflation by up to 0.4 pp in 2013. Several factors, such as the introduction of free public transport in Tallinn and the higher education reform may ease the impact on inflation. The administrative inflation component may be underestimated, especially towards the end of the forecast horizon.

General government

Estonia's public finances are strong compared to most of the EU Member States. Recent years' prudent fiscal policies have helped rapidly narrow the government budget deficit, adding to the credibility of the country's economic policy and contributing to growth. Considering the high uncertainty surrounding the resolution of the sovereign debt crisis and developments in the external environment, strong fiscal policy continues to be the right direction to take. Moreover, looking further ahead, additional burden on the state budget imposed by ageing population also needs to be taken into account.

General-government revenue

Supported by robust growth in domestic demand and in compensation to employees at the start of 2012, tax receipts have also increased considerably at the beginning of the year. The annual tax revenue growth during the first five months of the year has been about 10%, but it should decelerate in the second half of 2012, when both

domestic demand and growth in compensation to employees are expected to slow. In the years to come, tax revenue should increase by about 7%.

Non-tax revenue growth should slacken as well. The forecast assumes that the use of EU structural funds will rise only very little this year compared to 2011, after which it will start to decrease. We also expect that income from asset sale and withdrawal of dividends from state-owned companies will also decline as from 2013. The forecast takes into account the 10% rise in the tobacco excise duty in 2012 and at the start of 2013, and the abolition of reduced tax rates on fuels in some sectors in 2012 and 2013. Compared to autumn, the forecast assumptions now also include the annual 5% increase in alcohol excise duty, the reduction in the unemployment insurance instalments as from 2013 and the rise in state transfers to the second pension pillar as from 2014, which will technically reduce the tax burden. As a result of the above steps, the tax revenue to GDP ratio will decline by 0.5 pp by 2014 compared to this year, to about 32.5% of GDP, which is still 1–2 pp higher than before the crisis.

General government expenditure

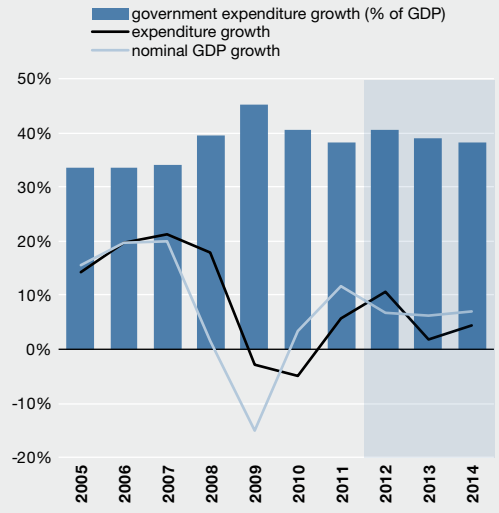
General government expenditure increased about 5% in 2011, at a slower pace than tax revenue. General government expenditure will temporarily pick up in 2012, due to the investment of income from the sale of emission quotas and an increase in general government consumption. Along with the emission quotas related investment, expenditure will increase by about 11%. Without the former, the growth would be approximately 7%. Looking at the medium-term economic outlook and the government's plan to cut labour taxes, the expenditure growth pace may be seen as too rapid. Wage pressures have intensified in the general government sector this year. They may become even stronger in the coming years, because in 2010 and 2011, wage growth in the general government sector was slower than in the private sector.

The 2012 increase in expenditure will be faster than projected in previous years' State Budget Strategies. As a result, the problem whether the government will be able to restrain expenditure growth when tax revenue receipts improve resurfaces again. In future, larger-than-expected tax revenues should rather be preserved as buffers than spent. The fiscal frameworks should be supplemented by an expenditure rule. It would alleviate fluctuations in expenditure growth, help avoid unjustified expectations and reduce the likelihood of painful cuts in a recession.

Fiscal balance and debt

In the updated State Budget Strategy for 2013-2016, the government confirmed their medium-term commitment to keep the general government budget in a structural surplus. The nominal balance was postponed by a year, until 2014.

Figure 17. General government expenditure



Sources: Statistics Estonia, Eesti Pank

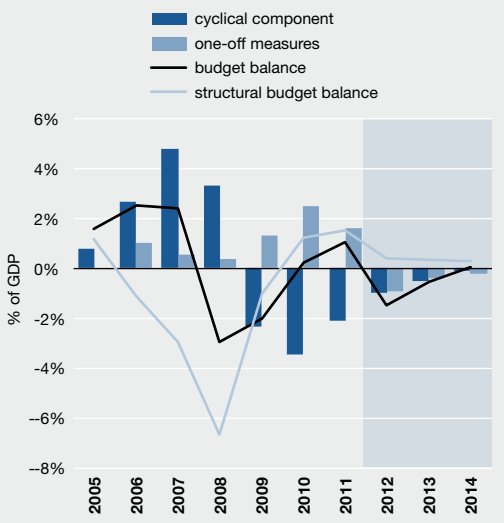
Compared to the autumn forecast, this forecast projects the general government budget deficit to be somewhat smaller in 2012 and 2013. The better balance is the result of an improvement in the nominal GDP outlook (especially as regards domestic demand and the wage fund), which, in turn, should mean higher tax receipts.

The nominal budget balance of 2012 and 2013 will be strongly affected by expenditure financed by income from the sale of emission quotas[19]. The spring forecast expects a small budget surplus in 2014.

The structural budget balance, that is, the fiscal position indicator excluding business cycle effects and extraordinary expenditure and revenue, will be in surplus over the entire forecast horizon, though the surplus will shrink slightly in the coming years (see Box 5). Thus, based on the assessment of structural fiscal balance, it may be concluded the government is going to ease fiscal policy (see Figure 18).

Last year, the general government debt increased by 9 million euros to 965 million euros, but owing to faster GDP growth, the debt to GDP ratio declined from 6.7% of GDP in 2010 to 6%. Although without the trade of the emission quota, the next years' general government budget will be close to balance, the debt burden will rise to about 10% of GDP by the end of the forecast horizon because of credit issued through the European Financial Stability Facility (EFSF), and the increase in the equity capital of Eesti Energia. Loans issued through the EFSF will raise the general government debt by around 2.5% of GDP and growth in the share capital of Eesti Energia by some 1.8% of GDP.

Figure 18. Fiscal stance



Sources: Statistics Estonia, Eesti Pank

[19] Income from selling emission quotas improved the fiscal balance of 2010 and 2011 by about 1 pp to GDP in both years, but the expenditure financed by the income will step up the next years' deficit: by 1.1 pp in 2012 and by 0.4 pp in 2013.

Box 4: Challenges in the measurement and utilisation of the structural budget balance

Alongside the nominal budget balance, more and more attention has been paid to the structural budget balance in Estonia in recent years. The annually updated state budget strategy, for example, lays emphasis on the establishment of objectives related to the structural budget position, with less attention paid to the nominal position. The EU budget agreement signed by most of the heads of state and government of the EU Member States at the beginning of 2012 also establishes minimum requirements for the structural budget balance. The signatories have assumed the obligation to introduce, by law, a budget rule according to which the general government budget must be either in balance or in surplus. This principle will be considered as met, if the annual structural budget deficit does not exceed 0.5% of GDP. When sovereign debt as a ratio to GDP is significantly below 60% and the risks related to the long-term sustainability of public finance are low, the structural budget deficit may amount to a maximum of 1% of GDP.

In order to determine the structural budget position, the cyclical component must be calculated first so as to determine the extent to which the budget position is defined by the economic cycle. In other words, high (or low) tax revenues may only be attributable to the economic high (or low) point. The cyclically adjusted budget position is determined by extracting the cyclical component from the nominal position. This shows the budget balance on a long-term growth trend. In layman's terms, the cyclically adjusted budget balance reflects the impact of the government policy on the budget balance, with the cyclical component adding the impact of the economic cycle. In order to determine the structural balance, one-off and temporary factors must be eliminated from the cyclically balanced budget position. The aim is to get a representation that is not distorted by cyclical and one-off factors, and that can then be used to analyse the impact of government policy and the sustainability of fiscal policy.

In practice, the cyclical component is calculated in three stages:

1. a macro-indicator (for instance, GDP) is divided into two: long-term growth and the cyclical component;
2. then the sensitivity of the budget components to the macro-indicator is determined;
3. lastly, the cyclical component is calculated on the basis of the two previous indicators.

GDP is the most popular macro-indicator for calculating the cyclical component. Frequently, the GDP gap is determined on the basis of the production-function based potential GDP estimate. This method is used, for instance, by the European Commission and the Estonian Ministry of Finance. Trend estimations based on statistical methods are also often used. For example, alongside the potential GDP method, the European Commission also publishes GDP-growth-trend-based estimates of the cyclical component in the AMECO database. The advantages of the trend-based method lie in its simplicity and transparency, whereas the advantages of the production-function based method include visible links between potential GDP and the productivity of the production factor. Alongside the above two methods, the so-called disaggregated approach is gaining popularity, where the elasticity of the budget components determined with respect to a particular tax base[20]. The base for social tax, for instance, is the aggregate wage

[20] See Bouthevillian, et al (2001). Cyclically adjusted budget balances: an alternative approach. Working Paper of European Central Bank, No 77.

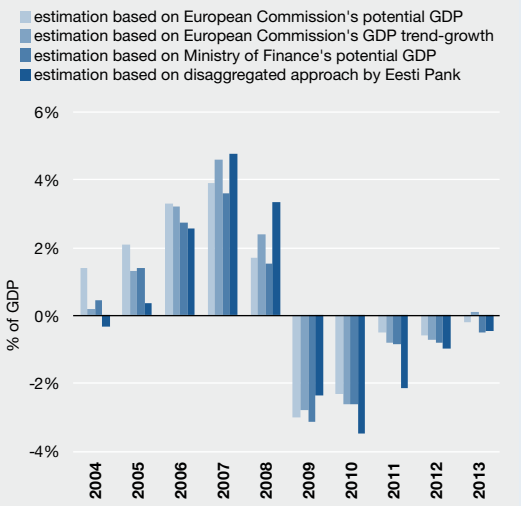
fund of the economy. The advantage of this method is that a specific tax base may develop very differently from GDP. This is also the method used by Eesti Pank.

Estimates of the cyclical component determined based on the above methods have been provided in Figure i. The figure reveals that cyclical component estimates differ significantly – in some cases nearly 2%. Estimates of the structural position are thus also different. At the beginning of Estonia's economic growth cycle (in both 2004 and 2010), expansion was fuelled by profit and export increases, with the main tax revenue sources (the wage fund and private consumption) initially showing a moderate growth. The cyclical component estimate calculated based on the disaggregated method was thus lower than the GDP method-based estimate. The tables were turned in 2008, when profits and exports started to drop, while wages and private consumption continued to rise.

A considerable drawback of all the above methods lies in the difficulty in assessing the size of long-term growth of macro-economic indicators and the stage of the economic cycle. Estimation is rendered even more complicated by the small size and openness of the Estonian economy, and the consequent volatility of economic growth.

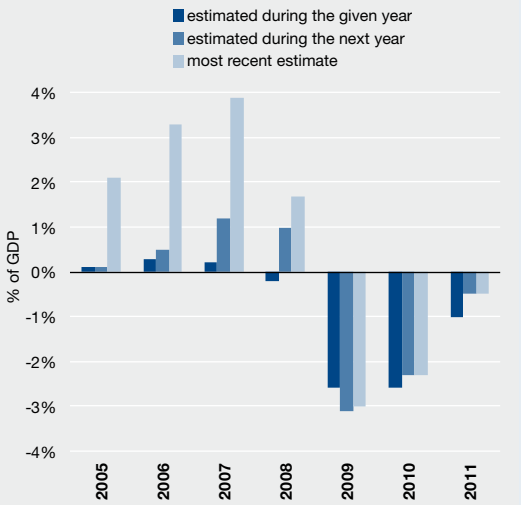
Figures j and k depict estimates of the general government budget's cyclical component in Estonia. Estimates published in three different points in time are shown: first, the estimate from that specific year, the estimate available a year later and the most recent assessment.[21] The figures reveal that irrespective of the method used, the esti-

Figure i. Estimation of the cyclical component of budget by different methods



Sources: European Commission, Ministry of Finance, Eesti Pank

Figure j. European Commission's view on the cyclical component of government budget balance at different points of time



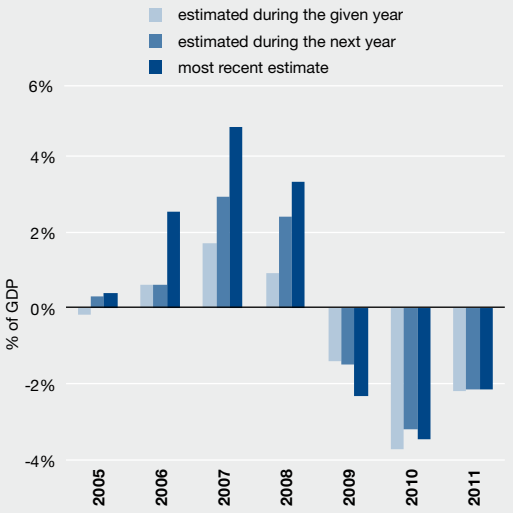
Source: European Commission

[21] 2012 spring forecasts of the European Commission and Eesti Pank.

mate for the specific year may significantly differ from later estimates. Furthermore, the estimates published the year after, when Statistics Estonia will have already published the economic growth figures for the previous year, may significantly differ from the estimates available in the years ahead.

All in all, it is clear that long-term objectives should be established with the help of the measure of the budget balance that is free of cyclical and one-off factors. At the same time, assessment of the current situation and of the near future is complicated, since there is no single method for determining the structural balance. Regardless of the method chosen, the estimates for the current year may prove misguided. Thus, the nominal budget position should not be overlooked in fiscal policy planning. The structural budget position should rather be viewed as a supplementary analytical indicator which can be used for assessing the fiscal policy situation.

Figure k. Eesti Pank's view on the cyclical component of government budget balance at different points of time



Source: Eesti Pank

Banking sector and financing of the economy

Banking-sector developments and support to the economy at the end of 2011 and the beginning of 2012 have been broadly in line with the autumn forecast. The contraction in the real sector's credit portfolio, which started in 2008, continued in the first months of this year. Lending activity has picked up somewhat recently, signalling an end to the loan stock shrinkage in the near future. The loan stock decreased more than forecasted both at the end of 2011 and at the start of 2012. This is partly due to the extensive write-off of non-performing loans at the end of the last year. Household lending activity also recovered more slowly than expected.

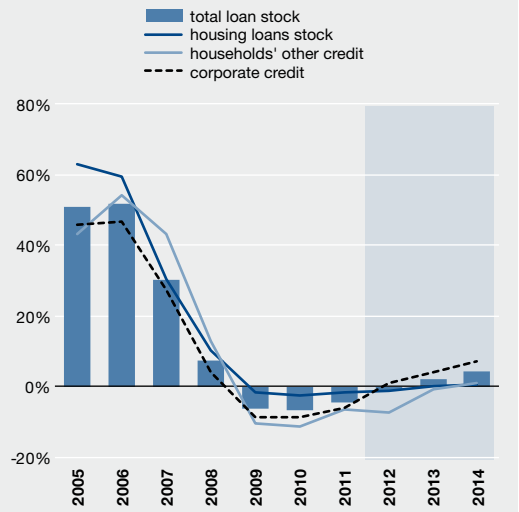
Adjustments in the economic structure have strongly affected the structure of corporate financing in recent years. On the one hand, the financial leverage of companies has markedly decreased, whereas financing with own funds owing to the restoration of profits has increased. On the other hand, more debt instruments have been included from abroad, by issuing debt securities in international markets (mostly large infrastructure enterprises) and by intra-group borrowing from parent companies. As a result, the share of foreign debt accounted for a third of total corporate debt by end-2011. In this light, the 34% growth in new domestic loans at the start of this year may be considered a rather strong support to the domestic business sector.

Against the backdrop of modest economic growth, credit market activity will remain relatively contained. Although the volume of new housing loans has been on the rise since 2010, with the annual growth pace showing two digits since 2011, it will be about 8% smaller in the forecast period than in the pre-boom level. The growth rate of consumer credit will also accelerate somewhat from the very low post-recession level, remaining nevertheless below total credit portfolio growth. Along with expanding business volumes and investment, corporate new lending volume will grow somewhat faster than nominal GDP in the forecast horizon. Compared to pre-crisis years, growth in new corporate loans will nevertheless remain modest, mostly due to slower growth in real estate investment.

All in all, it will take time for the annual loan and lease portfolio growth to turn positive (see Figure 19). Whereas the loan stock was 2.9% smaller at the end of the first quarter of 2012 compared to a year ago, the forecast expects it to be 0.8% smaller at the end of the year compared to the same period in 2011. The portfolio is expected to post a slight growth (2%) in 2013. The forecast may not hold, if more problematic loans will be written off than projected.

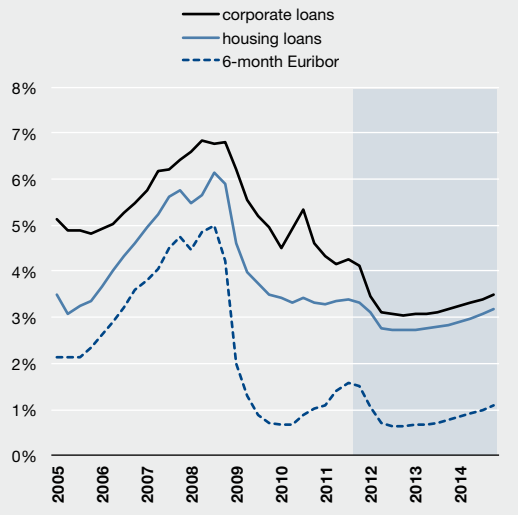
Demand from the real estate market is the major factor causing uncertainty in the credit market development. The baseline scenario projects real estate market developments to be stable. This will be favoured by the level of property prices, which has in recent years stood at a historically low level in relation to households' income: the average square metre price is still slightly smaller than average monthly wages. Though demand for dwellings may hike along with recovering confidence, and – considering that the number of high-quality dwellings is not that big – also exert upward price pressures, the latter will be somewhat eased by the supply of real estate stocked up by banks. Demand pres-

Figure 19. Credit stock growth



Source: Eesti Pank

Figure 20. Lending rates



Source: Eesti Pank

sure will also support development projects that have been postponed, partly due to growing expenses. Should the economic environment and consumer expectations turn out to be considerably better than forecasted, activity in the real estate and mortgage market may turn out to be stronger than expected. This is also supported by the favourable interest environment and banks' willingness to issue more loans. The interest rate on housing loans dropped to 3.1% in the first quarter of 2012, being in line with the autumn forecast expectations. The average weighted interest rate on corporate credit (3.5%) was lower than had been projected. Loan interest rates will remain low throughout the forecast horizon, owing to the interest environment (see Figure 20).

The high capitalisation of the Estonian banking sector and the continuously improving funding base provide a strong ground for financing both companies and households. The annual growth in real-sector deposits, which is considered the most stable funding source, was 8% in the first quarter of this year. The share of financing intermediated by parent banks in the structure of banks' funds continues to shrink. As a result, the share of deposits in bank financing hiked to a record 72%, which is 8 pp more than a year ago. The loan portfolio of banks, on the other hand, contracted, so the ratio of loans to deposits has markedly decreased, from 175% recorded in 2008 to 120% by the end of March 2012.

The baseline forecast scenario projects neither credit supply restrictions, deriving from a steep deterioration in financing conditions or capital constraints, nor a notable increase in interest margins. Although the euro area sovereign debt crisis is keeping tensions in the financial environment elevated, the high confidence of the financial markets in the Swedish parent banks contributes to the strength of the Estonian banking sector. However, should an escalation in the debt crisis bring about distrust in the Nordic region as well, a reduction in credit supply and resulting negative macroeconomic impacts cannot be ruled out.

FORECAST RISKS

The highest risks to the accuracy of Eesti Pank's economic forecast lie in the external environment. The Estonian economy has so far remained relatively unscathed by the euro area sovereign debt crisis, but uncertainties deriving from the crisis are exceptionally high. Estonia has very limited economic ties with the problematic Member States, but the risk of contagion is still there, which means economic developments in the euro area and thus also several forecast assumptions may change. Eesti Pank's forecast rests on the assumption that risks to euro area financial stability will remain contained and the growth outlook will improve in the second half of 2012. If the assumption fails to materialise, Estonia's outlook may be worse than forecasted.

The alternative scenario of Eesti Pank's autumn forecast (see Monetary Policy and Economy No 2/2011, p. 27) simulated a disorderly resolution of the debt crisis, where the spill-over from the crisis to the real economy was much more extensive. The threat of a disorderly crisis resolution has not disappeared. Non-euro area advanced countries with a high debt burden are not protected from the debt crisis, either. Other notable external risks include oil prices, which may soar due to geopolitical tensions, raising energy prices in Estonia as well. This would curb households' purchasing power and cut economic growth. If, however, global growth turns out weaker than projected, oil prices may fall.

Labour market developments constitute yet another risk to the baseline scenario. If the unemployment level falls below the non-accelerating wage rate of unemployment, wage growth may start to surpass productivity growth. The seriousness of the risk is proved by the fact that

economic growth has so far been unable to alleviate long-term unemployment. Thus, the current forecast pays more attention to structural unemployment. Various methodologies do not provide a uniform assessment of the structural unemployment rate in Estonia. Nevertheless, it is safe to say that active labour market measures need to concentrate more on solving the skills and knowledge mismatch problem in the economy.

The past has shown that although companies do manage to contain wage costs over the business cycle, this may come at the cost of considerably higher unemployment once growth slows. A more efficient rein-in on wage growth in an expansionary stage of the cycle may, on the other hand, alleviate a later increase in unemployment. Higher wages step up inflation and damage the competitiveness of the Estonian economy. In 2005–2007, rapid wage growth along with strong domestic demand and the real estate bubble caused extensive imbalances in the form of a wide current account deficit and discrepancies between wages and productivity.

The financing of the Estonian economy is also open to risks that may derail the economy from the baseline scenario. First of all, an intensification of the euro area sovereign debt crisis may compel banks operating in Estonia to take precautionary measures by curbing credit supply. This would hinder the development of the economy. If the debt crisis abates, an opposite risk may develop, because very low interest rate levels are likely to promote credit activity throughout the forecast horizon. The possibility of excessive borrowing becoming a problem is not very probable at the moment, but the favourable effective interest rate level may expand domestic demand in the years to come, causing prices to grow faster than projected in the baseline scenario. The recent price growth in the real estate market has probably turned the effective interest rate negative in this field. If domestic economic imbalances in Estonia increase due to the favourable financing environment, they will have to be eased by other measures (for instance, by fiscal and financial sector policies). One cannot rule out that foreign investors' tolerance of imbalances is much smaller in the current global economic situation than it was in past years. In such case, the economy may face adjustments forced on by markets.

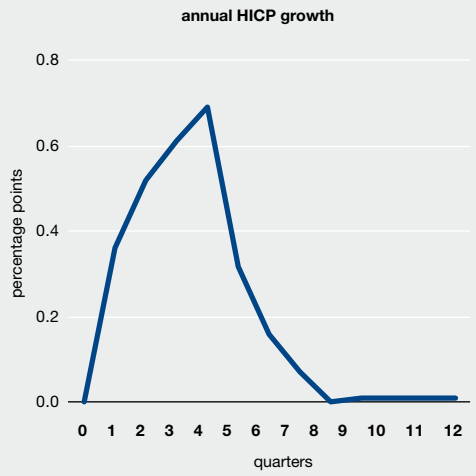
Box 6: Sensitivity of the economy to oil price changes

In recent years, fluctuations in oil prices have played an important role in the accuracy of the forecast. Oil prices are not determined by processes in which Estonia plays a major role. Hence, in the economic forecast of Eesti Pank oil prices are external assumptions based on market expectations – futures contracts prices of oil. The latter usually predict oil prices to remain close to current prices and their predictive power is rather poor. It is difficult, however, to find a more reliable alternative.

Oil prices influence Estonia's inflation directly through the energy component. More precisely, an increase in oil prices entails a rise in the prices of motor fuel and household energy (heating, gas, electricity). An increase in prices implies a relative decline in real income that results, in turn, in slower consumption growth. Since it is difficult to reduce energy consumption, a rise in energy prices may reduce demand for other goods. A drop in real income inhibits overall demand and slows economic growth. Poorer economic outlook lowers investments and labour demand. Figures l, m and n illustrate the impact of a 20% rise in oil prices from the level of 110 USD per barrel on the selected macro indicators.

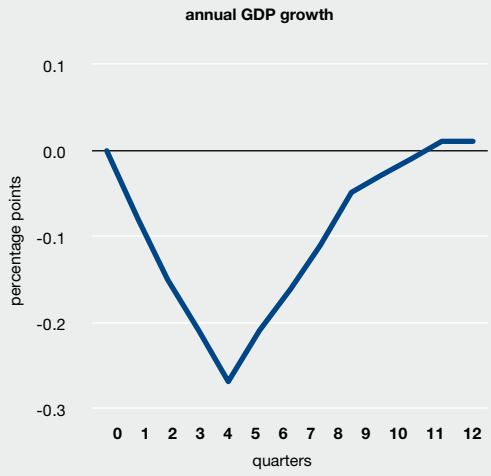
Energy may not become more expensive right after an increase in oil prices, since the adjustment mechanism may take longer. Changes in oil prices are spilled over relatively quickly to the final price of motor fuel but are reflected with a lag in household energy prices, since a substantial part of household energy inflation depends on long-term agreements and it must be negotiated with the Competition

Figure l. Behaviour of selected macro indicators in case of a 20% rise in oil prices (difference from the baseline scenario)



Source: Eesti Pank

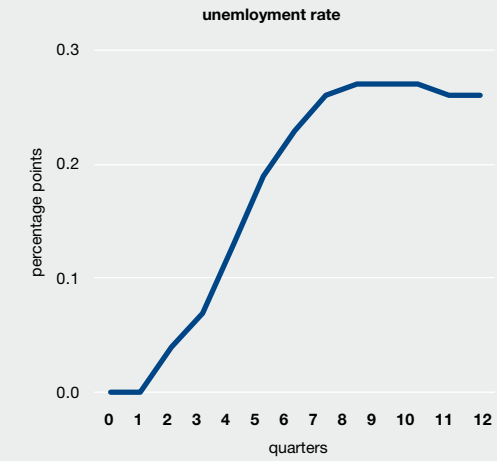
Figure m. Behaviour of selected macro indicators in case of a 20% rise in oil prices (difference from the baseline scenario)



Source: Eesti Pank

Authority. According to the solution of Eesti Pank's macroeconomic model, the majority of the impact of oil prices is spilled over to other prices in four quarters. Only the direct impact of oil prices on consumer prices is analysed, potential wage pressures due to an increase in the cost of living are left out of the analysis.

Figure n. Behaviour of selected macro indicators in case of a 20% rise in oil prices (difference from the baseline scenario)



Source: Eesti Pank

The price elasticity of energy prices regarding oil price shocks depends on the price level of oil: the more expensive it is, the stronger is the impact of a rise in oil prices on inflation. The effect of oil price growth on energy prices is not unitary, since a substantial part of energy prices consists of taxes. Moreover, not all prices of energy carriers are related to oil prices. Hence, oil prices make up just a fraction of the final energy price and a rise in oil prices is not passed through one-to-one to energy inflation. At the same time, oil price growth increases its share in energy price, increasing the impact of oil prices on energy price formation. According to the solution of Eesti Pank's macroeconomic model, a 20% rise in oil prices from the price level of 70 USD per barrel would raise Estonia's price level by the end of the third year following the shock by 0.65%. A similar rise from the price level of 200 USD per barrel would increase the price level already by 0.75%.