Eesti Pank

FINANCIAL STABILITY REVIEW

1/2017

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ASSESSMENT OF FINANCIAL STABILITY AND MACROPRUDENTIAL MEASURES

The improved global outlook for growth has been put in the shade by major political uncertainty. The outlook for growth in advanced economies was better than previously at the end of 2016 and the beginning of 2017. There is a great deal of political uncertainty around those countries though, because of the lack of clarity about the exit of the United Kingdom from the European Union and the elections that are being held in several countries this year. International financial markets reflected the improved outlook for growth as equities and the interest rates on bonds with long maturities rose.

The main risks to financial stability in Europe are a sharp rise in the risk premiums on bonds and the low profitability of the banks. Despite rising a little at the end of 2016 and the start of 2017, interest rates in bond markets remain very low, meaning they could rise substantially and cause large losses, particularly for institutional investors. The low profitability of the banks is caused by the large volume of problem loans in several euro area countries and the lack of adjustment by banks in the euro area to weak economic growth and low interest rates.

The decline in the profit of Estonian companies is slowing, having lasted two years. Estonia's main export partners became more active in foreign trade at the end of 2016, which improved the opportunities for growth for Estonian exporters. Growth picked up a little in the sales revenue of companies in the fourth quarter of 2016 and the rise in labour costs slowed, braking the decline in profits that had lasted two years. Growth in the Estonian economy remained slow last year, but it picked up in the final quarter. Value added increased in most parts of the economy, including oil shale and energy, where it had earlier fallen. Signs of faster GDP growth also became apparent in the first quarter of 2017.

Corporate indebtedness remained at about the same level as a year earlier. Corporate investment in fixed assets remained weak and indebtedness, measured as the ratio of debt liabilities to GDP, was at the same level as a year previously. There was a rapid rise in the amount taken as loans and leases from domestic banks and leasing companies, but there was no significant change in the amount taken from abroad and there was a sharp drop in borrowing from other companies.

Rising incomes and increased confidence let household debt liabilities grow faster than before. The financial position of households was better than a year earlier as the high employment rate and rapid wage growth had an impact. Wages have risen rapidly for a long time and this has increased confidence among households about the future. The combined effect of all these factors has been an increase in demand in the housing market and faster growth in the debt liabilities of households. As debt liabilities increased at the same rate as disposable income, the debt burden still remained at the same level as in 2015. The rapid growth in incomes helped household deposits and financial buffers grow at the same rate as household debt liabilities.

Prices in the housing market started to rise faster in the second half of 2016. More transactions were made in the real estate market than a year earlier and the average price of apartments rose rapidly in the fourth quarter of 2016 and at the start of 2017. Real estate developers brought more new residential property to the market than before though, so a larger share of transactions were for residential space in newly built buildings and this had an effect on the average price of transactions as well. If the structure of the transactions had been the same as a year earlier in terms of the location and age of the apartments, the average transaction price would have increased by an estimated 5-6% in the second half of 2016, which is about the same rate as household disposable income.

More and more new office space came to the market and the average vacancy in the commercial real estate market increased. Real estate developers have brought a lot of new office and commercial real estate to the market in recent years. The increase in the supply of commercial space and the stabilisation of rent prices in the fourth quarter of 2016 indicate the market for office space may be reaching the point of saturation. The volume of loans granted by banks to real estate companies increased strongly in the second half of 2016, though it

increased only a little as a share of the loan portfolio of the banking sector.

The equity level of the banking sector remains high and liquidity remains good, though liquidity management is highly dependent on the parent banks. The loan and lease portfolio of the banking sector grew fast, but loan quality remained good and loan losses were small. Banks still mainly funded themselves with retail deposits, though funding from parents continues to play an important role. Profitability remained at a similar level to that of the previous year and capitalisation remained high.

In the assessment of Eesti Pank, the risks to the functioning of the financial sector in spring 2017 are low. Risks are being reduced above all by the relatively large financial buffers of companies and households, and by the high equity level of the banking sector. The three main risks to financial stability are:

Risk 1

If financial markets assess that the risks to the Nordic economies or banking groups have increased, the liquidity risk of the banks operating in Estonia will increase and with it the risk to the financing of the economy. Reduced economic activity in the Nordic countries will have a negative effect on the income of Estonian exporters and their ability to service loans.

The risks from the Nordic economies or the Nordic banking groups could threaten the liquidity and funding of the Estonian financial sector directly, and indirectly through the ability of the exporting sector to repay loans. Funds received from parent banks account for a significant share of around one fifth of the financing of banks operating in Estonia. The liquidity management of the biggest banks in Estonia is also integrated with the parent banking groups, meaning that any possible financing or liquidity problems at the parent banks could also affect the banks in Estonia. If the parent banking groups were to reduce their funding of the banks operating in Estonia, it could affect the credit supply in Estonia. Furthermore, any downturn in the Nordic countries would reduce demand for Estonian exports and the ability of exporters to service their loans.

Risks arising from the Nordic economies come primarily from the heavy indebtedness of households, rapid rises in real estate prices and the heavy dependence of banks on market-based funding, which may be amplified by the interconnectedness between the economies. The high debt burden could make households cut consumption if interest rates were to rise and loan servicing costs to increase. Reduced consumption would reduce the revenues of companies and their ability to service their loans, which would hurt the loan quality of the banks. The banking groups are however vulnerable to a deterioration in funding conditions. If international investors were to reassess the risks to the economy or banks upwards, the financing conditions for the banks could worsen quickly and substantially.

The risks are mitigated by the good economic standing of the Nordic countries and the relatively strong financial position of the banks. Growth in the Swedish economy, the most important for the Estonian economy and banking sector, remains strong and the labour market has improved. The profitability of the big Swedish banking groups operating in other Nordic countries has remained high and their level of capitalisation is stable. The conditions for market based funding remain favourable, and liquidity is good. Risks are also reduced by the relatively large financial assets held by households.

Risk 2

The profitability of Estonian companies is reduced by labour costs rising faster than sales revenues. This could weaken the ability of companies to pay their loans and thus worsen the loan quality of banks.

Wage pressures remain and company profits could start to shrink again. Although corporate income rose a little faster at the end of the fourth quarter and the fall in profits slowed, wage pressures will remain high in future and

wage growth may be accelerated again by various factors. It is equally unclear how far the fall in profits and investment over several years has affected the competitiveness of Estonian companies.

If corporate profits continue to decline, it may lead to a weakening in the ability of companies to service loans. If profits continue to shrink, companies may go bankrupt, reducing employment and the wage level, which could affect the ability of households to service their loans. The risk of companies being less able to service loans is mitigated by leverage being lower than previously and the level of liquid assets being relatively high.

Risk 3

Rising incomes and improved confidence may boost transaction volumes and price growth in the real estate market. Combined with low interest rates, this would accelerate the growth in housing loans and loans to real estate companies. This would make the banks more vulnerable to risks coming from the real estate sector.

The long-lasting steep rise in incomes could lead households to overestimate their ability to pay. Demand and rising prices in the Estonian real estate market have been supported in recent years by the strong growth in incomes and the low level of interest rates. The long rise in income has led to inflated expectations that could lead households to overestimate their ability to pay and take on more debt liabilities than they can bear. It is particularly dangerous if the assessment of ability to pay is based on the assumption that incomes will continue to rise at the same rate in the future. Wages have grown faster than productivity, and that is not sustainable over a long time.

If banks were to start to ease their lending conditions, the risks in the real estate market would increase. The value of housing loans and loans to real estate developers as a share of the portfolio has only increased a little however. Lending conditions have stayed the same and loans are not used for funding real estate to the same extent that they were earlier. Rising costs and low interest rates are putting pressure on banks to increase their revenue base, which could bring about an increase in loan growth.

The demographic factors that have supported demand in the residential real estate market are changing. Demand has been boosted in recent years by the movement of people into the bigger towns and a simultaneous increase in the share of the population aged 25–39, and developers have met this by bringing ever more new properties to market. In the years ahead though, the share of the population in this age group will shrink quite sharply, leading to a drop in demand and pressure on prices. Real estate developers, those that fund them, and households investing in real estate should take this into account when making their economic decisions.

Increased supply in the market for office space could weaken the ability of owners of low quality and less centrally located office buildings to service their loans. There are signs of saturation in the market for office space, but developers are as active as ever. As rental clients prefer new properties with modern facilities, and supply in this segment is also good, there could be a drop in interest and a consequent fall in rental prices for office buildings that are of lesser quality and that are less centrally located, and that could dent the ability of their owners to service their loans.

Macroprudential measures

Eesti Pank, as the macroprudential authority for Estonia, is responsible for taking measures where needed to ensure the stability of the financial system. Eesti Pank requires credit institutions to hold three different capital buffers: the systemic risk buffer, the other systemically important institutions buffer, and the countercyclical buffer. Eesti Pank has also introduced requirements for housing loans on the loan-to-value ratio (LTV), the debt service-to-income ratio (DSTI), and the maximum maturity of loans. The measures are intended to strengthen the resilience of credit institutions

and to limit any possible increase in systemic risks to the financial sector.

Eesti Pank assessed the lending terms and conditions of the banks for housing loans in 2016 and found that they have remained generally the same for the past two years. The statistical distribution and the average value of the indicators analysed (the LTV and DSTI ratios and loan maturities) have remained the same. If the growth in housing loans becomes faster and signs appear of a general loosening of lending standards and conditions, Eesti Pank can tighten its lending requirements.

Eesti Pank does not currently consider it necessary to raise the countercyclical buffer rate above 0%. The indebtedness of the non-financial sector as shown by the credit-to-GDP ratio has not changed in recent years and is predicted by the Eesti Pank December forecast to remain at around the same level for the next three years. Debt will grow faster in the coming years as the economy grows, but the rate of growth will not exceed that of nominal GDP consistently or significantly. There is no indication that banks are amplifying lending activity, as lending standards and conditions have not been loosened and the banks have not significantly increased their leverage.

If credit growth increases further and indebtedness rises, Eesti Pank can raise the rate of the countercyclical capital buffer above 0%. Low interest rates and continuing fast wage rises could lead trading activity and prices to increase further in the real estate market, which could raise the debt levels for households and the related risks. Corporate indebtedness could also start to grow again if investment and confidence increase. Eesti Pank constantly monitors the factors that could indicate an increase in risks and can, if necessary, raise the countercyclical buffer rate above 0%.

The main risks to financial stability in Estonia

If financial markets assess that the risks to the Nordic economies or banking groups have increased, the liquidity risk of the banks operating in Estonia will increase and with it the risk to the financing of the economy. Reduced economic activity in the Nordic countries will have a negative effect on the income of Estonian exporters and their ability to service loans.	→
The profitability of Estonian companies is reduced by labour costs rising faster than sales revenues. This could weaken the ability of companies to pay their loans and thus worsen the loan quality of banks.	↘
Rising incomes and improved confidence may boost transaction volumes and price growth in the real estate market. Combined with low interest rates, this would accelerate the growth in housing loans and loans to real estate companies. This would make the banks more vulnerable to risks coming from the real estate sector.	↗

1 = minor risk and 6 = major risk. The arrow indicates changes in the risk level from the assessment of October 2016.

DEVELOPMENTS AND RISKS AFFECTING FINANCIAL STABILITY

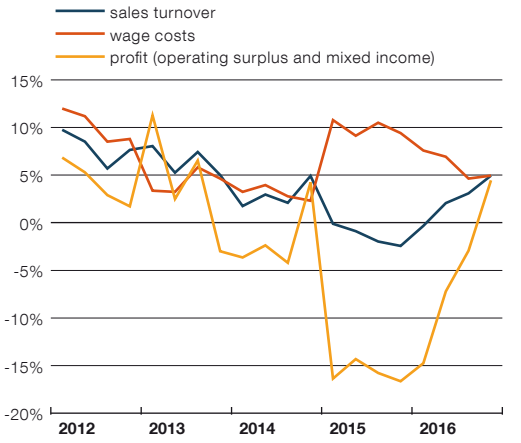
COMPANIES AND HOUSEHOLDS

The economy in the euro area is growing quite strongly, though a lack of political clarity is causing uncertainty about the future. Economic growth reached a rate of 1.7% in the fourth quarter of 2016, and this helped the labour market to improve in the euro area. Survey data indicate that growth picked up further in the first quarter of this year. However, there will be elections in several big countries in the euro area in 2017, and this has increased political uncertainty. This may then endanger economic growth, mainly because of a decline in confidence.

The economies of the countries around Estonia mostly improved in the second half of 2016, increasing the export opportunities for Estonian companies. Growth in the Swedish, Latvian and Lithuanian economies increased in the final quarter of 2016, and this combined with the improved purchasing power of consumers will increase the opportunities in those countries for Estonian exporters. Companies in Estonia also benefit from the return of growth to Swedish goods exports and industry, as Estonian exports to the Nordic countries are largely used as inputs for Nordic exports and the industrial sector. Growth slowed down in Finland in the final quarter of the year, but it still posted 1.4% for the whole year. The Russian economy is exiting its recession after two years, but no rapid recovery in growth is to be expected there, and opportunities for Estonian exporters in the Russian market continue to be constrained by import restrictions on food products from the European Union.

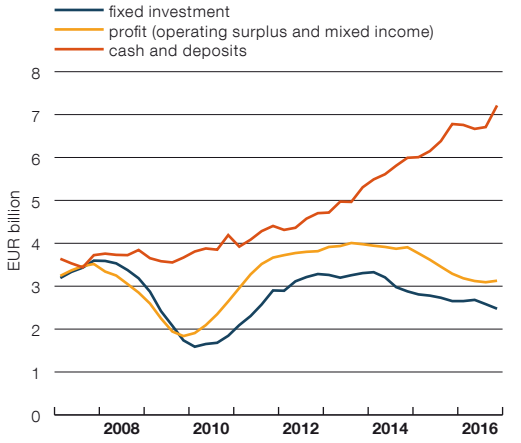
Estonian economic growth in 2016 was slow, but it picked up in the second half of the year. GDP was up 2.7% over the year in the fourth quarter of 2016, and increased by 1.6% over the whole year. Growth in the second half of the year was quite broadly based. Signs of improvement were also seen in the oil shale and energy sector, where low energy prices have pulled sales revenues and profits down by more than the average. Only agriculture among the largest sectors saw a decline, which was a consequence of the poor harvest. Surveys of business sentiment have again indicated relatively strong development in the economy in the first months of 2017.

Figure 1. Sales turnover, wage costs and profit of companies



Source: Statistics Estonia

Figure 2. Profit, fixed investment and financial assets of companies



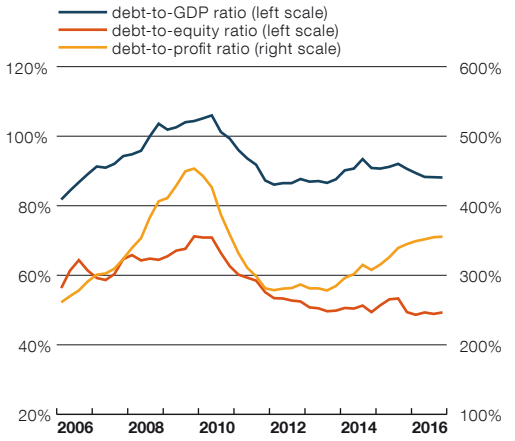
Sources: Eesti Pank, Statistics Estonia

Profits stopped declining at the end of 2016, but corporate profits remain fairly low. Corporate sales revenues grew slightly faster during the year, and this offset the rapid rise in wage costs to some extent. This slowed the decline in corporate profits that had lasted for two years (see Figure 1). However, the profit of Estonian companies as a share of earnings is below the European Union average and is at a similar level to that seen before the crisis. Wage pressure will remain high in the near future, though it is important for the competitiveness of companies and their ability to service their loans that wage growth not exceed growth in revenues in the future.

The liquidity of Estonian companies is high compared to the level of the past decade and in international comparison. Corporate investment in fixed assets has been low in recent years, and that has allowed companies to use the funds freed up to increase their liquid assets despite the decline in profits. Liquid assets have been added primarily as deposits (see Figure 2). Increased deposits and a reduction in the use of short-term loans have improved the coverage of debt liabilities with liquid assets. As a result, it has been easier for companies to make their loan payments. In this way, low investment in fixed assets could have a short-term positive impact on financial stability. Investments remaining small will reduce the long-term growth potential of the economy and the international competitiveness of companies though, and through that could have a negative effect on financial stability. Increases in the ability of companies to pay and in their liquid assets are again being supported by the very low base interest rates, which mean that companies are spending a lot less on interest payments.

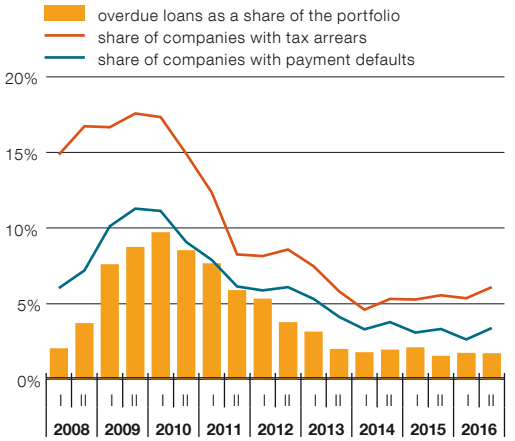
Corporate financial leverage and indebtedness remain lower than during the past decade, though the ability to service loans is menaced by the low level of profits. There was a rapid increase of 8% in 2016 in the stock of loans and leases taken from banks operating in Estonia. However borrowing from abroad by companies remained at the same level throughout the whole year and other borrowing by companies contracted substantially. This meant that corporate debt liabilities increased by only 0.2% during the whole of 2016. As corporate equity also only increased a little, the financial leverage of companies, which is the ratio of their debt liabilities and equity, remained at about the same level as at the end of 2015. Growth in nominal GDP meant that corporate indebtedness, or the ratio of debt liabilities to GDP, declined slightly and stood at 88% at the end of 2016. A relatively large share, by the standards of recent decades, of the value added created by companies is being used to cover labour costs and the profit level is low, so the ratio of debt to profit has risen quite high (see Figure 3).

Figure 3. Indebtedness and leverage of companies



Sources: Eesti Pank, Statistics Estonia

Figure 4. Payment behaviour of companies



Sources: Krediidiinfo, Eesti Pank

The payment behaviour of companies deteriorated to an extent in the second half of 2016, though it remains good (see Figure 4). The share of companies with payment difficulties, seen in overdue debts to suppliers, or with tax arrears increased in agriculture, construction, industry, accommodation and catering, and transport, which are the sectors where payment behaviour was worse than the average in earlier years too. The share of companies in those sectors with debts is still not higher than it was before the financial crisis though. The share of bank loans overdue did not change significantly in the second half of the year. The number of bankruptcies fell for the seventh consecutive year and is very low.

The main risk to financial stability in Estonia from the business sector stems from the

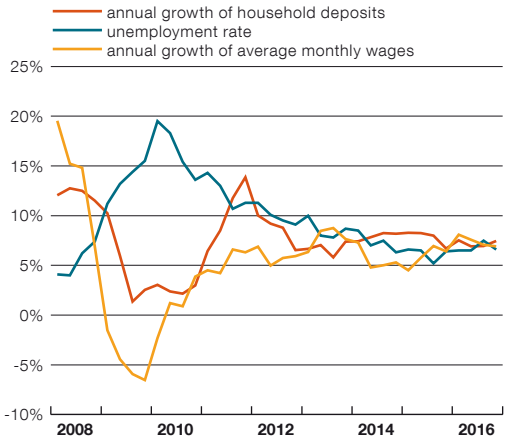
continued reduction in profits. This could weaken the competitiveness of Estonian companies, and their ability to repay loans. Although corporate income rose a little faster at the end of last year and the fall in profits slowed, wage pressures will remain high in future and wage growth may be accelerated again by various factors. It is equally unclear how far the fall in profits and investment over several years has affected the competitiveness of Estonian companies and their potential for growth. A further decline in profits could cause companies to go bankrupt and could reduce the ability of both companies and their employees to service their loans, reducing the loan quality of the banks in turn.

The economic circumstances of households improved in 2016 mainly because wages continued to rise quickly. Wages still rose fast in the second half of 2016, at a rate of 7% in the final quarter of the year, and it was particularly low wages that rose. The unemployment rate remained the same as in 2015 though at 7% (see Figure 5). Household incomes were boosted in 2016 by increases in social benefits as well as by rising wages.

The improved position of households is also reflected in the continuing rise in consumer confidence, especially the expectations towards the labour market and Estonia's economic development (see Figure 6). The positive expectations may start to cool though if inflation starts to rise from the very low level it has been at for a long time. The price of motor fuels was some 15% higher in December 2016 than a year earlier.

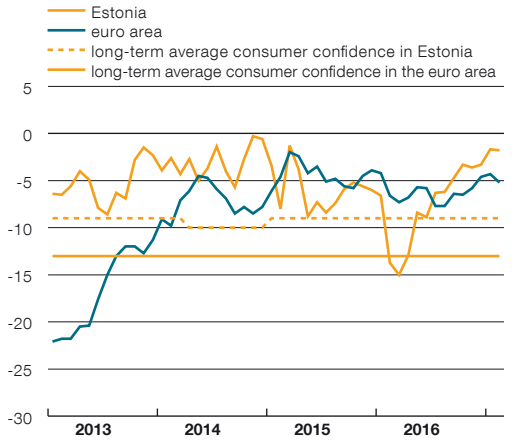
The higher incomes of households encouraged them to increase their debt liabilities too. The debt liabilities of Estonian households have started to increase ever faster from year to year, and in the final quarter of 2016 they were around 6% larger than a year previously. Car leases and housing loans saw the fastest growth, with the total value of car leases increasing by 16% in 2016 and that of housing loans by 5%. The rate of growth in housing loans started to rise faster in the second half of 2016. The growth comes from the average value of the contracts being signed and from a rise in the number of

Figure 5. Unemployment rate and growth in average gross wages and deposits



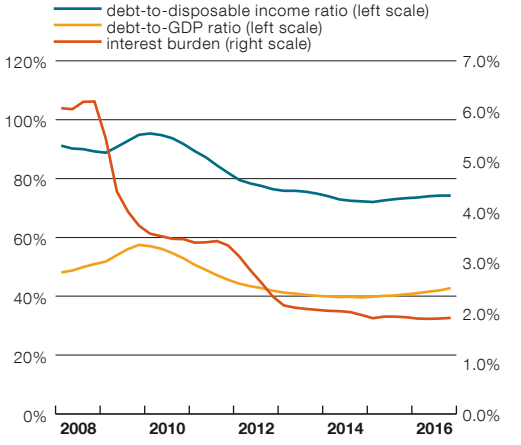
Sources: Statistics Estonia, Eesti Pank

Figure 6. Consumer confidence indicators



Sources: Estonian Institute of Economic Research, European Commission

Figure 7. Household indebtedness



Sources: Statistics Estonia, Eesti Pank

contracts. However, there was no major change in the ratio of the turnover of housing loans to the total volume of residential real estate transactions, which remained at 63%. This indicates that the lending policy of the banks for housing loans did not change particularly during the year.

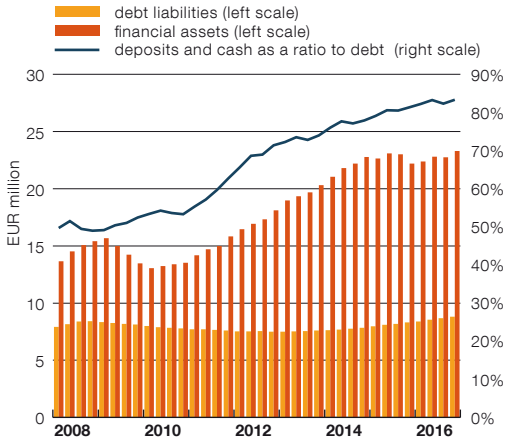
The portfolio of credit card loans and overdrafts started to increase in the second half of 2016. Loans given by savings and loan associations and creditors and credit intermediaries to households saw rapid growth as well, though the total value of such loans is less than half of one per cent of the value of bank lending[1].

As household debt liabilities have grown at a similar rate to household incomes, the ratio of household debt to disposable income remained at 74% in the third quarter of 2016. The ratio of debt to GDP rose by one percentage point to 42% because of slow GDP growth (see Figure 7). The interest burden of households has remained at 1.9%. The natural renewal of the portfolio will lead the average interest rate in the portfolio to rise, raising the interest burden over time as well.

As household incomes have risen faster than spending, household deposits have grown slightly faster than wages. Deposits were up by 8% in the fourth quarter of 2016. The growth in deposits got support from the addition of households that are able to save at the same time as consuming. The Estonian Institute of Economic Research found that the share of households able to save in December 2016 was five percentage points higher than in June at 45%. The ratio of cash and deposits to household debt changed little in 2016, and was 81% at the end of the year (see Figure 8).

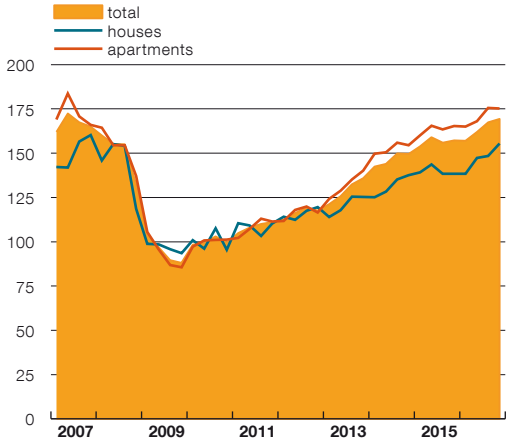
Rapidly rising wages can create a risk for households if the rapid rises form the basis for expectations of wages in the future. If there is no improvement in the capacity of the economy to grow, slower wage growth can be expected, and the Eesti Pank December forecast predicts it will be 5% in the years ahead. This makes it important for households now not to overestimate their ability to service their loans in the expectation of continuing wage growth. Decisions about loans need to be made with a sense of balance, bearing in mind that wage growth may slow and interest rates may rise.

Figure 8. Financial assets and liabilities of households



Source: Eesti Pank

Figure 9. Residential property price indexes (2010 = 100)



Source: Statistics Estonia

THE REAL ESTATE MARKET

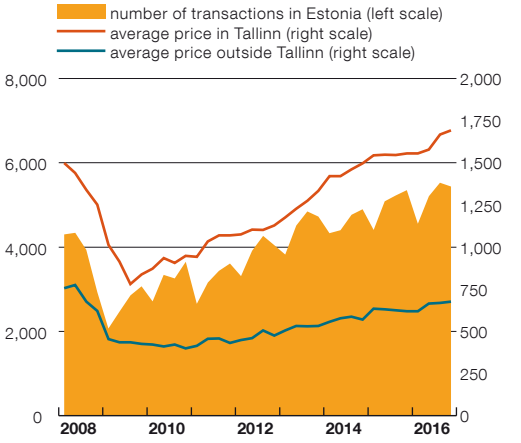
The housing market

Transaction activity and prices rose at a faster rate in the Estonian housing market in the final quarter of 2016. Data from Statistics Estonia show the price index for residential property up 7.7% in the fourth quarter of 2016, with apartment prices up 5.9% and prices of detached houses up 12.2% (see Figure 9).

1 See also Financing of the Economy 2017

The average price of transactions with apartments, which is the largest sector of residential real estate, rose faster in the second half of 2016. Data from the Land Board[2] show the average price for an apartment transaction was up 11% in the fourth quarter (see Figure 10). Preliminary data show that prices were up by the same amount in the first quarter of 2017. A rapid rise in the average price was natural in almost all the bigger towns of Estonia except Narva. There are fewer people in Ida-Virumaa, because of internal migration, and this has caused prices to fall for two years in the apartment market in Narva, with the drop 8% in 2016. The average price for an apartment transaction in Tallinn was up almost 9% in the fourth quarter of 2016.

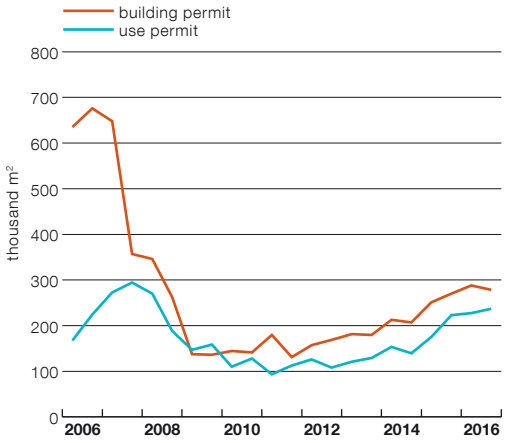
Figure 10. Number of transactions and average price of a square metre for apartments



Source: Estonian Land Board

There was a lot of activity in construction in 2016, and a lot of new apartments came onto the market. The arrival of new apartments on the market is confirmed by the relatively steep rise in the number of use permits issued, as it climbed to 6% more than a year earlier in the second half of 2016 (see Figure 11). The number of building permits indicates that the level of construction activity will remain high in future.

Figure 11. Building and use permits for residential property



Source: Statistics Estonia

As supply has increased, so has demand. It is estimated that developers of new property had around 900 apartments unsold or on offer for pre-sale in Tallinn in the final quarter of 2016, which is about 40% more than a year earlier[3]. However, the number of new apartments sold or reserved at the end of 2016 was also up on the year at the end of 2016.

The share of apartments sold for the first time[4] or of new apartments has increased significantly over the past two years. The figure for Tallinn is above the Estonian average and is very volatile. The share of apartments being sold for the first time by floor area rose for the whole of Estonia from 14% in 2014 to 21% in 2016, while in Tallinn it rose from 18% to 29% (see Figure 12). The share of apartments sold for the first time has also increased elsewhere in Estonia, but at a much slower rate. At the same time the share of such apartments in transactions in Tallinn has been very variable, and it was 14 percentage points more in the second quarter of 2015 than a year earlier, for example.

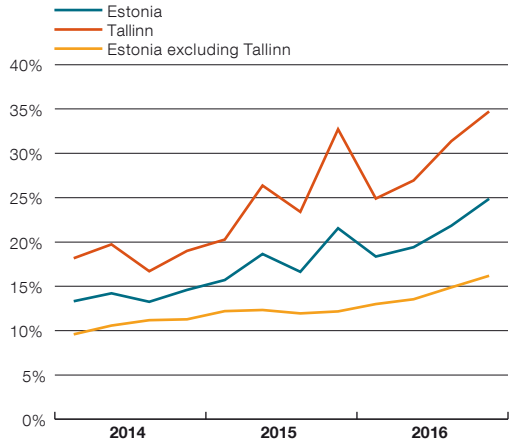
An increase in the share of new apartments in the structure of transactions and the change in the share of transactions with apartments in Tallinn have substantially affected the annual growth rate of the average price of apartment transactions in Estonia in the past two years. The share of

2 The average transaction price from the Land Board differs from the price index of Statistics Estonia in that it does not take account of changes in the location of real estate in the structure of transactions, so this can have a notable impact on it.

3 Data from Trigon Capital.

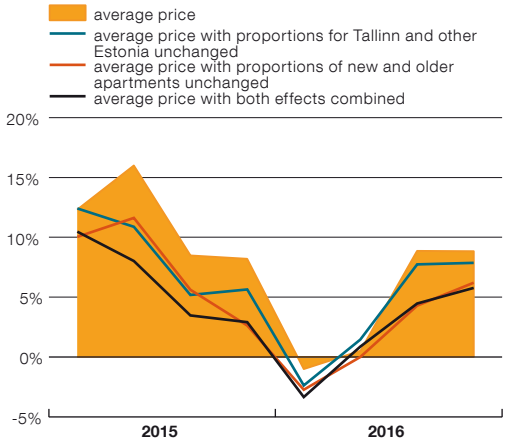
4 Apartments sold for the first time have been defined by the Land Board in its statistics since the start of 2014.

Figure 12. The share of transactions with new apartments / apartments sold for the first time in the total



Source: Estonian Land Board

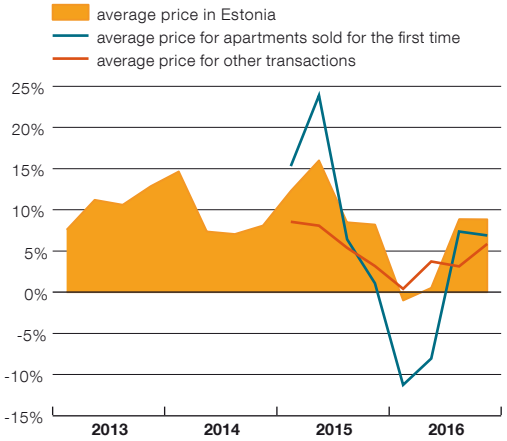
Figure 13. The effect of changes in the structure of transactions on the average price of transactions with apartments



Sources: Estonian Land Board, Eesti Pank calculations

Tallinn apartments has been a little larger than previously in the past two years and so it particularly affected the annual growth rate in 2015. The annual growth in the average apartment price in 2016 was mainly driven by the increase in the share of new apartments (see Figure 13[5]). The contribution of new apartments to the rise in prices was also affected by the wide volatility in their average prices as the structure of transactions involving such apartments changes much more than that of transactions with apartments in older buildings. A large number of transactions may be made with apartments in a popular and more expensive region in one quarter, then in the next quarter the majority of transactions may be for apartments in a lower priced suburb. If it is assumed in the calculation of the annual growth rate of the average price of transactions with apartments in Estonia that the balance of apartments in new and older buildings remains the same in the structure of transactions, the annual rate of growth would have been 5-6% in the fourth quarter rather than 11% (see Figure 14).

Figure 14. Growth in the average price of transactions with new apartments / apartments sold for the first time and older apartments



Sources: Estonian Land Board, Eesti Pank calculations

Alongside the property ownership market, the apartment rental market also saw a lot of activity. Internal migration[6] makes this particularly evident in Tallinn, where the rental prices asked have been rising for some time, climbing by a little over 6% in the second half of 2016[7]. However, the number of apartments advertised for rent has remained between 600 and 1000 for a long time, which is a low number by historical standards and together with the rising prices indicates that demand remains strong (see Figure 15).

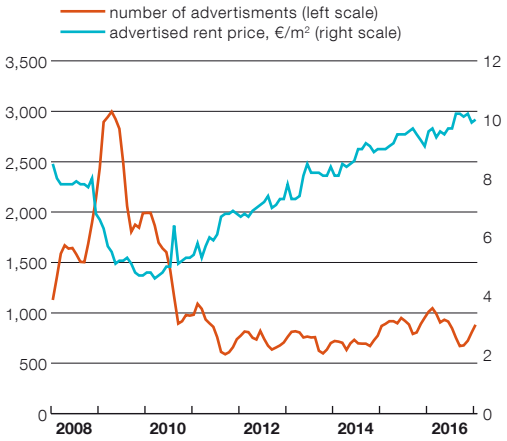
The average apartment price as a ratio to the average gross wage was the same at the end of 2016 as at the start. Continuing growth in wages meant that the ratio of the square metre price of real estate to incomes was similar in 2016 to what it was in 2015 despite the rapid rise in

5 The annual growth rate in the average price for Estonia used in this calculation is a little different from the growth rate in the average price used by the Land Board as the average price is calculated here a little differently and the methodology of the Land Board could not be followed precisely in the calculation.

6 See also Box 1: Factors affecting demand and supply in the housing market.

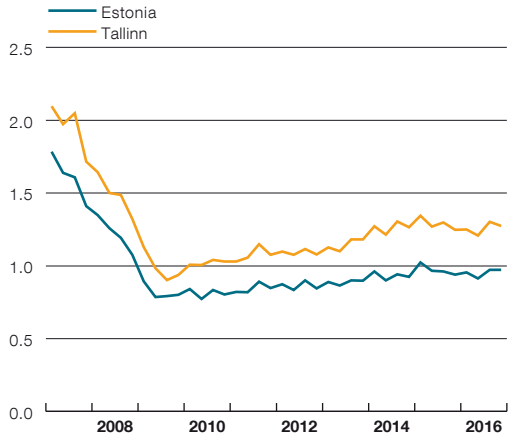
7 KV.EE price statistics on advertised rental prices.

Figure 15. Rental housing advertisments in Tallinn and average price per m²



Source: KV.ee

Figure 16. Ratio of the average price of a square metre in an apartment to average gross wages



Sources: Estonian Land Board, Statistics Estonia

prices, as it stood at 0.97 in Estonia as a whole and 1.27 in Tallinn (see Figure 16).

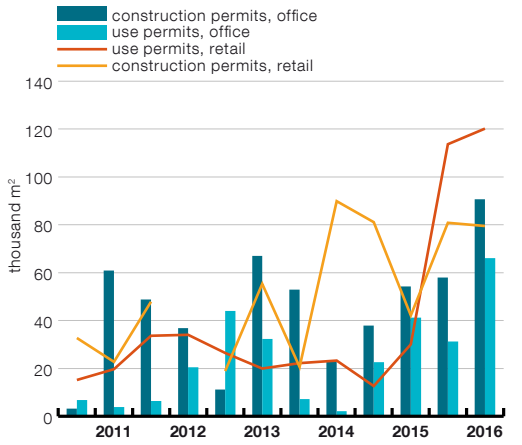
If wages continue to rise fast and loan interest rates remain low, there is a risk that numbers of transactions and prices in the real estate market could continue to rise, which could in turn increase the loan burden of households and the associated risks.

The commercial property market

The active development in the commercial property market meant the average vacancy rates in the markets for office, production and trading space rose a little in 2016. The vacancy rate for high-quality office space and production buildings in Tallinn is 6-7%, which is about one percentage point higher than the rates in Riga and Vilnius[8]. However, the amount of office space and production space on the market in Tallinn is also larger than in the other Baltic capitals. The vacancy rate for the trading sector did not particularly change in the second half of the year in Tallinn and it remained below 1%.

Statistics on adverts for commercial space show no rise in the rental price asked in 2016, though there was some increase in the number of adverts for property to rent. There were some 11% more adverts in the fourth quarter of 2016 than a year earlier, indicating some saturation of the market. This is confirmed

Figure 17. New retail and office space



Source: Statistics Estonia

by the number of new use permits for trading and office space, which is notable for its rapid rise in 2016, especially for trading space (see Figure 17). This makes it unsurprising that the number of building permits has fallen slightly, and slightly less construction has been started than earlier.

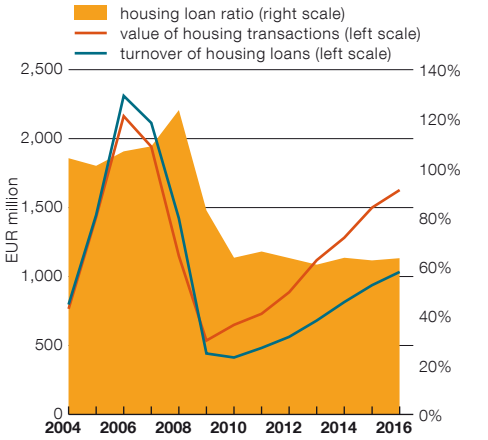
There remains the risk in the commercial property market that the low level of investment by non-financial companies may reduce their desire to expand their business, which in turn could mean that the arrival on the market of new commercial space could raise the vacancy rate. In this case it would be low quality or poorly located commercial buildings that would be most vulnerable.

8 From the Colliers International market review.

Box 1: Factors affecting demand and supply in the housing market.

Prices have been rising relatively fast in the Estonian residential property market for a long time. The average price of transactions with apartments in Estonia has been rising by an average of 10% a year since 2011. The rise in prices has been driven by both demand-side and supply-side factors. The steep rise may be due to unusually high demand, which is perhaps a consequence of rapidly rising wages, favourable lending conditions, demographic changes, or the popularity of real estate investment. Prices may also be affected by limited supply, which might result from the construction sector being unable to keep up with demand because of inertia or a lack of labour or an increase in the cost of labour.

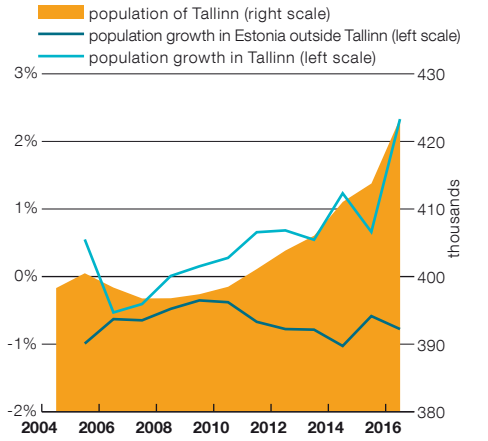
Figure B1.1. Housing loans to housing market turnover



Sources: Eesti Pank, Estonian Land Board

The main factor on the demand side in the rise of real estate prices could be the rapid rise in wages in recent years, as wages have been up by 6-7% a year on average since 2011. This has been slower than the rise in prices though, and prices of apartments have risen relative to wages by an average of 3-5% a year at the same time. Wages rising rapidly for a long time may have led households to expect that they will continue to do so in future. The rises so far have come at the expense of corporate profits though. GDP has been growing less quickly than expected, and so it cannot be sustainable to keep reducing profit margins at the same rate. The Eesti Pank December forecast expects wage growth to slow in the next two years to 5% a year.

Figure B1.2. Population growth in Tallinn



Source: Statistics Estonia

Rising wages have supported purchases of new and more expensive properties and have made it possible for borrowers to take on larger debt liabilities. This is confirmed by the survey of the financial behaviour of Estonian households carried out by Kantar Emor, which has seen the number of those wanting to take a housing loan rise by four percentage points in six years to 9%. Interest rates on housing loans have fallen in this time from 3.4% to 2.2%, cutting monthly interest payments. The turnover of housing loans as a ratio to the value of apartment transactions has fallen to 63%, meaning that the lending policies of the banks have not increased activity in the real estate market further, unlike during the boom time (see Figure B1.1). The lending policy of the banks is reflected in the Kantar Emor survey, which found in 2016 that more than one third of those wanting to borrow were refused, and 10% got less than they wanted, which is more than previously.

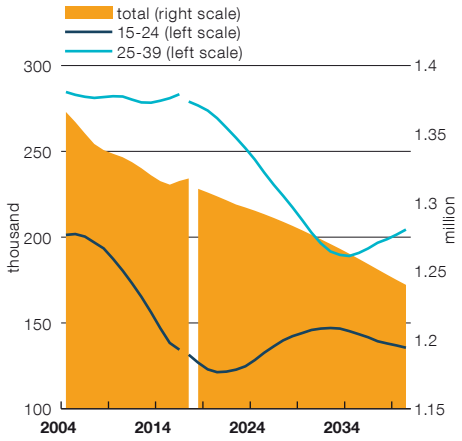
The flow of population to the towns has been a demand-side factor supporting the rise in real estate prices. It can best be seen in the rise in population in Tallinn, which has been positive since 2008, and occurred at a rate of 2.3% in 2016. Meanwhile, the population of Estonia increased by only 0.2% last year, having been shrinking for a long time. This means the main factor behind the increase in population in Tallinn was internal migration (see Figure B1.2).

This migration has coincided with an increase in the 25-39 age group within the population, or has maybe even been caused by it. However, a shortage of younger people of working age is expected in the near future, as the number aged 15-24 will be smaller than before and that group has declined sharply as a share of the total population (see Figure B1.3). This demographic position means that the internal migration to Tallinn may recede in the future as a consequence of the decline of the working age population.

The effect of internal migration is seen most in real estate prices in Tallinn and Tartu, where the number of transactions rose by an average of 10% a year in 2015 and 2016. The number of transactions dropped most in Narva, and it was down by 4% on average in those years, while prices also fell a long way. The average number of transactions in Estonia rose by 6% during that period.

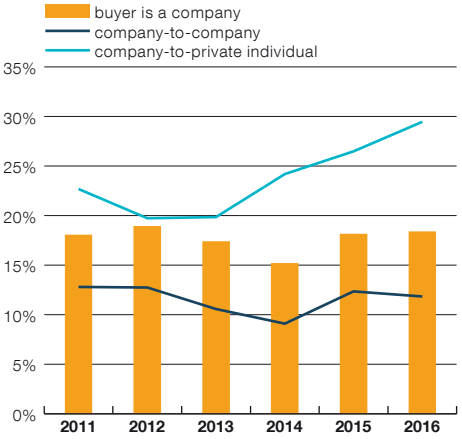
With interest rates low, it is natural that people should seek alternatives for their savings, and real estate is one of the most popular choices as investment in real estate is considered low in risk. This has encouraged growth in the market segment for new apartments that are bought to let. Of the apartments sold in 2015 and 2016, 18% went to legal entities, which is more than before though not unusually many (see Figure B1.4). Internal migration to Tallinn may be a cause of the larger demand than previously in the apartment rental market, which is reflected in higher rental prices (see the section on the real estate market).

Figure B1.3. Estonian population forecast by age groups



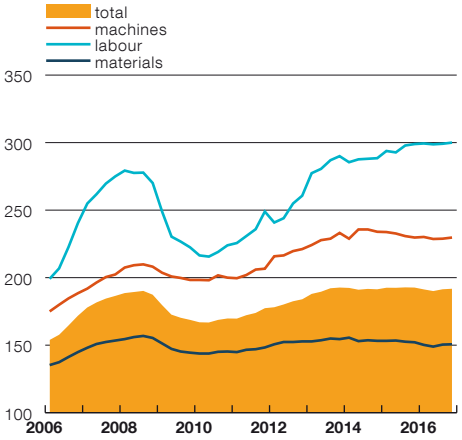
Source: Statistics Estonia

Figure B1.4. Real estate transactions by buyer-seller type



Source: Estonian Land Board

Figure B1.5. Construction price index (1997 = 100)



Source: Statistics Estonia

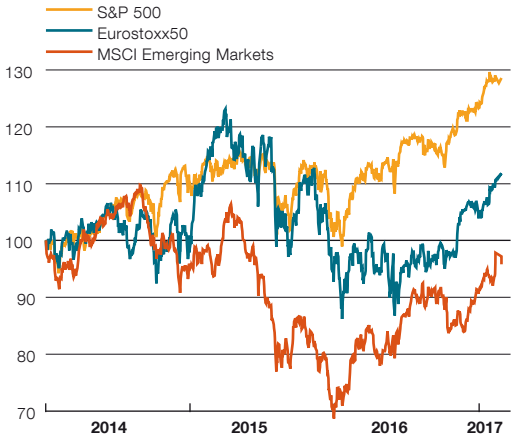
A rapid reaction by the supply side to the increased demand is hampered mainly by the inertia of the construction sector. This is partly due to the time needed for administration and procedures, though this is relatively little in Estonia in comparison with other countries. The shortage of labour or labour being too expensive cannot be given as the main reasons for the inertia either. The labour costs of the construction sector rose faster in 2012 and 2013, but in 2015 and 2016 the construction labour index rose by an average of 2% a year (see Figure B1.5). Labour is generally considered relatively mobile in the construction sector and when there are fewer orders for building plant and facilities, those who had worked on such projects can move into building buildings. The Estonian Institute of Economic Research finds that the capacity utilisation of construction companies increased to 84% in the fourth quarter of 2016. However, orders cover 22% of production capacity, which is a long way below the typical 54%. This indicates that there is a lot of activity in the construction industry right now, but there is room for supply to be increased in future.

It can be concluded overall that the cause of rising prices is rapidly rising wages on the demand side and internal migration to the biggest towns in Estonia. The slow reaction of the supply side has so far been due to the inertia in the construction sector, as there are no visible structural causes of the delayed reaction of supply. The move to the cities has alleviated the change in the age structure of the population, as the number of people of working age has risen. At the same time, demographic forecasts expect that this age group will shrink in future as fewer young people enter it. For this reason, demand for housing may drop in the largest towns in the years ahead, and prices may rise more slowly.

THE FINANCIAL ENVIRONMENT

Prices have been rising in global stock markets since the end of 2016. After the US presidential elections at the start of November, the outlooks for inflation and economic growth were raised in expectation of the budget-financed investment promised by the new administration. Rising share prices were also supported by the good financial results of companies, and the main share indexes in the US hit record levels (see Figure 18). Positive economic data and the good results of companies have given support to rises in share prices elsewhere too, though share indexes in Europe have risen by less than those in the US. This is because of the uncertainty surrounding the United Kingdom's exit from the European Union and the elections this year in several countries in the euro area.

Figure 18. Main stock indexes (1 January 2014 = 100)



last observation 03.04.2017
Source: Bloomberg

Interest rates on sovereign bonds were affected in the final quarter of 2016 by economic figures proving better than expected, while political uncertainty started to have an effect in the first months of 2017. Interest rates on the bonds of advanced economies mainly rose in the final quarter of 2016, especially long-term interest rates in reaction to improved economic figures and expectations of changes in monetary policy (see Figure 19). The interest rates on US bonds started to rise sharply after inflation expectations increased following the presidential elections. The rise was pushed even higher by the decision of the US Federal Reserve to start raising key interest rates in December, and by the expectation that rises in interest rates will be brought forward. As the economic programme of the new government still remains quite unclear however, interest rates

have moved generally sideways in the beginning of 2017. The increase in political uncertainty led to wider spreads in the interest rates of euro area sovereign bonds over German bonds.

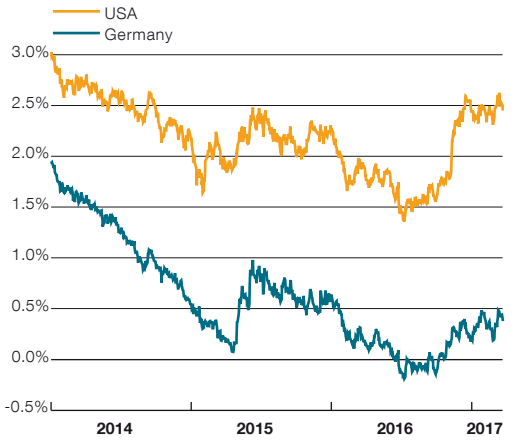
The European Central Bank and the European Systemic Risk Board (ESRB) find that the main risk to financial stability in the European Union is a possible fall in prices on international bond markets. Long-term interest rates remain low by historical standards, meaning that they could rise sharply and by a notable amount were the outlook for economic growth to change. A rise in interest rates and a fall in the value of bond markets would lead to large losses for investors, primarily banks, pension funds and insurance companies. This effect could be passed through into other markets as well.

A second worry for financial stability in the European Union is the weak profits of the banks. Profitability is low because interest rates are low, keeping the income of the banks low, while the stock of problem loans remains high in many countries, and the banking sector is adjusting slowly to economic circumstances. Banks could find problems in accessing funding, which would have a negative effect on the credit supply and on the funding of the economy, and through that would hinder the recovery of the economy. The capitalisation of the banks in the European Union has increased however, and the level of core equity tier 1 capital at the biggest banks was 14% in the third quarter of 2016.

The share prices of banks rose at the end of 2016 as share prices in general rose and long-term interest rates did the same (see Figure 20). The prices of the shares of banks were affected at the start of 2017 by agreements that were reached about the fines threatening some big euro area banks, and by the rise in long-term interest rates, which it is believed will have a positive impact on the revenues of the banks. However, the income of the banks has not risen as much as expected, so share prices may fall back again.

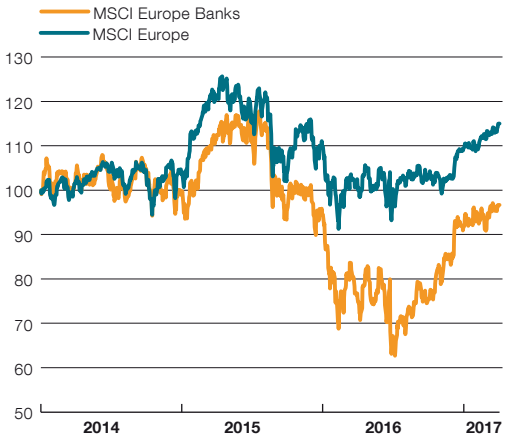
The third major risk in the opinion of the European Union institutions is that the governments and private sectors in some member states still have high levels of indebtedness. A rise in the risk premiums for bonds could make some investors start to worry again about the ability of some governments and private sectors in the European Union to service their debts. Political uncertainty has increased, putting a large question mark over the continuation of structural reforms.

Figure 19. Interest rates on ten-year government bonds of the USA and Germany



last observation 03.04.2017
Source: Bloomberg

Figure 20. Europe's main and banking sector stock indexes (1 January 2014 = 100)



last observation 03.04.2017
Source: Bloomberg

The European Central Bank continues to see a risk to financial stability in the rapid expansion of the non-bank finance sector, primarily investment funds, which finance long-term investment with short-term liabilities. These funds have grown rapidly in size and their cross-border positions have also increased, and they are connected to other financial institutions. If the funds were to hit liquidity problems, they could pass them on to other financial inter-

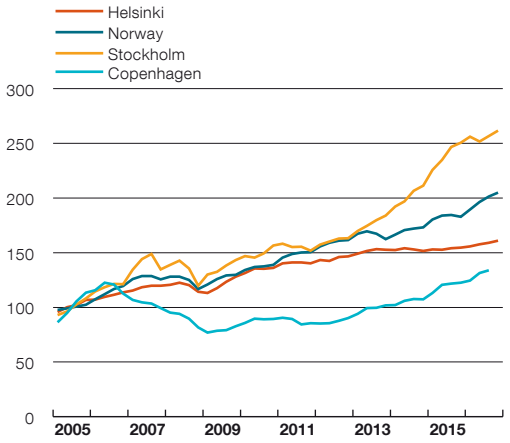
mediaries. The relatively low leverage of the funds reduces this risk, but off-balance-sheet liabilities mean it could be bigger than estimated.

Over 90% of the Estonian banking sector is owned by financial groups operating mainly in the Nordic and Baltic countries. Estonia's main trading partners are in the same region, and so the Estonian economy and the supply of credit in the market in Estonia are affected by developments in neighbouring countries.

The results of the largest banking groups operating in Estonia were good in 2016, though there was no major reduction in the risks coming from the high household indebtedness in Sweden. Real estate prices in Sweden rose a little more slowly in the first half of 2016 (see Figure 21), but the rise over the year was still more than that in either nominal GDP or disposable income. Data from the Swedish central bank show real estate prices up around 9% in Sweden in 2016 and real estate loans up a little over 7%. One reason real estate prices rose more slowly for a time may be the tightening of lending conditions from spring 2016[9]. The tighter requirements raise the borrowing costs for new clients, but population growth, urbanisation, restricted supply in the largest cities, and low interest rates are keeping demand relatively strong. Consumer confidence has also remained strong as unemployment has continued to fall and GDP grew by more than 3% in 2016 according to estimates.

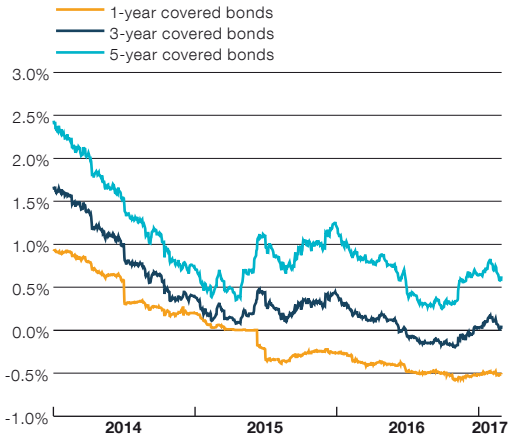
The cost of market-based funding for the Swedish parent banks has remained relatively low. The market interest rates on covered bonds, which are the main instrument for market-based funding, remained negative for bonds with a maturity of less than one year, while the market interest rates on bonds with a maturity of over five years rose a little in the second half of 2016 (see Figure 22). The rise in market interest rates was largely connected to the general rise in interest rates on long-term bonds in Sweden. The risk premium for the bonds of the banking groups over government bonds was not substantially different from the average level of 2015.

Figure 21. Price indexes for apartments in the Nordic countries (2005 = 100)



Sources: statistical agencies, Valueguard, Real Estate Norway, Eesti Pank calculations

Figure 22. Average bond yields of Swedish bank groups*



*Swedbank, SEB, Nordea
Sources: Bloomberg, Eesti Pank calculations

The liquidity of the banking groups generally remained good. Liquidity has remained good primarily for the euro and the dollar. The liquidity coverage ratios of the banks exceeded 100%, both in overall terms and for the euro and the dollar separately (see Figure 23). For the Swedish krona and other currencies though, the liquidity coverage ratio was still on average below 100%.

The liquidity of the Swedish banking groups may be threatened by mismatches between the short-term assets and liabilities in various currencies. A large part of the liquid assets of the banks is in euros and dollars, and

9 From 1 June, Swedish borrowers whose loan principal exceeds 70% of the value of the collateral have to pay at least 2% of the principal back each year on top of interest payments. Borrowers whose outstanding loan is for 50–70% of the value of the collateral must reduce the loan principal by at least 1% each year.

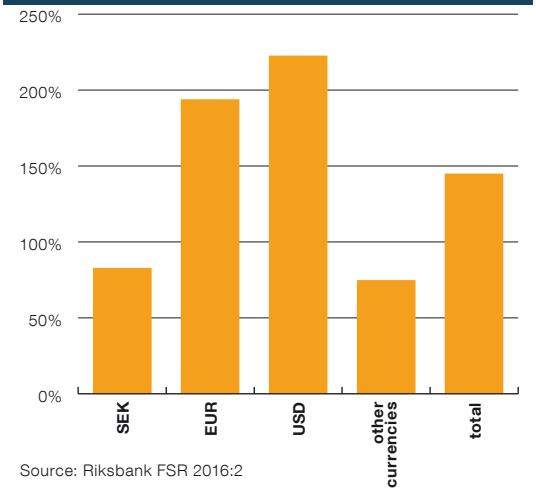
liquidity has been managed successfully in other currencies through swap contracts. However, the swap market may not necessarily function so well if there is a market shock, and so banks could face a problem with liquidity management. The Swedish central bank has also pointed this out.

The profitability of the banking groups remained strong (see Figure 24). Profitability has been supported by strong demand for loans, favourable financing conditions, and very low loan loss rates. An increasing share of loans are issued with floating interest rates or rates that are fixed for the short term, so any change in the reference rate is transmitted into interest income relatively quickly. This reduces the risk to the banks from a rise in base interest rates. With demand remaining strong the earnings of banks from housing loans have increased. Sweden's financial supervisory authority estimates the average gross margin on housing loans has increased from about 0.2 percentage point in 2009 to 1.6 percentage points in 2016.

The capitalisation of the banking groups has continued to increase (see Figure 25). The profitability of banks has let them add to their own funds, while stricter supervisory requirements have locked in the increase. The core equity tier 1 (CET 1) ratio of the largest banking groups was between 18% and 25% at the end of 2016. However, it is important to remember when assessing these figures that the good quality of loans has allowed the banks to reduce their forward-looking risk assessments. This has been balanced by the supervisory authorities, who require that additional capital buffers be maintained and a minimum risk floor be introduced for Swedish and Norwegian mortgages in risk assessment, and who suggest that a more conservative approach be used for corporate loans in risk assessment models[10]. The leverage indicators for Swedish banks rose in 2016, but at 4.8–5.4% they remain around the average in international comparison.

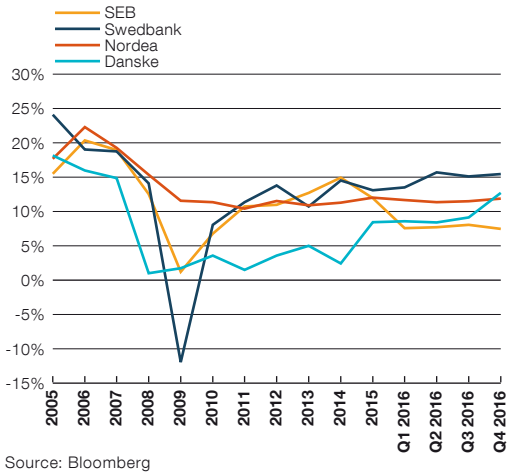
The adjusted lending requirements may have some effect on the Swedish real estate market, but private debt keeps increasing and the dangers from that remain. The ability of the banks to bear loan losses is considered to be satisfactory at present, but there has been no reduction in the levels of household indebtedness or in the risks from the interconnections between banks. The high debt level of households could lead to a reduction in domestic demand if economic circumstances were to change, and this could then be passed on to the banks by a deterioration in the ability of clients to service their loans. The funding risk to the biggest banking groups comes from the tight connections between the banks from their hold-

Figure 23. Liquidity coverage ratio of the major Swedish banks in different currencies (September 2016)



Source: Riksbank FSR 2016:2

Figure 24. Return on equity of large Nordic banking groups

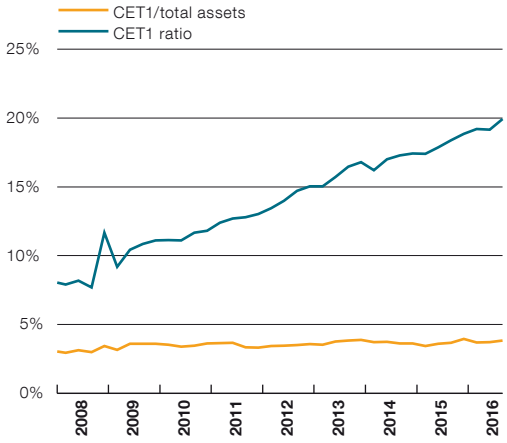


Source: Bloomberg

10 The four largest banking groups have to hold an additional 5% of CET1 equity on top of the usual requirements as a systemic risk buffer in Sweden, and since March 2017 the applicable countercyclical buffer requirement has been 2%. A minimum risk weight of 25% has to be used for housing loans.

ings of each other's securities[11]. About half of the funding is market-based, and so the Swedish banking sector is vulnerable to shocks in the financial markets. Almost half of this market-based financing is in the form of covered bonds, which are used to fund housing loans. This equally means that the funding is exposed to risks in the real estate market. The International Monetary Fund and the European Systemic Risk Board drew attention to the need for additional measures in 2016 (see Box 2 on the ESRB warnings to European Union countries about the risks from residential property).

Figure 25. Capitalisation of the largest Swedish banks



Source: Riksbank calculations

11 The Swedish central bank finds that the volume of the risk positions is equal to almost one third of the equity of the banks.

Box 2: ESRB warnings to European Union countries about vulnerabilities in the residential real estate sector

The European Systemic Risk Board (ESRB), which assesses the risks to financial stability in the European Union, carried out an analysis of the risks in the residential real estate sector in the European Union member states last year. The analysis looked at risks from three angles: risks from the dynamics of the price level of residential real estate, risks from the capacity of households to service their loans, and the ability of lenders to bear losses if any of the risks were to be realised. The ESRB also assessed whether countries had taken sufficient measures in the face of these risks.

As a result of the analysis, the ESRB issued warnings in September 2016 to eight countries where risks from real estate markets could cause risks to financial stability and the real economy in the future. The warnings were issued to Austria, Belgium, Denmark, Finland, Luxembourg, the Netherlands, Sweden and the United Kingdom. The warnings were intended to draw attention to potential vulnerabilities.

Further investigation was made of the risks from real estate markets in Estonia, Malta and Slovakia too, but factors alleviating the risks meant that it was not considered necessary to issue those countries a warning. In its analysis of Estonia, the ESRB found the main risk to be changes in the price of residential property, as real estate prices have risen strongly over the past five years, with the rise mainly driven by rapid wage growth that has exceeded GDP growth. However, the ESRB found that the macroprudential measures taken by Eesti Pank to guard against the risks from the housing market were appropriate and sufficient.

The warnings to the different countries

Among Estonia's near neighbours, Sweden and Finland received warnings from the ESRB. The main vulnerability in Sweden is due to the rapid rise in real estate prices and the possibility the market may be overvalued. The risk is increased by the large and growing debt burden of households. Though the Swedish banks are well capitalised, the ESRB found that the banking sector is vulnerable to risks being realised because the banks mainly use market-based funding. The ESRB emphasised that the realisation of the risks could be spilled over through the banking

sector to other countries in the region. Measures taken to reduce the risks from real estate, including the requirements for repaying loans, were found by the ESRB to be appropriate, but not necessarily sufficient, as they only apply to new loans. Uncertainty about whether the Swedish financial supervision authority has a mandate to set restrictions on borrowers, such as limits on the loan-to-income ratio, is an obstacle to the introduction of further measures.

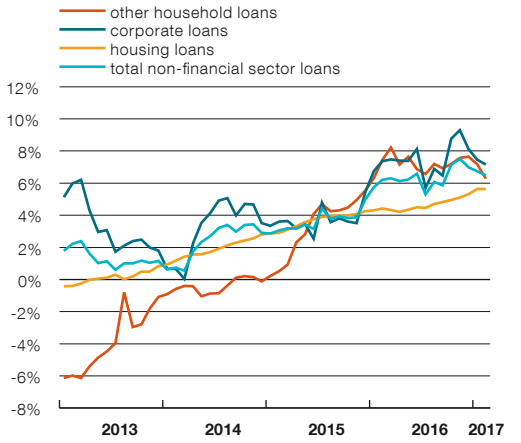
The warning to Finland arose from the large debt of households, which is growing faster than incomes and could cause problems if real estate prices were to fall because of weak economic growth. The resilience of the banks is influenced by the low risk weights on housing loans and the large share of funds from the market in the financing of banks. Finland has taken steps to reduce the risks, but the ESRB finds they may not be sufficient. Furthermore, the Finnish financial supervisor does not have the right to introduce limits on loan-to-income and debt service-to-income ratios.

The ESRB's opinion on the risks to the other countries that received warnings – Austria, Belgium, Denmark, Luxembourg, the Netherlands and the United Kingdom – is that they come from rapid growth in real estate prices and mortgage lending, and the high debt levels of households. There is equally a lot of uncertainty surrounding the real estate market in the United Kingdom, which makes it harder to assess policy measures.

BANKS

The loan portfolios of the banks operating in Estonia continued to grow at a relatively fast rate in the first months of 2017. The stock of loans issued to businesses and households was larger by 1.1 billion euros, or 6.5%, in February 2017 than a year previously (see Figure 26). Growth in the loan portfolio was driven by both corporate and household loans. At the same time that growth in loans to households has gradually increased, the rate of annual growth in loans taken by companies remained a little slower at the start of 2017 than in the preceding months. Despite the rate of growth slowing a little, the growth in loans to companies was still 7.2% in February.

Figure 26. Annual growth rates of banking sector loans and leases to businesses and households



Source: Eesti Pank

Corporate loans increased in most sectors. Although the largest increase over the previous year in February was in the stock of loans to the trade sector, the largest contribution to growth in the corporate loan portfolio came from the real estate and construction sector (see Figure 27). In the same month of last year, the annual growth of loans to that sector was running at 3%, but since August it has been at around 10%.

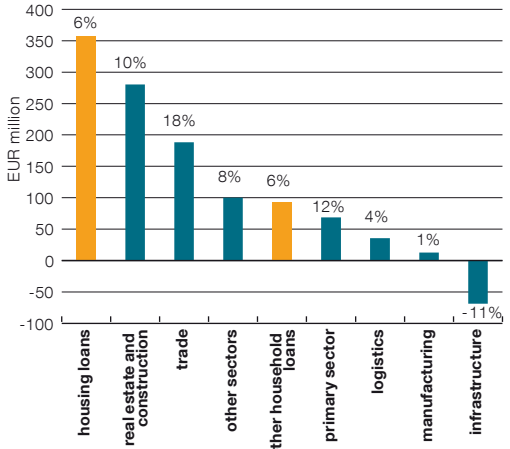
The exposure of the banks to risks that are related to the commercial real estate market that is by its nature cyclical has increased gradually in the past year. A large share of the banks operating in Estonia have increased a bit their lending to companies in real estate and construction. As a result, the share of the loans to the real estate and construction sectors in the total portfolios of most banks has increased a little. Loans to companies in real estate and construction accounted for some 36% of the total value of corporate loans in February, which is about one percentage point more than a year earlier. The sectoral concentration risk of the loan portfolio does not only come from real estate and construction as certain sectors of the economy

play a relatively large role in the financing portfolios of the banks operating in Estonia. This mainly reflects the special features of the financing of the economy, where some sectors, such as real estate, are mainly funded by domestic banks, while others, such as energy, are mainly funded from abroad.

Loans have mainly been made to the real estate and construction sector for the development of commercial real estate. The amount lent for developing office space, retail space and storage and production buildings has increased but the banks operating in Estonia have been quite conservative in recent years about funding the development of residential projects. This means the credit risk faced by the banks is related more and more to the development of the commercial real estate market. Increased supply may reduce the level of rent for commercial space and raise the vacancy rate. This can put pressure on the cash flows of real estate companies as it may not be possible to sell the completed projects fast enough and start them earning income. This may increase the credit risk of real estate companies. With the increase in supply, newer and better quality space is preferred, so it is the owners of older buildings who are particularly vulnerable.

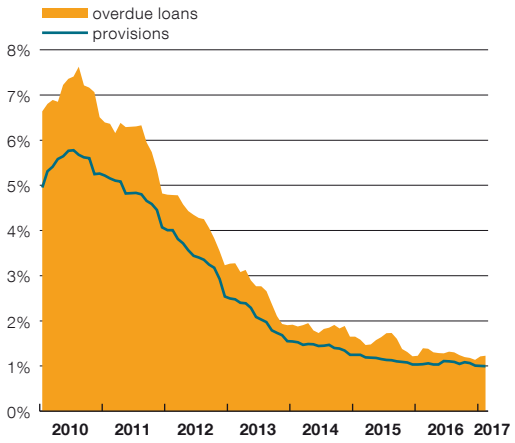
As incomes have risen, so lending to households has become more intensive. The rate of annual growth in housing loans in 2016 increased gradually to reach 5.6% in February 2017, leaving it 1.2 percentage points higher than a year earlier. Both the average value of housing loan contracts and the number of contracts have risen since the end of 2016. This indicates some increase in demand for housing loans and a general rise in real estate prices. It also points to a change in the preferences of borrowers, with new buildings more in demand. Alongside the growth in housing loans, other loans to households have also grown at quite a strong rate, and the increase over the year was 6.3% in February. Other household loans have again grown fast largely because of car leases, which have been posting double-digit yearly growth rates for almost two years now, with a rate of 13.9% in February. The use of overdrafts also started to increase in 2016, having been negative for more than six years.

Figure 27. Annual growth in loans and leases as at 28/02/2017



Source: Eesti Pank

Figure 28. Share of overdue loans and provisions in the loan stock



Source: Eesti Pank

The improvement in the financial position of households has had a positive effect on their ability to service their loans. It was the overdue loans of households that decreased by the most over the year (see Figure 28). Favourable developments in the household sector are not a reason however for risks to be underestimated or expectations to be set too optimistically. Factors like rapid wage growth or low loan costs that have enabled households to service their loans until now could change.

The quality of the corporate loan portfolio varies across sectors. There was a decline over the year in overdue loans in the real estate and construction sector and the trade and infrastructure sector, but an increase in the indus-

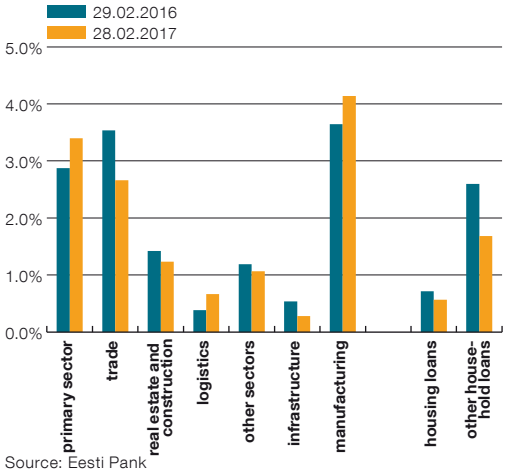
trial, primary and logistics sectors. The biggest growth in overdue loans and in restructured loans was in the primary and industrial sectors. However, the continued loan growth in those sectors indicates that the problems do not affect the entire sector. Although there has been some rise in the level of problem loans in some sectors, the general quality of the loan portfolio remains good, and 1.2% of the loan portfolio was overdue in February (see Figure 29).

Loans are still mainly funded using domestic deposits, which have continued to grow strongly. The rate of annual growth in domestic deposits reached 7% in February 2017 as 980 million euros were added over the year. Demand deposits drove the growth, while the amount held as time deposits contracted over the year. The strong growth in domestic deposits means that there was no deterioration in the loans-to-deposits ratio despite the fairly intensive expansion of the loan portfolio. The ratio has remained at close to 1.1 for the past year (see Figure 30). The share of non-resident deposits in the sources of funding for the banking sector was one percentage point lower in February than a year earlier at 11%.

Like domestic deposits, the funding received from parent banks has grown. The amount taken in funding from parent banks has increased since August by 450 million euros to reach 4.6 billion euros at the end of February, providing 21% of the debt liabilities of the banks. Although several banks have taken more funds from their parents than they had a year earlier, this is not necessarily in order to finance lending, but rather to boost liquidity.

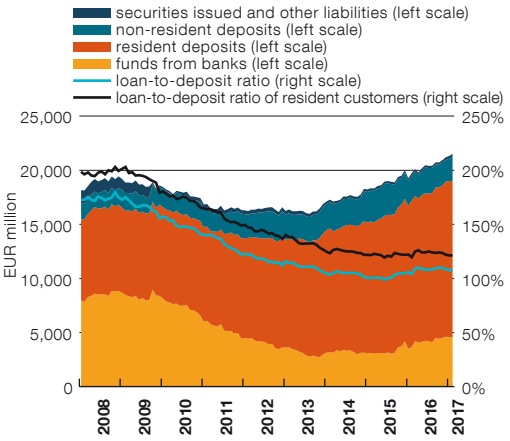
The liquidity buffers in the banking sector are large, but they are highly dependent on group-level liquidity management. The liquid assets of the banks operating in Estonia accounted for 25% of the total assets of the banking sector in February 2017, totalling 6.3 billion euros (see Figure 31). The liquid assets of the banks increased because of an increase in the liquidity held at the central bank. Claims on the central bank made up 53% of the liquidity buffers of the banks in February, which is seven percentage points more than a year previously.

Figure 29. Share of overdue loans



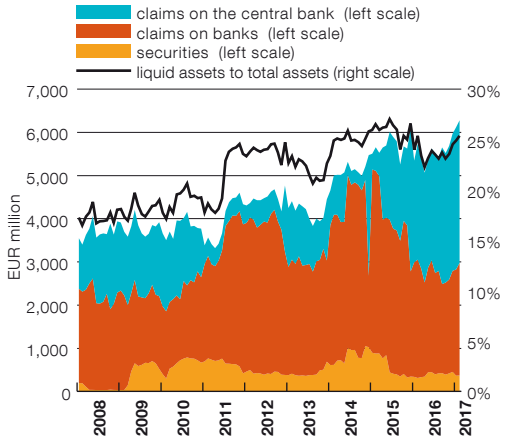
Source: Eesti Pank

Figure 30. Structure of funding and loan-to-deposit ratios



Source: Eesti Pank

Figure 31. Banks' liquid assets and their share in total assets



Source: Eesti Pank

The share of claims against banks in liquid assets shrank in contrast, though it was still around 40% of liquid assets.

The profitability of the banks was a little lower in 2016 than a year before, but was still relatively high. Banks in Estonia earned more than 357 million euros in net profit in 2016 in total. The net profit earned in 2015 was affected very much by the extraordinarily large dividend income of one bank and the cost of the income tax paid on it, but if these are excluded, the return on assets of the banks was a little lower and it stood at 1.4% at the end of December 2016 (see Figure 32). The return on assets of the Estonian banking sector has been one of the highest in the euro area for the past five years (see Figure 33).

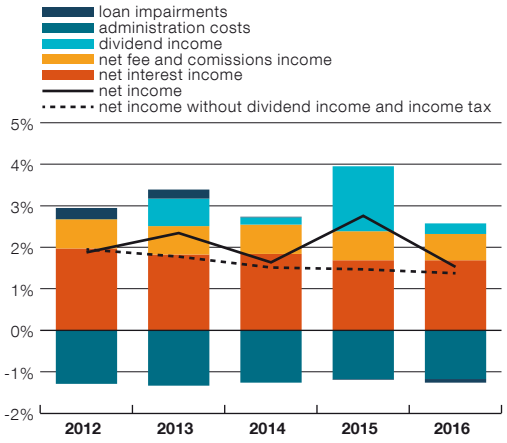
Income was boosted by a rise in net interest income. This rise supported the improvement in income in 2016, and came from low interest expenses, growth in the loan portfolio, and a rise in the average interest margin earned on the loan portfolio. Net fee income overall was down slightly in 2016.

Expenses increased in 2016 because of staff costs and other administrative costs, and to some extent because of the cost of loan provisions. Administration costs were up 6% in total over the year in 2016, with staff costs up 6% and other administration costs up 5%. The costs of loan provisions increased a little in 2016, as 20 million euros of provisions were made, equal to more than 6% of net profit.

The profitability of the banking sector is very likely to remain stable in future. It will be maintained by growth in the loan portfolio and an increase in loan margins. Pressure to increase the expenses of the banks will also continue.

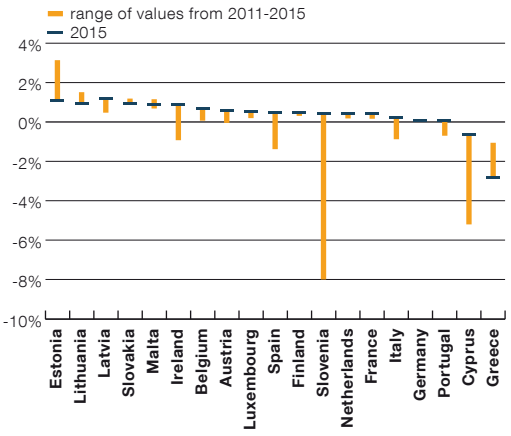
The capitalisation of the banking sector continues to be high. The ratio of total own funds of the banks to risk-weighted assets stood at 34% at the end of 2016. The share of common equity tier 1 capital (CET1) in own funds is also large and so is its ratio to risk-weighted assets at 33.7%. The lowest figure for CET1 of any of the banks was 14% (See Figure 34).

Figure 32. Banking sector income, expenses and net profit (% of total assets)



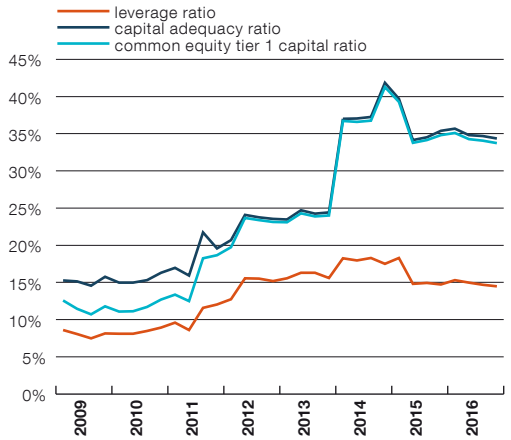
Source: Eesti Pank

Figure 33. Banking sector return on assets*



* found from consolidated data
Source: European Central Bank

Figure 34. Capital and leverage ratios



Source: Eesti Pank

All the banks exceeded the minimum requirements for capital by a considerable margin. Since 1 August 2016, all banks in Estonia have to hold CET1 capital of at least 8% of risk-weighted assets. The two largest banks in the market, Swedbank and SEB, are subject to a further requirement of two percentage points because of their systemic importance. These two banks have to hold total own funds of 13.5% and the other banks need 11.5% (see the section on macroprudential policy).

There has been little change in the past year in the amount of own funds held by the banks, and the small drop in the indicator has come mainly from growth in the volume of assets. The two banks with the highest figures, SEB Pank and Swedbank, use internal models for assessing risks (see Figure 35), while the other banks use the standardised method. In the standardised approach to risk calculation, a risk weight of 35% is applied for housing loans. Banks in Sweden have to use a risk weighing of at least 25% for real estate loans when calculating their capital needs. Norway is also introducing minimum requirements for real estate in risk calculation, and Finland is considering tightening its requirements.

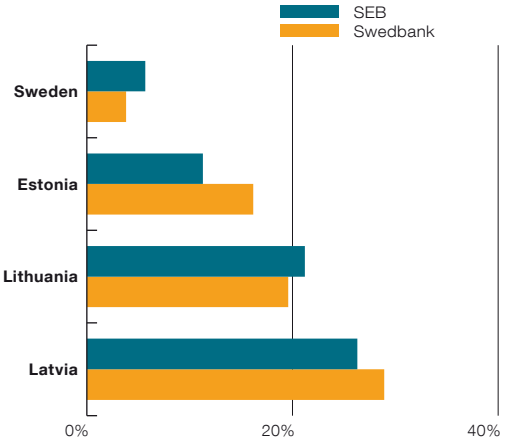
The banks are certainly well capitalised in terms of leverage as well (see Figure 34). The CET1 own funds of the banks is more than 14% of total assets, and the lowest figure for any bank was above 8%.

OTHER FINANCIAL INTERMEDIARIES

Securities Markets

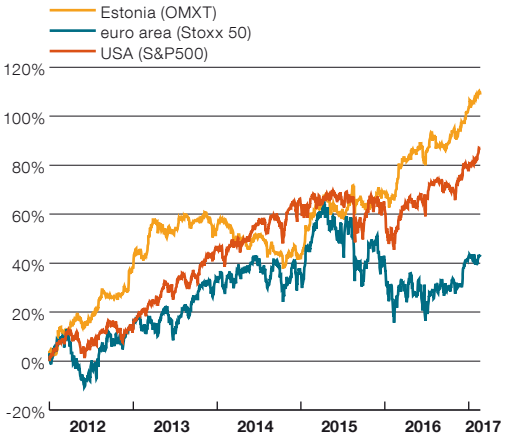
The Estonian securities market is relatively small in size and in its activity level, and it has only a marginal impact on financial stability in Estonia. The capitalisation of the stock exchange and the bond market stood at 2.9 billion euros or 14% of GDP at the end of 2016. The capitalisation of the stock market increased during the year by 22% as share prices rose and because the shares of the LHV group were listed. At the end of December 2016 the stock exchange capitalisation reached 2.3 billion euros. The capitalisation of the bond market increased by 1% over the year to stand at 580 million euros.

Figure 35. Average risk weights of housing loans in the calculations of banks



Source: public reports of banking groups

Figure 36. OMXT and other indexes, change from the beginning of 2012



Sources: Bloomberg, Eesti Pank calculations

The OMXT index rose by almost 20% in 2016 (see Figure 36). The main drivers of the increase were the rising share prices of Silvano Fashion Group, LHV Group and Tallinna Kaubamaja Grupp.

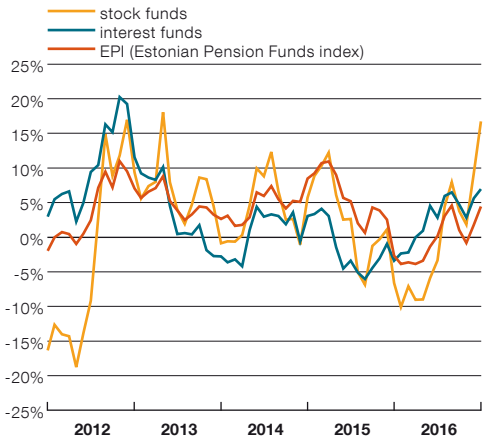
The turnover in the stock market was modest in 2016. Transactions each month averaged 13.3 million euros in value during the year. Without the exceptional month of May, the average monthly turnover of the exchange was 8% less in 2016 than in the previous year.

More new bonds were issued in the bond market in 2016 than in the previous year. A total of 109 million euros of new bonds were issued during the year, which is 45% more than a year earlier, though the increase was mainly due to one individual company issuing new bonds.

Investment and Pension Funds

A large part of the assets of Estonian investment and pension funds are placed abroad, meaning that the returns of the funds are largely affected by developments in securities markets outside Estonia. Optimism in securities markets at the end of 2016 passed into the returns of investment and pension funds. Despite the correction in securities prices at the start of 2016, funds ended the year with a positive return. The net value of units in equity funds was up 9% on average over the year, units in bond funds were up 6%, and the EPI index, which shows the general return of pension funds, was up 2% (see Figure 37).

Figure 37. 12-month changes in net asset values of funds and the EPI index



Sources: Pensionikeskus, Eesti Pank

The assets of both pension funds and real estate funds saw strong growth in 2016. At the end of December, investment funds had assets of 742 million euros and pension funds had 3.2 billion euros of assets. The assets of pension funds increased over the year by 18%, mainly on the back of contributions paid in, while the assets of investment funds grew by around 23% over the year. The growth was driven by the yearly growth of around 61% in the assets of real estate funds, which came from both increased investment and the opening of two new real estate funds. The assets of other funds grew by only 1% over the year to stand at 383 million euros at the end of December.

Insurance Companies

Rapid growth continued in the insurance sector in 2016. Insurance premiums of 388 million euros were received in total, which was 7% more than in the previous year. Increased insurance of companies and households could strengthen their resilience to the realisation of risks and so should support their ability to service their loans. In this way the development trends of recent years in the insurance sector have supported financial stability. Despite that, insurance premiums are still only worth 1.9% of GDP, which is a quarter of their average level in Western Europe[12]. This means it would be natural for insurance premiums to continue growing faster than GDP in the future.

Despite the increasing stability in the sector, the traditional business model of the insurance companies is threatened by low interest rates. The risks from the macroeconomic environment threaten life insurers in particular, as their portfolio contains a large share of contracts with relatively high guaranteed interest rates. One important factor supporting the profitability of the insurance companies is the income earned on investment of assets. In the current economic climate, the returns on hedged risks are generally low. This has made the long-term liabilities of the insurance companies more expensive, as the income earned from the reinvestment of assets is small. Insurers can maintain their profitability by investing a larger share of their assets in asset classes with higher returns, but this would increase the risk level of their investments and would threaten the stability of the sector. The investment portfolios of Estonian insurers have been conservative so far.

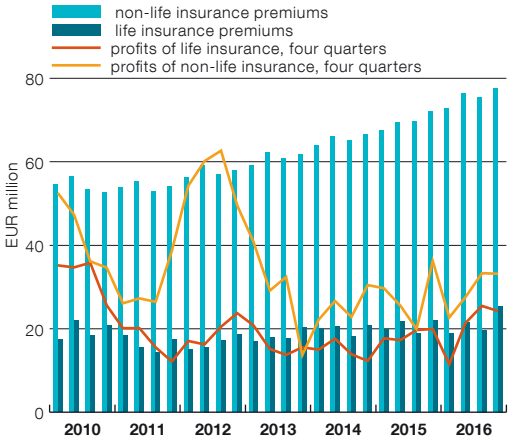
There has been strong growth in the non-life insurance market in recent years. The growth has lasted more than five years, and the rate of growth has increased slightly in recent quarters. In 2016, 8.4% more was received in insurance premiums than in the previous year (see Figure 38). The different types of non-life insurer contributed fairly equally to the growth.

12 Western Europe is Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

The profit of non-life insurers has remained quite stable, though it varies widely across companies. There is quite tough competition in the non-life sector, which is indicated by the net combined ratio remaining at between 90% and 95%[13]. The growth in the sector mitigates the price pressures that come from the competition. Non-life insurers have fewer long-term liabilities, which allows them to reprice their products to match the operating conditions better. This means that the return on investment does not affect non-life insurers to the same extent as life insurers. Stable income from investment has supported the profits of the insurance companies so far. The investment portfolio risk for non-life insurers can be considered moderate, as 75% of the portfolio is made up of bonds, and a large part of the rest is in term deposits (see Figure 39).

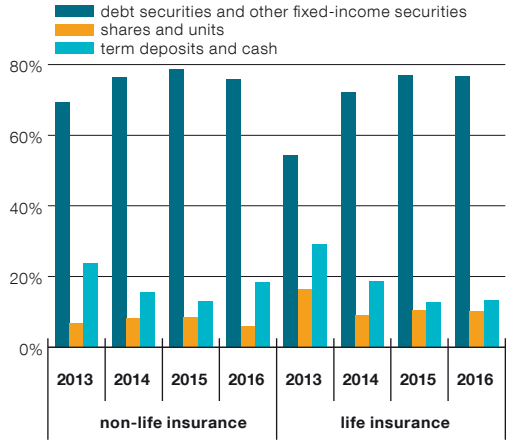
There was a quite substantial jump of 16% over the year in the premiums collected in the life insurance market in the fourth quarter of 2016. This was partly due to increased sales of life insurance contracts that could partly be deducted from income tax. This led receipts of insurance premiums to increase by 4% in total in 2016 (see Figure 38). However, the market has potential for strong growth, given that the life insurance market in several countries is as much as ten times larger as a share of GDP. In the years ahead, growth in the market will be boosted by a rise in the number of people who have the right to receive payouts from the second pension pillar.

Figure 38. Premiums and profits of insurance companies



Sources: Statistics Estonia, websites of insurance companies

Figure 39. Investments of insurance companies



Source: Financial Supervision Authority

The life insurance sector as a whole has remained profitable. Profitability was aided in 2016 by improved return on investment, though this may prove temporary. While insurance companies have increased the share of bonds in their investment portfolios in recent years, there were no further changes in 2016 (see Figure 39). The majority of the portfolio is made up of bond investments, so the risk level of the investments may be seen as limited. Nonetheless, there are certain risks with bonds as the value of bond investments may fall if interest rates rise.

PAYMENT AND SETTLEMENT SYSTEMS

Eesti Pank oversees two systemically important settlement systems, which are the TARGET2-Eesti real-time gross settlement system operated by Eesti Pank and the securities settlement system operated by the Estonian Central Securities Depository. Eesti Pank also has oversight responsibility for the card payments system, which is important because card payments make up a large share of all payments.

The TARGET2-Eesti settlement system functioned well in the second half of 2016, with no major incidents, and an availability rate of 100%. The risks to TARGET2 come from its dependence on other systems, and incidents in the TARGET2-Securities settlement platform launched in 2015 have repeatedly led to the settlement day being

13 Net combined ratio = (claims paid out + operating costs) / premiums received = net loss ratio + net expense ratio

ended later than usual. These interruptions did not affect payments in the Estonian component system.

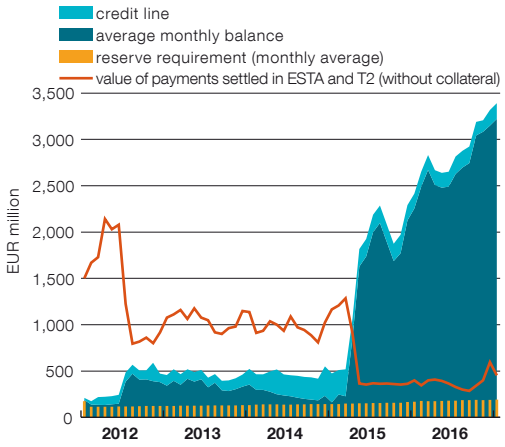
The banks had sufficient liquidity buffers for making settlements without any disruptions. The banks did not need overnight credit, and the intra-day lending facility, which is a credit line opened against pooled collateral, was not used. The commercial banks hold substantially more in funds at the central bank than is required (see Figure 40).

The biggest risks from securities settlement arise from the simultaneous launch in autumn 2017 of large-scale and important development projects. The depositories of Estonia, Latvia and Lithuania are being unified as a single depository, the Nasdaq CSD, and the three separate securities settlement systems will be replaced by a system operating on a single technical platform, and preparations are being made for the newly created depository to join TARGET2-Securities, the pan-European settlement platform. The success of each project is critically important, as a failure in one could cause problems for the other development projects. Eesti Pank is working with the overseers at the Latvian and Lithuanian central banks to prepare an assessment of the risks to the new securities settlement system.

The current system mitigates credit, liquidity and settlement risks sufficiently through its functionality and the risk mitigation measures that have been taken. There has been no incident in the securities settlement system in the past two years that could have reduced the level of availability (see Figure 41), and so the system operator has been successful in managing IT risks and operating risks as well.

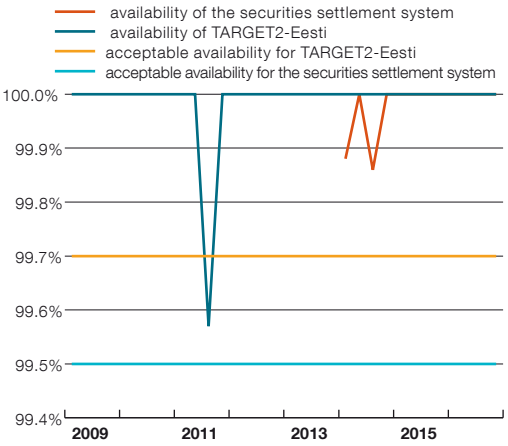
The card payment system managed by Nets Estonia, which processes half a million card transactions a day, experienced six incidents during six months, reducing the indicator for the level of service and leading to partial interruption of card payments for a total of three hours and 30 minutes (see Figure 42). The biggest interruption occurred on 4 October, when card payments, cash with-

Figure 40. Value of interbank payments, reserve requirements and balances held at the central bank



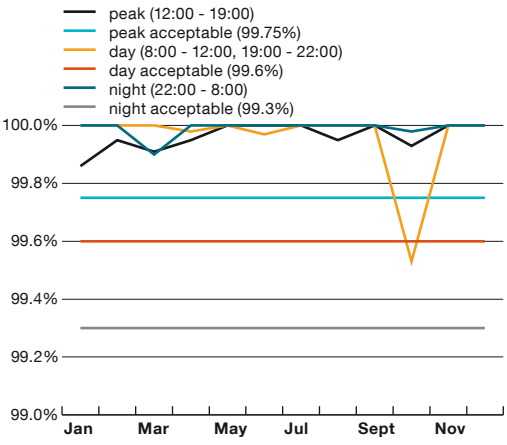
Source: Eesti Pank

Figure 41. Availability of interbank payment systems



Source: Eesti Pank

Figure 42. Availability of the card payment system in 2016



Source: Eesti Pank

drawals and mobile payments were interrupted for 55 minutes because of a stoppage in the network infrastructure. The fault was caused by human error and also by a software error that meant the network equipment with the problem was not isolated. Nets Estonia changed its working practices following the incident and made changes in its computer network infrastructure.

The other incidents only affected some services. The problems that arose at the start of 2016 with international transactions using MasterCard, which affected transactions outside Estonia with cards issued by banks operating in Estonia, and transactions in Estonia with foreign cards, occurred again three times in the second half of the year. Nets Estonia has identified the causes of the interruptions, and in October 2016 improvements were made to increase the processing capacity of the system in extraordinary circumstances and to roll out risk mitigation software that stops problems in one process causing issues in other connected processes.

MACROPRUDENTIAL POLICY

CURRENT MACROPRUDENTIAL MEASURES

The macroprudential measures that apply for credit institutions operating in Estonia are the capital buffer requirements and the requirements for housing loans (see Table 1). The current measures are mainly preventative in nature and are intended to strengthen the resilience of credit institutions to negative events that could occur in the financial sector and to limit any possible increase in systemic risks.

To limit the increase in systemic risks in the housing loan market, Eesti Pank has set limits for housing loans on the loan-to-value ratio (LTV), the debt service-to-income ratio (DSTI), and the maximum maturity of loans. Eesti Pank regularly assesses developments in housing loans, the real estate market, and the lending terms and conditions of the banks, and if necessary can change the limits. As the risks in the housing loan market have not notably increased since the requirements were introduced and lending conditions have not eased, Eesti Pank does not currently consider it necessary to tighten the requirements for housing loans (see the section on Eesti Pank requirements for housing loans and compliance with them).

Eesti Pank requires banks to hold three different capital buffers: the systemic risk buffer, the other systemically important institutions buffer, and the countercyclical buffer. The countercyclical buffer rate is currently set at zero, though Eesti Pank assesses changes in the credit cycle each quarter and can raise the rate if systemic risk increases because of faster credit growth (see the section on assessment of the need for a countercyclical capital buffer).

Adding the buffer requirements introduced in Estonia to the current minimum capital requirements of the European Union means that banks in Estonia have to hold own funds of at least 11.5% of risk assets, of which eight percentage points must be common equity tier one (CET 1) capital. Systemically important banks, which are Swedbank AS and AS SEB Pank, are subject to an additional 2% buffer requirement, which means they face a total own funds requirement of 13.5%, of which 10 percentage points is

Table 1. The macroprudential measures of Eesti Pank

Instrument	Rate	From
Systemic risk buffer	1%	1 August 2016
Other systemically important institutions buffer	2%	1 August 2016
Countercyclical capital buffer	0%	1 January 2016
Housing loan requirements*		1 March 2015
loan-to-value (LTV) limit	85%**	
debt service-to-income (DSTI) limit	50%	
maximum loan maturity	30 years	

* Share of loans breaching the limits may not exceed 15% of the volume of housing loans issued each quarter
** Up to 90% for housing loans guaranteed by KredEx

Table 2. Capital and buffer requirements in Estonia

		Systemically important credit institutions*	Other banks
Macroprudential buffers	countercyclical capital buffer	0%	0%
	systemic risk buffer	1%	1%
	other systemically important institutions buffer	2%	-
Capital conservation buffer		2.5%	2.5%
Minimum own funds requirement		8%	8%
Total capital and buffer requirements		**13.5%**	**11.5%**
of which, Common Equity Tier 1 (CET 1) requirement		**10.0%**	**8.0%**

* In 2016, like in 2015, Eesti Pank named two banks as other significant credit institutions: Swedbank AS and AS SEB Pank

CET 1 capital. All capital buffer requirements are introduced in Estonia without a transition period.

Alongside its measures designed to secure financial stability in Estonia, Eesti Pank takes decisions on reciprocation of the macroprudential measures taken by other member states. If a member state requests reciprocation for a measure it has passed, Eesti Pank can decide to introduce an equivalent requirement for banks licensed in Estonia that operate in that member state. In reciprocating, Eesti Pank follows the recommendations of the European Systemic Risk Board (ESRB) and considers the size of the cross-border exposures of the Estonian banking sector. In 2016 the ESRB recommended that other member states reciprocate the measure of the Belgian central bank raising the risk weights on loans for residential real estate in Belgium for banks that use internal rating models. As the Estonian banks had no exposures related to real estate in Belgium, Eesti Pank decided for now not to apply the additional requirements.

Reciprocation of the Estonian systemic risk buffer requirement by other European Union countries

From 1 August 2016 a 1% systemic risk buffer requirement applies for all banks and banking groups operating under a licence from Estonia. In order to increase awareness of the structural vulnerabilities in the Estonian economy and to ensure a level playing field, Eesti Pank requested the authorities of other member states to apply equivalent additional buffer requirements to credit institutions that provide banking services in Estonia through branches or directly cross-border for their risk exposure in Estonia.

At the request of Eesti Pank, the European Systemic Risk Board (ESRB) issued a pan-European recommendation for a requirement of an additional 1% capital buffer to be applied to risk exposures in Estonia. To avoid an excessive administrative burden, Eesti Pank noted that it expected the equivalent requirement to

Table 3. Responses of EU member states to the request for reciprocity for the Estonian systemic risk buffer

	Applies an additional or equivalent measure	No measures applied	Insitution-specific threshold for application of the measure
Austria		x	
Belgium	x		
Bulgaria		x	
Czech Republic	x*		
Denmark	x		EUR 200 million
Finland		x**	
France	x		
Germany		x	
Hungary		x	
Ireland		x	
Italy		x	
Latvia	x		EUR 1 million
Lithuania	x		
Luxembourg	x		EUR 200 million
Malta	x		EUR 200 million
Netherlands	x		EUR 200 million
Poland		x	
Portugal	x		
Romania		x	
Slovakia	x		
Spain		x	
Sweden	x*		EUR 200 million
United Kingdom		x	
Number of countries	**12**	**11**	

* The Estonian measure is considered to be met, as exposures to Estonia are covered by a higher systemic risk buffer applied by the domestic authorities to total exposures at the consolidated level
** In Finland the systemic risk buffer instrument has not yet been transposed into national law
Four countries (Croatia, Cyprus, Greece and Slovenia) have not responded about their reciprocation decision
Sources: ESRB, Eesti Pank

be applied principally to those credit institutions that have exposures in Estonia of more than 200 million euros, this being 1% of the total assets of the Estonian banking sector.

By 31 March, 23 member states had replied to the recommendation of Eesti Pank and the ESRB (see Table 3). Of these, 12 said they would reciprocate as requested by Estonia, and that an equivalent requirement had been introduced for the risk exposures in Estonia of their banks, or would soon be introduced. Ten countries announced that they would not introduce the measure as the exposures in Estonia of their credit institutions were very small and the measure would have no meaningful impact on the Estonian market. The very different decisions of the countries about reciprocation of the Estonian systemic risk buffer show that there is no one standard in the European legal environment for how other countries should implement requested measures.

Estonia's near neighbours also varied in their responses. Lithuania introduced the requirement for all exposures in Estonia, whatever their size. Latvian banks have to comply with the requirement if they have exposures of more than one million euros in Estonia. The four biggest banking groups in Sweden are subject to a higher systemic risk buffer than that required in Estonia, so the Estonian requirement is considered to have been met. Denmark introduced an additional requirement for exposures in Estonia on top of the systemic buffer requirements at group level, on the grounds that systemic risks in Estonia are not taken separately into account in setting systemic risk buffers in Denmark. The introduction of the requirement in Finland faces the obstacle that no systemic risk buffer has yet been implemented in Finnish legislation.

EESTI PANK REQUIREMENTS FOR HOUSING LOANS AND COMPLIANCE WITH THEM

Eesti Pank introduced three limits in March 2015 that all credit institutions operating in Estonia have to hold to when issuing new housing loans. The requirements set a limit of 85% on the loan-to-value (LTV) ratio at the moment the loan is granted, or 90% if there is a guarantee from KredEx; a limit of 50% on the debt service-to-income (DSTI) ratio; and a limit of 30 years as the maximum maturity for housing loans. Some flexibility was allowed to the banks in meeting the limits, as 15% of the loans issued in a quarter by volume may have terms that breach the limits.

These requirements for housing loans were introduced to prevent lending terms and conditions being eased. As the limits were not restrictive at the time they were introduced, it cannot be assumed that they have seriously changed the conditions on the loans that have been issued. It is equally hard to say whether lending conditions would have been eased had the requirements not been introduced. However, major changes in the distribution of loans issued or in the use of the exemptions could indicate that lenders or borrowers have changed their behaviour, and this should be considered in risk assessments and in the possible adjustment of the measures.

Monitoring of compliance with the requirements uses loan-based reporting for housing loans, which Eesti Pank started to require of the banks from early 2015. The reporting was extended in 2016 and from the second quarter of that year it became possible to observe the compliance with the requirements. There is no positive credit register covering all the banks in Estonia containing information on all the loans issued. In the highly concentrated Estonian housing loan market however, the absence of any such register has not proven a major obstacle to assessment of the ability of loan applicants to pay their loans or of the adequacy of collateral. The Financial Supervision Authority has issued wide-ranging recommendations for the information needed before decisions on loans are taken[14], among them that the information collected on the loan applicant should be used together with the bank's own data and information from public databases and other sources.

14 See the advisory guidelines of the Financial Supervision Authority Responsible lending requirements, of 01.12.2010 (last updated 13.06.2016).

The loan-to-value ratio

In 2016 the loan-to-value (LTV) ratio of the housing loans issued by the banks rose a little. The share of new housing loans with an LTV ratio of over 85% rose sharply to 23% in the fourth quarter of 2016 (see Figure 43). This share is still three percentage points lower than it was in the period before the requirement was introduced. The weighted average value of the LTV ratio did not change particularly in 2016, rising by only one percentage point to 71%.

The growth in loans with large LTV was driven by the wider uptake of KredEx guarantees. Although the share of loans with LTV of over 85% increased markedly at the end of 2016, the majority of those loans had KredEx guarantees, in which case the maximum permitted rate for the LTV ratio is 90% (see Figure 44). In fact the LTV limit was not breached to a greater extent, but rather breaches happened less during the year, as 4.4% of the loans issued in the fourth quarter of 2016 exceeded the limit.

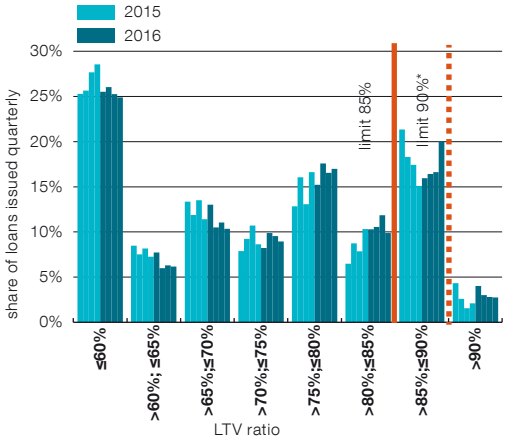
The growth in loans with KredEx guarantees was notably faster than the overall growth in housing loans, as the volume of housing loans increased by around 10% in 2016 while loans with KredEx guarantees grew by 51%. The share of loans covered by KredEx increased to almost 25% of new loans in the fourth quarter.

The growth in KredEx covered loans was caused mainly by increased borrowing by young borrowers (see Figure 45). The introduction of a new target group for the guarantees also increased the role of KredEx in the housing loan market. From 1 March 2016 the earlier list of target groups of young professionals, young families, tenants in returned dwelling spaces, and military or Defence League veterans was expanded to include buyers of energy efficient properties or people renovating properties to make them energy efficient. The share of loans given to this new target group increased in the fourth quarter of 2016 to 14% of all the housing loans issued with KredEx guarantees[15].

The government measures designed to raise energy efficiency had a smaller impact on the

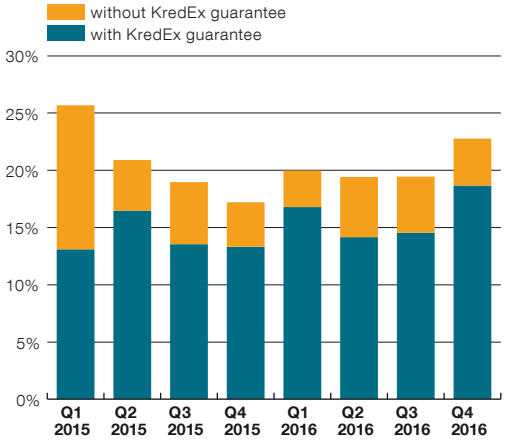
15 Source: KredEx

Figure 43. Distribution of loans by the LTV ratio



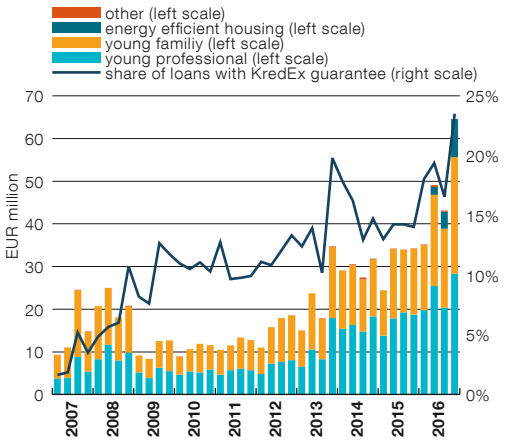
*For loans issued with a KredEx guarantee the limit is 90%
Source: Eesti Pank

Figure 44. Share of loans with an LTV ratio over 85% in loans issued quarterly



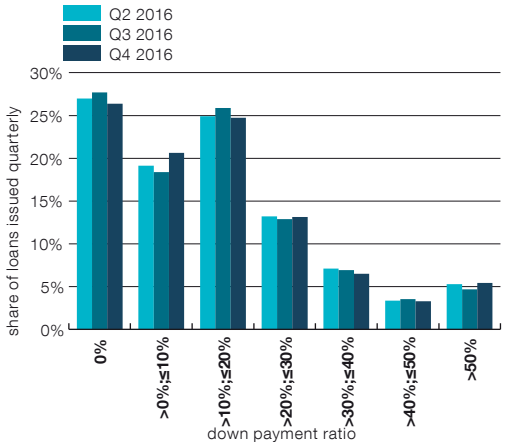
Source: Eesti Pank

Figure 45. Housing loans granted with KredEx guarantee by target groups



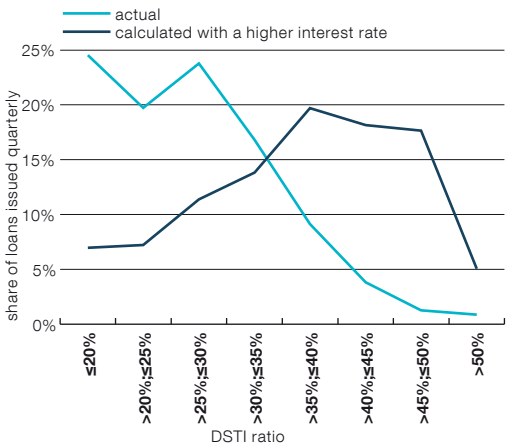
Sources: KredEx, Eesti Pank

Figure 46. Distribution of loans by the borrower's down payment ratio



Source: Eesti Pank

Figure 47. Distribution of loans by the DSTI ratio in Q4 2016



Source: Eesti Pank

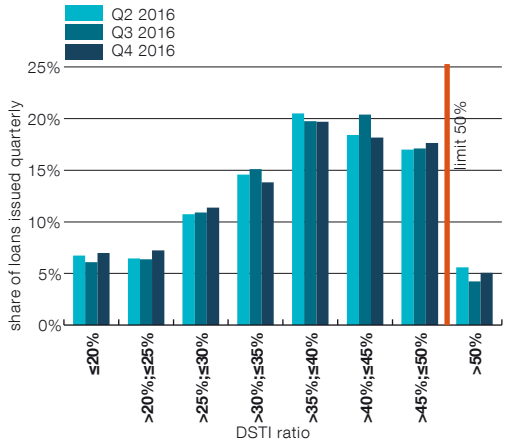
growth in loans with a state guarantee than Eesti Pank estimated in spring 2016. Such guarantees could play an increasing role in future though, as although the target groups overlap somewhat, the much higher upper limit for guarantees on energy efficient housing could potentially lead to a stronger increase in lending volumes[16].

The average down payment increased a little at the end of 2016 to reach 18% of the value of the property being bought in December. This rise can partly be explained by the increase in the use of KredEx guarantees, as one condition of the guarantee is that the borrower must put in at least 10% of their own financing. However, the use of additional mortgages as collateral remains widespread in Estonia, and this helps to reduce the share of own financing of the borrower. Use is often made in this of the option provided by the banks of taking housing loans with a 0% down payment. Such loans accounted for 26% by volume of all new housing loans in the fourth quarter of 2016 (see Figure 46).

The debt-service-to-income (DSTI) ratio

The monthly payments of the principal and interest for more than two thirds of housing loans amount to up to 30% of the monthly net income of the borrower (see Figure 47). This shows that the loan repayment burden is not very big for borrowers while interest rates are low. However, loans with floating interest rates need to take account of possible rises in interest rates, which the DSTI ratio referred to in the Eesti Pank regulation also does[17].

Figure 48. Distribution of loans by the DSTI ratio



*In calculating the DSTI ratio the higher interest rate is used
Source: Eesti Pank

The DSTI ratio taking account of possible interest rate rises was up to 40% in 2016 for a larger share of housing loans. Some 5% of new loans by volume exceeded the DSTI limit of 50% (see Figure 48). The share of loans that were close to the limit, with a DSTI ratio of 45–50%, rose a little in recent quarters to 18%. The weighted average DSTI ratio calculated in

16 The higher price of energy efficient housing means that the upper limit of the guarantee for loans used to purchase such properties is set higher at 50,000 euros. The guarantee limit for other target groups is 20,000 euros (see also Appendix 1. The effect of loan guarantees from KredEx on the Estonian housing loan market, in the Financial Stability Review 1/2016).

17 To find the DSTI ratio for the Eesti Pank limit, the housing loan payment is calculated with either an annual interest rate of 6% or the interest rate given in the loan contract plus two percentage points. The calculation uses whichever of these is higher.

accordance with the Eesti Pank requirements was quite stable at 37%.

The DSTI ratio calculated at current interest rates has fallen over two years. Since the limit was introduced in March 2015, the banks have issued more and more loans with conditions where a smaller share of the borrower's regular net income is used for loan repayments. The distribution of the DSTI ratio calculated using the actual loan schedules has shifted towards the lower values since the limit was introduced, and the weighted average DSTI has fallen from 30% to 27%.

Maturity of housing loans

More than half of housing loans are issued for 25–30 years. At the start of 2015 there were a few new loans that were issued with a repayment deadline of longer than 30 years, but in 2016 no such long loans were issued (see Figure 49).

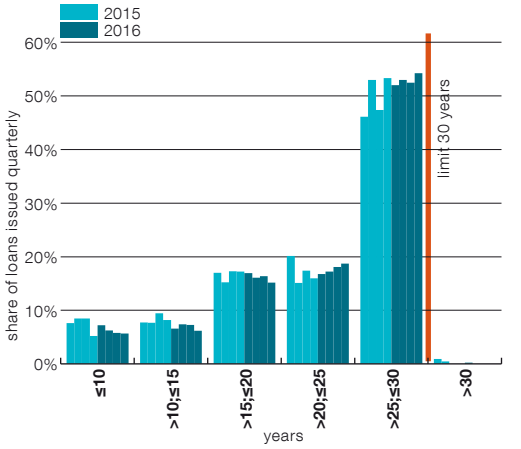
The weighted average maturity of housing loans has risen over the past two years by half a year to around 25 years. The minor increase in the maturity of the loans can be explained by the increase in the share of young borrowers and the rise in the average amount borrowed caused by the rise in housing prices. Borrowing with a longer maturity means repayments can be spread over a longer period.

The Eesti Pank requirements do not limit the ability of the borrower to agree faster repayment of the housing loan with the bank if the borrower accepts the resulting increase in the loan repayment burden, and the contract allows the borrower to extend the deadline if necessary[18]. Only 0.6% of all borrowers wanted to, and were able to, repay their loans faster than the limit set of 30 years.

The use of exemptions

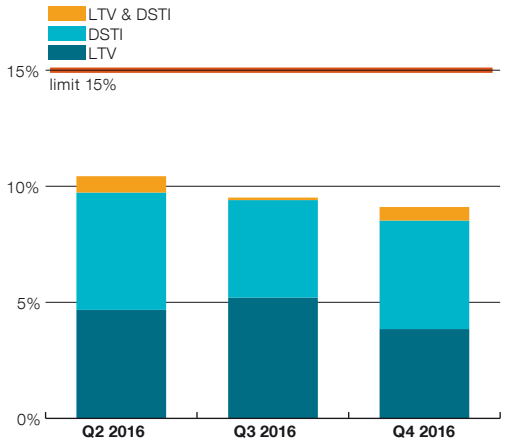
More than 90% of the loans were issued within the limits set by Eesti Pank. In 2016 the exemptions were used to breach one or more of the limits for around 9% of loans, which is less than the amount permitted in the regulation of 15% of the loans issued within a quarter (see Figure 50).

Figure 49. Distribution of loans by maturity



Source: Eesti Pank

Figure 50. Share of loans breaching the limits



Source: Eesti Pank

More than half of the exemptions were for breaches of the DSTI limit. Around three quarters of them breached the limit by up to ten percentage points, meaning the DSTI ratio of such loans was 50%-60%. The LTV limit was breached by a little less in 2016, which may be partly because of the increased use of the KredEx guarantees. The share of loans that breached both the DSTI and LTV limits was 1% of all loans in the fourth quarter of 2016. The banks have not issued any loans that breach the maturity limit since April 2016.

18 In calculating the DSTI ratio it is possible to use as the repayment deadline the date until which the borrower has the right to extend the deadline for repaying the loan. For loans issued under such conditions to meet the Eesti Pank requirements the option of extending the maturity of the loan must be fixed in the loan contract.

Conclusions and assessment on the need to change the housing loan requirements

Overall there has been no loosening of the lending terms and conditions of the banks for new housing loans in the past two years, there has been no increase in the breaching of the limits, and the average level of the indicators for the requirements has been quite stable (see Tables 4 and 5). The weighted average value of the LTV ratio rose in the fourth quarter of 2016, but this was mainly because of the increased use of the KredEx loan guarantees. The biggest changes have been in the distribution of the DSTI ratio calculated using the actual loan schedules, which has moved towards lower values for the ratio. However, the DSTI ratio taking account of a rise in interest rates, which is on average 10 percentage points higher than the DSTI ratio from actual loan schedule, has changed relatively little. The share of loans that were close to the DSTI and maturity limits increased a little in the past quarter.

The banks are only partly making use of the flexibility permitted in meeting the requirements. The permitted exemption rate is 15%, but banks have issued less than 10% of loans by volume each quarter with conditions that qualify under the exemptions. This shows that the banks have not wanted to ease lending conditions notably, and it also means that the current limits are not too restrictive given the current demand for loans.

Eesti Pank does not consider it currently necessary to change the requirements for issuing housing loans. Should the growth in housing loans accelerate substantially though, or should signs appear that competition may lead lending standards and conditions to be loosened, Eesti Pank may tighten the requirements. Rapidly rising wages and real estate prices can particularly create the danger of the ability of borrowers to repay their loans being overestimated, or their financial leverage being increased to an unreasonable extent that could ultimately lead to an increase in systemic risk. Although there is no urgent need to change the housing loan requirements for the banks in the current credit environment, Eesti Pank will focus more attention in monitoring on changes in leverage and the ability to repay loans, and may if necessary make the requirements stricter.

Table 4. Weighted average indicators for the LTV and DSTI ratios and the loan maturity in housing loan contracts

Indicator	01.2015	04.2015	07.2015	10.2015	01.2016	Q2 2016**	Q3 2016	Q4 2016
LTV	72.7%	72.1%	69.7%	69.6%	72.3%	69.9%	70.7%	70.7%
of which without KredEx	69.1%	67.4%	66.1%	65.4%	67.4%	66.1%	67.0%	65.7%
of which with KredEx	93.3%	91.1%	87.9%	89.6%	90.2%	85.2%	85.0%	85.8%
DSTI	*	*	*	*	*	37.1%	37.5%	36.9%
scheduled DSTI	30.3%	32.0%	29.7%	30.3%	31.3%	26.8%	27.6%	26.5%
Maturity (years)	24.1	24.2	23.6	24.6	24.5	24.4	24.4	24.7

* No data about the DSTI ratio calculated using the definitions specified by the Eesti Pank regulation
** Reporting was changed from 1 April 2016
Sources: Eesti Pank, Financial Supervision Authority

Table 5. Share of loans breaching the limits set by Eesti Pank

Indicator	01.2015	04.2015	07.2015	10.2015	01.2016	Q2 2016**	Q3 2016	Q4 2016
LTV	13.9%	5.5%	5.7%	5.0%	4.5%	5.4%	5.3%	4.4%
of which without KredEx	14.7%	5.5%	6.5%	4.7%	4.1%	5.3%	5.0%	4.1%
of which with KredEx	9.1%	5.2%	1.6%	6.5%	6.0%	0.1%	0.3%	0.3%
DSTI	*	*	*	*	*	5.7%	4.3%	5.3%
Maturity (years)	0.9%	0.5%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%

* No data about the DSTI ratio calculated using the definitions specified by the Eesti Pank regulation
** Reporting was changed from 1 April 2016
Sources: Eesti Pank, Financial Supervision Authority

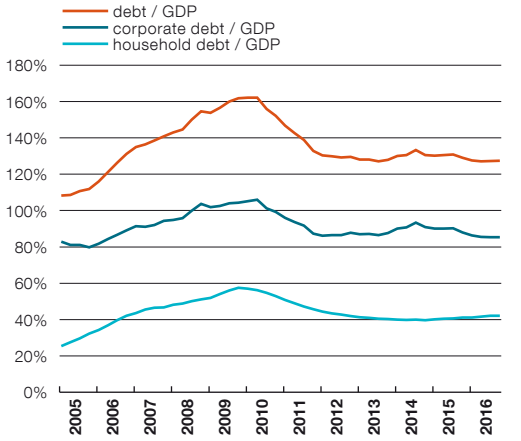
The LTV limit may need to be tightened if real estate prices start to rise significantly faster and there is an increased risk of residential property being overvalued. Lowering the LTV limit would reduce the availability of loans and so help to restrict rises in real estate prices. Requiring more collateral when real estate prices are rising fast would support the solvency of the banks if the rise in price were to be followed by a sharp fall. Alongside the LTV ratio it is also important to note the role of the borrower's down payment in reducing risks. Estonian households have relatively few savings, and so quite a lot of loans are at 0% down payment, for which additional mortgages are provided as collateral. Additional collateral helps to reduce the risks to the banks of a possible fall in the value of the collateral, but the excessive leverage of households when the down payment is very small or non-existent could lead to macroeconomic and social problems if the market were to turn down, and a deterioration in the ability to repay loans could also deliver a blow to the banks.

The DSTI limit has a larger role to play in reducing systemic risk as it restrains borrowers from taking on too much in loan liabilities. The income level of borrowers defines how much they can borrow and how much further real estate prices can rise. The current DSTI limit will become more restrictive for borrowers if housing prices and the size of the loans needed to finance housing purchases increase faster than incomes. If rising prices mean that the DSTI ratio and loan maturities shift even closer to their limits, it could be a sign of imbalances increasing in the housing loan market. Larger changes could require the DSTI limit to be tightened.

ASSESSMENT OF THE NEED FOR A COUNTERCYCLICAL CAPITAL BUFFER

A countercyclical buffer has to be created for the banks at a time when the financial cycle is on the upswing and the systemic risk from rapid loan growth is increasing. Banks can use the additional capital buffers they have built up during the growth phase of the financial cycle to cover losses that may arise when the cycle turns down and to continue supplying credit to the real economy. The larger the systemic risk

Figure 51. Real sector indebtedness



Sources: Eesti Pank, Statistics Estonia

accumulation in the credit market and the greater the imbalance that it creates, the larger the capital buffer should be.

Growth in credit volumes could be a danger to the stability of the financial system if it is faster than growth in the economy, meaning that indebtedness increases. A moderate increase in indebtedness could reflect the normal process of financial deepening, where borrowing is used to create greater value added that can be used in the future for servicing the loans. However, rapid credit growth could cause the economy to overheat and the banks to suffer loan losses. For this reason the development of debt and the factors affecting it need to be assessed and forecast when the capital buffer requirement is set.

The indebtedness of Estonian companies and households shrank slightly in 2016 as debt liabilities grew more slowly than nominal GDP. The debt-to-GDP ratio has changed relatively little since 2012 and has held stable at close to 130% (see Figure 51). Corporate debt has declined slightly in the past year as a ratio to GDP while the debt of households has increased. However, the share of household income in the structure of GDP has been increasing since 2015, so there has been no increase in household debt as a ratio to wages.

The Eesti Pank December forecast expects that the total debt of the non-financial sector

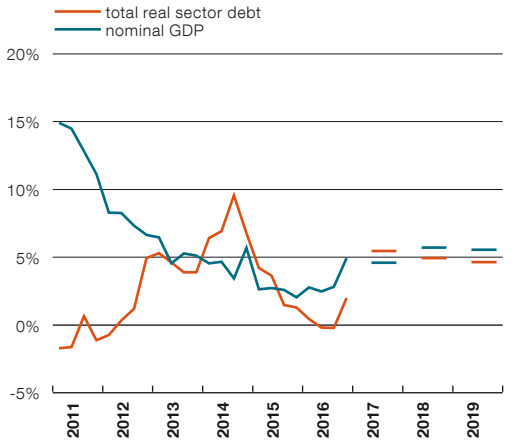
will remain at its current level as a ratio to GDP in the years ahead, and the credit-to-GDP ratio will remain negative. The debt of the non-financial sector will grow faster in the coming years as the economy and investment grow, but the rate of growth will not exceed that of nominal GDP consistently or significantly (see Figure 52). The standardised credit-to-GDP gap[19] calculated using the methodology of the Basel Committee on Banking Supervision was -11 percentage points at the end of 2016 and the additional gap[20], which is also used by Eesti Pank, was -21 percentage points (see Figure 53). The gap will remain negative in the years of the forecast, 2017-2019, and so the buffer guide is 0%.

To get a better picture of the development of the credit cycle and the behaviour of participants in the credit market, the credit-to-GDP gap of the non-financial sector has to be considered alongside other indicators that allow the need for the buffer in the coming years to be assessed. It is particularly important to analyse alternative indicators in Estonia's case, given the wide amplitude of the previous credit cycle and the short time series.

Growth in corporate debt has been slowed by the low level of investment, while the corporate debt structure has changed and lending by banks operating in Estonia has increased quickly. There was an increase of 8% in 2016 in the stock of loans and leases taken from banks operating in Estonia[21]. However, borrowing from abroad by companies remained at the same level throughout the whole year and other borrowing by companies contracted substantially (see Figure 54). This meant that corporate debt liabilities increased by only 0.5% during the whole of 2016.

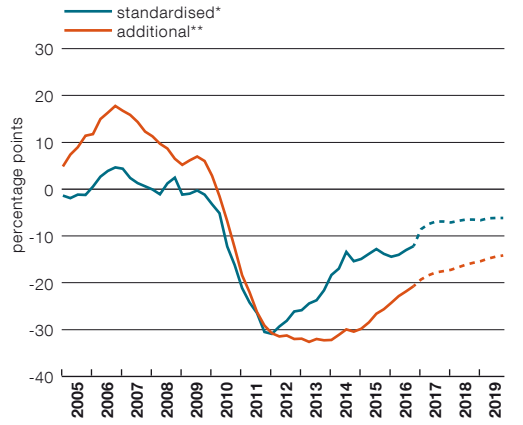
This rapid growth in bank loans from domestic banks in recent years reflects the increased borrowing by companies in sectors like real estate that are mainly financed by domestic banks. The growth has also been supported by the relatively favourable lending conditions and by the replacement of foreign loans with domestic ones. Foreign borrowing has mainly declined because of reduced investment in sectors like energy and transport that are financed relatively more with foreign debt, and because of a reduction in intra-group short-term liabilities. Other corporate liabilities were reduced in 2016 primarily because of a fall in lending by holding companies[22] to non-financial companies. There was also a decline in 2016 in lending between companies in the non-financial sector.

Figure 52. Annual growth of real sector debt and nominal GDP



Sources: Eesti Pank, Statistics Estonia

Figure 53. Credit-to-GDP gap



* from total debt data
** from data for domestic bank loans and leases
Source: Estonian Land Board

19 In calculating the standardised credit-to-GDP ratio, Eesti Pank uses the quarterly statistics of the financial account from the system of national accounts for finding the debt level. This covers resources borrowed and bonds issued by the Estonian private sector both within Estonia and abroad. This is an unconsolidated indicator.

20 The additional credit-to-GDP ratio is calculated using a narrow aggregate of credit that covers domestic loans and leases issued by banks operating in Estonia.

21 By the end of February 2017 the growth had slowed to 6.8%.

22 Classified under the financial sector.

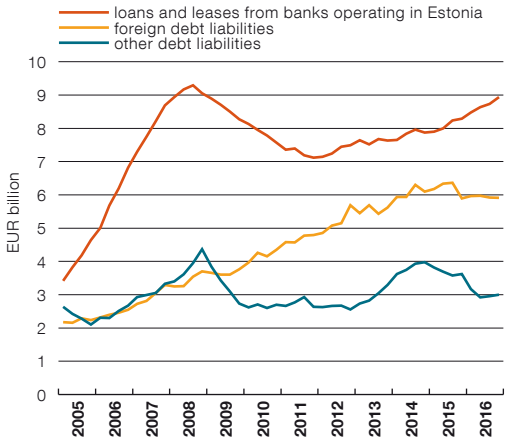
The yearly growth in household debt liabilities picked up to 6% as housing loans, car leases and other consumption loans all increased. Growth in borrowing by households has been built on strong growth in wages, as the average wage has increased faster than the value of loan liabilities (see Figure 55).

The annual growth in housing loans accelerated to 5.6% by the end of February 2017. Both the average value of housing loan contracts and the number of contracts have risen since the last quarter of 2016. This indicates increased growth in demand for housing loans and in real estate prices. The average value of apartment transactions in Estonia was up around 10% on a year earlier in the fourth quarter of 2016 and the first months of 2017, leaving it a little higher than the average of the past three years (see Figure 56). The rapid growth was partly due to an increase in the share of transactions that involved new and more expensive apartments, and without that the growth would have been 5-6%.

If prices for residential property continue to rise fast, it may cause credit growth to accelerate. The rise in real estate prices has itself been supported by the continuing strong growth in household incomes and savings, which have boosted demand for residential property as interest rates are low. Households continued to use their own resources to a considerable extent for buying residential property, though at the end of 2016 there was a slight increase in the share of borrowed money used for financing real estate transactions. The conditions for housing loans have not become looser however[23].

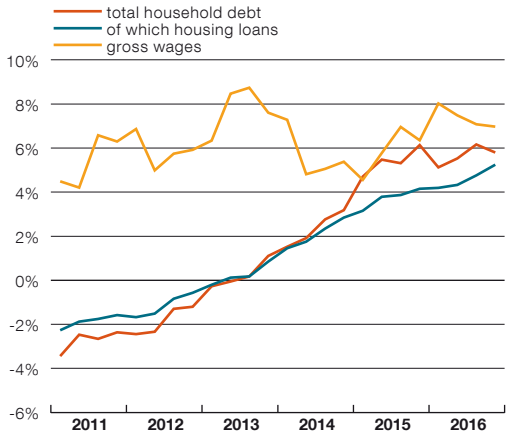
Several indicators of external balance for the economy have improved and do not point to any need to raise the countercyclical capital buffer requirement. The current account surplus for 2016 was the largest since independence was regained. Estonian residents invested more funds abroad than they took from there, so Estonia was a net lender. The net international investment position, which is the difference between external assets and external liabilities, climbed in consequence to -37% of GDP. The gross external debt shrank and remains smaller than debt assets.

Figure 54. Corporate debt



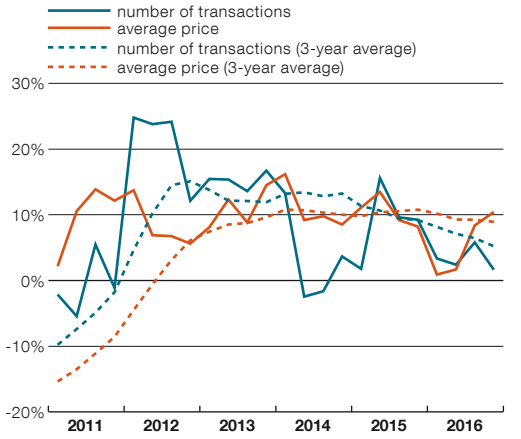
Source: Eesti Pank

Figure 55. Annual growth of household debt and the average gross wage



Source: Eesti Pank

Figure 56. Annual growth of housing prices and number of transactions



Source: Estonian Land Board

23 See section on Eesti Pank requirements for housing loans and compliance with them.

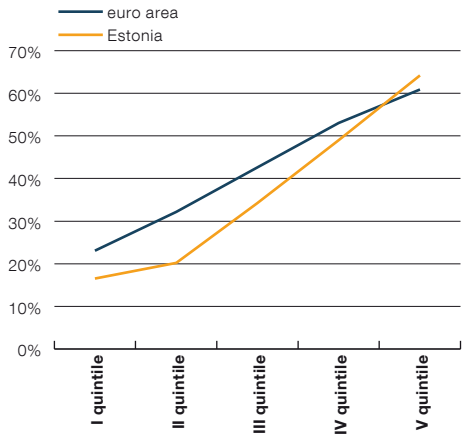
In summary, Eesti Pank does not currently consider it necessary to raise the countercyclical buffer rate above 0%. The main argument for this is that the indebtedness of the non-financial sector as shown by the credit-to-GDP ratio has not increased in recent years and is predicted by the Eesti Pank December forecast to remain at around the same level for the next three years. Debt liabilities will grow faster in the coming years as the economy grows, but the rate of growth will not exceed that of nominal GDP consistently or significantly. There is no indication that banks are amplifying lending activity, as lending standards and conditions have not been loosened and the banks have not increased their leverage significantly.

However, low interest rates and relatively fast wage rises contain the risk that trading activity and prices could increase at a faster rate in the real estate market, leading to growth in debt levels and an increase in related risks. Corporate indebtedness could also start to grow again if investment and confidence increase. For this reason Eesti Pank constantly monitors the factors that could indicate a possible build-up of risks and it can, if necessary, raise the countercyclical buffer rate above 0%.

APPENDIX 1. INDICATORS OF INDEBTEDNESS FOR ESTONIAN HOUSEHOLDS

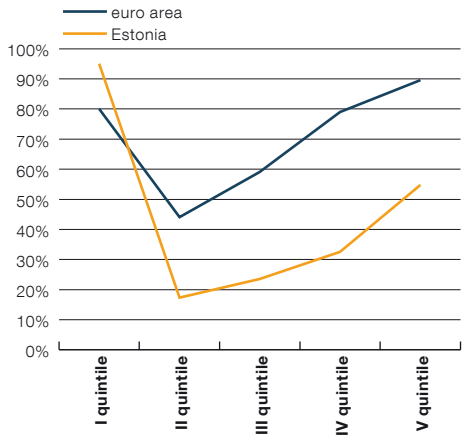
Among Estonian households, 41% have loan liabilities, instalment loans or leases, and this share has been stable since 2010[24]. The main interest in terms of financial stability is in how this debt burden is distributed between households, and the answer to this can be found in the results of the household finance and consumption survey carried out in 2013[25].

Figure A1.1. Share of households with loans across income quintiles



Sources: European Central Bank, Eesti Pank

Figure A1.2. Debt-to-income ratio across income quintiles



Sources: European Central Bank, Eesti Pank

The larger their incomes and assets are, the more households participate in the credit market in Estonia. Some 17% of households with incomes in the lowest fifth, or quintile, have a loan, and 62% of the fifth of households with the highest income have one (see Figure A1.1). The share of households with debt liabilities in Estonia as a whole is smaller than in the euro area. Only among households in the quintile with the highest incomes is the share of households with loan liabilities larger than in the euro area. It should be remembered in this that the incomes of Estonian households are still notably lower than elsewhere in the euro area, and a large share of Estonian households would be in the first or second quintile for income in the euro area as a whole.

The loan-to-income ratio for Estonian households is highly positively correlated with income, except among the lowest-income households. While the loan liabilities of households in the second quintile for income amount to a little under one fifth of the household's annual income, the figure for households with the highest incomes is over 50% (see Figure A1.2). A possible reason why the households with the lowest incomes are an exception is that the incomes of such households are so small that they borrow to cover their everyday spending, meaning that their financial position is vulnerable because of their high debt levels. The loan-to-income ratio for Estonian households as a whole is lower than in the euro area (see Table A1.1), though the households in the lowest quintile stand out here for their relatively high loan-to-income ratio.

The ratio of loan payments to income varies considerably across households and is negatively correlated with income. On average loan payments account for one tenth of

24 Financial Behaviour of Estonian Households. TNS Emor.

25 Jaanika Meriküll, Tairi Rõõm. The assets, liabilities and wealth of Estonian households: Results of the Household Finance and Consumption Survey. Occasional Papers of Eesti Pank 1/2016.

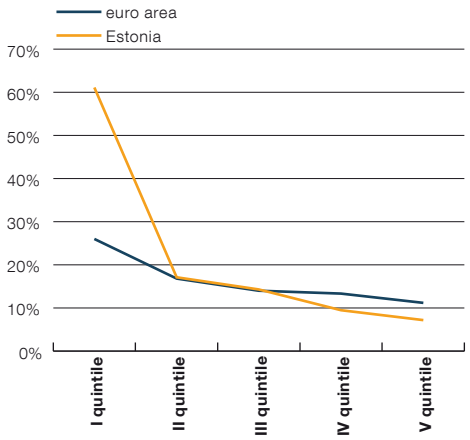
Table A1.1

	Credit-to-assets ratio	Credit-to-income ratio	Loan repayments-to-income ratio	Outstanding loan-to-value of main residence ratio	Liquid net assets-to-income ratio
Estonia	15.3%	38.3%	9.7%	44.0%	9.8%
Euro area	25.6%	71.5%	13.6%	43.9%	16.6%

Sources: Eesti Pank, European Central Bank

the income of Estonian households (see Table A1.1), but for households with lower incomes the figure is almost 60%, while it is only 7% for households with the highest incomes (see Figure A1.3). The higher ratio for households in the lowest quintile by income equally indicates that the ability of such households to service their loans is the most vulnerable. The loan payments-to-income ratio for those households is also noticeably high by the standards of the euro area, while the ratio for Estonian households in the other income quintiles is smaller than in the euro area.

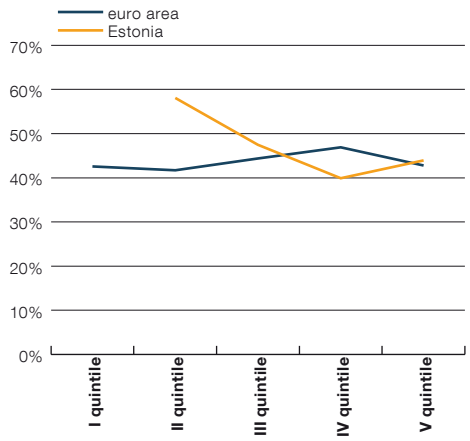
Figure A1.3. Debt service-to-income ratio across income quintiles



Sources: European Central Bank, Eesti Pank

The age group with the highest loan-to-income ratio in Estonia is the 35–44 age group, and it decreases with age. Although the loan-to-income ratios are lower than the euro area average for each age group, the ratio for the group of younger households is closer to the euro area level. However, the ratios for the older age groups are substantially below the euro area level. There may be several reasons for this. Firstly it may be because it was not possible to take housing loans at a time when those households were younger and would have been able to take a long-term loan secured against property, and secondly a majority of older households were able to privatise their residences in the 1990s, so they were able to acquire a residence without needing a loan.

Figure A1.4. Loan-to-value ratio of household main residence across income quintiles



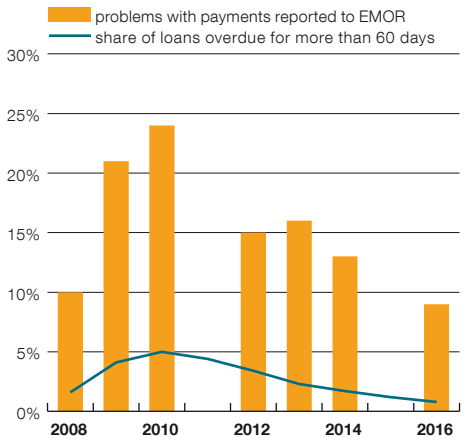
Sources: European Central Bank, Eesti Pank

The loan-to-value ratio for the main residence of households in Estonia as a whole is 44% (see Table A1.1), and it varies across households with different incomes. Generally households with lower incomes in Estonia use more financial leverage for purchasing residences than households with high incomes do (see Figure A1.4), as households with higher incomes are equally able to use their own resources for financing purchases. In the euro area as a whole this ratio varies less across households with different incomes than it does in Estonia, and it is between 40% and 50%.

APPENDIX 2. HOUSEHOLDS FACING DIFFICULTIES WITH PAYMENTS

Households fall into difficulties with payments for many different reasons, but the Estonian household finance and consumption survey ordered by Eesti Pank and carried out by Kantar Emor allows explanatory indicators to be identified that show an above-average risk of payment difficulties arising. The survey of financial behaviour is run almost every year and this appendix considers the survey for two periods, 2012 and 2013, and 2014 and 2016, allowing the stability of the results to be analysed[26].

Figure A2.1. Credit repayment problems (% of households with credit or a loan)



Source: Eesti Pank

Data from the Kantar Emor survey show that the share of households with loans, leases or instalment loans that admitted difficulties with payments peaked in 2010, when 24% of responding households noted payment difficulties in the preceding 12 months. In preceding and subsequent periods there were fewer households with payment difficulties, with 15% reporting difficulties in 2012 and only 9% in 2016. The earlier period, 2005–2011, has been thoroughly researched by Merike Kukk, using data from one commercial bank on households with payment problems[27]. It should be emphasised though that the payment difficulties shown in the Emor survey are not directly comparable to those in Kukk's research or the Eesti Pank statistics on overdue loans (see Figure A2.1). The difference between the data is that the Emor survey does not ask about unmade or delayed payments, but more generally about whether households feel they have had difficulties in making payments. The assessment by households of their payment difficulties is generally larger than the share of overdue loans, as payment difficulties can be translated as meaning that making the payments limits the other spending by the household. The data from the banks only show cases where payments were not made on the due date.

It is to be expected that a subjective assessment of payment difficulties will be larger than the actual number of cases of problems with payments. Kukk finds that in the worst year, 2010, the share of households with difficulties climbed to 2.7%. Data from the European Union Statistics on Income and Living Conditions (EU-SILC) put the figure for 2010 at 4.7%. The data from the Eesti Pank banking statistics put the share of loans more than 60 days overdue at 5% in 2010. All the data confirm that the financial difficulties of households were at their largest in 2010.

Both the research by Kukk and analysis of the data from the Kantar Emor survey confirm that the probability of a household falling into difficulties is mainly related to the size of its income, but it can be related to the use of consumer loans and to general confidence. Using a probit model for the assessment shows the probability of payment problems arising in the period observed for families that earned less than 500 euros per family member was around seven percentage points higher than for those who earned more than that[28]. Households where a member had

26 The samples for each period contain around 500 households that have loans, car leases or instalment loans.

27 M.Kukk, What are the Triggers for Arrears on Debt? Evidence from Quarterly Panel Data, Working Papers of Eesti Pank 9/2016. http://www.eestipank.ee/en/publication/working-papers/2016/92016-merike-kukk-what-are-triggers-arrears-debt-evidence-quarterly-panel-data

28 Here and throughout the probit model marginal effects are calculated from the average of the other indicators.

Table A2.1 Probit regression results for households with difficulties with payments (2014 and 2016)

		Opinion of household about payment difficulties	Standard error
Income, €	500 to 900	-0.3803**	(0.1937)
	900+	-0.3640*	(0.2058)
Confidence	not changed	-0.5172**	(0.2468)
	improved	-2.489	(0.2516)
Age	34-49	0.0695	(0.1691)
	49+	-0.0187	(0.2410)
Male		-0.2924*	(0.1561)
Saver*		-0.3219	(0.2385)
Credit**		0.4856***	(0.1742)
Instalment		0.0963	(0.1631)
Housing loan***		-0.0780	(0.1615)
From the capital		0.0409	(0.1612)
Children	1 or 2	-0.0740	(0.1816)
	3+	-0.4758	(0.4358)
Living alone		0.2514	(0.2218)
Unemployed		0.8894**	(0.4055)
Education	secondary	0.5023	(0.2756)
	higher	-0.1965	(0.2935)
Non-Estonian speaking****		0.2891*	(0.1746)
Retired		0.2471	(0.3362)
Number of observations		580	

Note. Standard errors are given in parentheses. Statistical significance: ***p<0.01, **p<0.05, *p<0.1.
* Respondent considers saving important
** The household has a negative credit card balance
*** The household has a housing loan
**** The respondent did not reply in Estonian
Source: Data from the Household Finance and Consumption Survey

credit card debt had a probability of falling into difficulties that was nine percentage points greater. Kukk also finds a positive relation between consumer loans and loan debts from the panel data, and offers the explanation that overdrafts or credit cards may be used to ease financial difficulties. That argument is supported by the current analysis, where the relation between a negative credit card balance and payment difficulties is calculated for different income groups. It is found that credit card loans raise the probability of payment difficulties for families earning below 500 euros per member by around 11 percentage points, but raise the probability by a notably lower seven percentage points for households who earn more.

Largely as expected, unemployment increases the probability of payment difficulties, lifting it by 16 percentage points. Worry about the ability to cope financially is likely to play a major role in this too. This is also reflected in the question of how households assess their financial future. Those who expected things to be worse over the coming 12 months had an 11-percentage-point higher probability of reporting payment difficulties.

It is apparent from the analysis that women worried a little more than men on average about making loan payments, and people who cannot speak Estonian worried more than those who can. The probability of difficulties arising was five percentage points higher in each of these categories, and the effect was a little stronger for households that earn less than 500 euros per member per month. Payment difficulties may be related more to people living alone, but the statistical relation is not very strong. The surveys also ask whether respondents consider saving to be important in principle. The majority of households respond that it is, and this indicator is not statistically significantly related to the probability of payment difficulties arising. Respondents with financial savings or who said they were satisfied with their financial circumstances did not generally have difficulties in making their payments.

There are some differences between the results for 2014 and 2016 and for 2012 and 2013, as households were still feeling the negative effects of the recession in the earlier period. Like in the later period, low wages increase the probability of difficulties, though immediately after the crisis anyone who earned less than 900 euros fell into the risk group. Like it was later, the use of credit cards was at that time statistically significantly related to payment difficulties.

Unlike in the later observation period of 2014 and 2016, the probability of falling into payment difficulties was higher immediately after the crisis for people who lived alone. Equally, families with three or more children were more worried about their payments. In the later observation period, those relations were no longer statistically significant, and the presence of children did not increase the probability of difficulties. The analysis distinguishes respondents with higher education, who felt more confident than others in the period after the crisis. This was no longer significant in 2014 and 2016.

The average probability of falling into difficulties that was perceived by the sample also showed the improvement in the economic climate, as it was 14% in 2012–2013, but an improved labour market and wage rises meant that it had fallen to 10% in the data for the later period of 2014–2016.

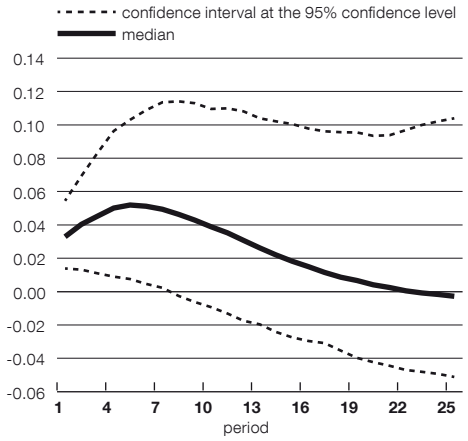
APPENDIX 3. INTERACTION BETWEEN HOUSING PRICES AND HOUSING CREDIT IN ESTONIA[29]

In the second half of the 2000s house prices and the issuance of housing loans rose to record rates in Estonia, before both lending and house prices plummeted in 2009. The big swings in the credit market have provoked a need to understand the interaction between housing prices and household debt.

The relationship between house prices and credit is analysed by estimating a Bayesian Structural vector autoregressive (BSVAR) model. The main variables in the model are the standard determinants of house prices and credit in the literature. The impulse-response function is estimated using a BSVAR for shocks to real labour income, consumer confidence, new dwellings, house prices, new loans or credit turnover, the interest rate and capital inflows. The variables have been transformed into natural logs, except the consumer confidence index and the interest rate, and they have been seasonally adjusted.

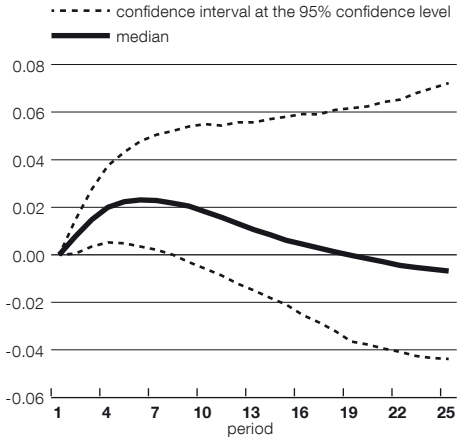
The impulse-response functions of the house price index and new housing loans show that shocks to either of these two variables have an effect on the other, with the shock to housing prices affecting housing credit turnover more than credit turnover affects house prices (see Figure A3.1[30] and A3.2). House prices are affected by shocks to real labour income, confidence and credit turnover but we do not find a clear response of house prices to shocks to the nominal interest rate. Shocks to real labour income have a long-term effect on house prices while the shocks to confidence and credit turnover clearly have a short-term effect on house prices. Shocks to real labour income, confidence and house prices affect credit turnover, while a shock to the nominal interest rate does not have a distinct effect. The effect of all the shocks to credit turnover is temporary, and the shock to real income is the slowest to die out.

Figure A3.1. House price shock to credit



Source: Eesti Pank

Figure A3.2. Credit shock to house prices



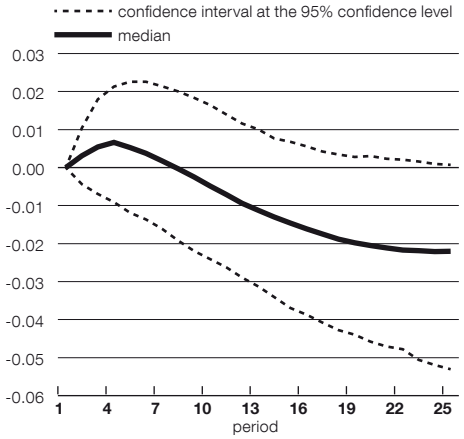
Source: Eesti Pank

It is possible however, that the relations between house prices and housing loans are different in credit accumulation and de-accumulation periods. To test this, the credit turnover variable has been split into two variables, one for increasing credit turnover and one for decreasing

29 This appendix is based on Cuestas, J.C., Kukk, M. (2017). Asymmetries in the interaction between housing prices and housing credit in Estonia, Working Papers of Eesti Pank 2/2017.

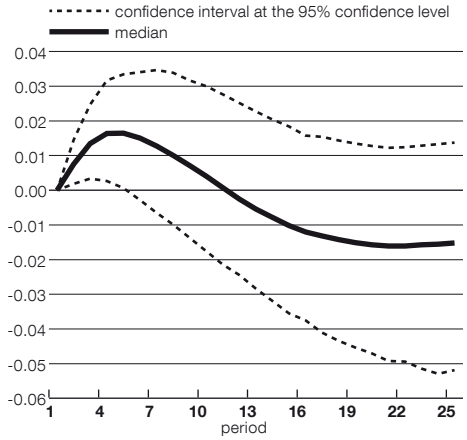
30 Note: Dashed lines represent the 95% credible sets. The solid line represents the median of the posterior response. The impulse response functions for other real labour income, consumer confidence, new dwellings, the interest rate and capital inflows are not reported.

Figure A3.3. Positive credit shock to house prices



Source: Eesti Pank

Figure A3.4. Negative credit shock to house prices

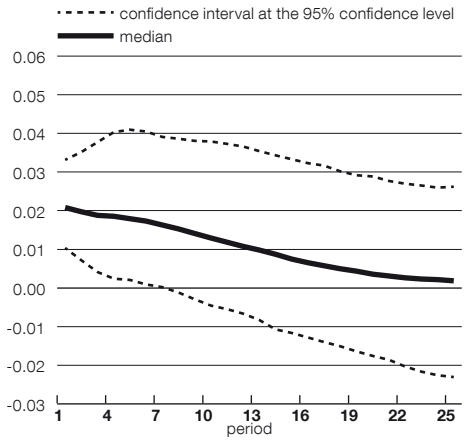


Source: Eesti Pank

credit turnover. The results show a positive response of house prices to shocks in periods of increasing turnover, although it is not possible to draw any strong conclusions (see Figure A3.3[31] and A3.4). A shock to the falling credit turnover reduces house prices, and the results suggest that when credit is falling there is a stronger suppressive impact from credit turnover on housing prices. This indicates that house prices are more sensitive to changes in credit turnover at times when that turnover is declining. Credit turnover reacts to shocks to house prices both when credit is growing and when it is falling, but the credit turnover reaction to house price shocks is stronger in the period of credit turnover growth (see Figure A3.5 and A3.6).

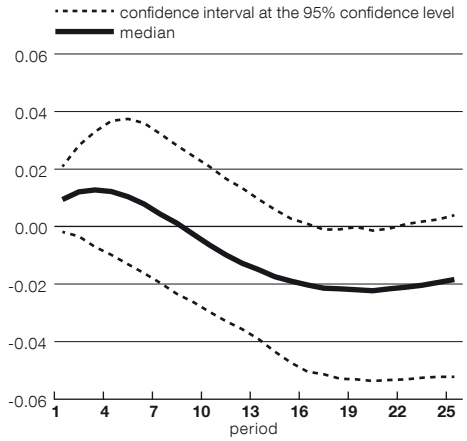
Overall, there is a clear degree of interdependence between housing prices and credit. Furthermore, the results show that housing credit shocks had a stronger effect in magnitude on house prices during periods of declining credit turnover than in periods of increasing credit turnover. This result highlights that when the business and financial cycle turns, measures to control credit booms should be alleviated to reduce the negative effects of credit decline on the housing market and the macro economy more broadly.

Figure A3.5. House price shock to positive credit growth



Source: Eesti Pank

Figure A3.6. House price shock to negative cedit growth



Source: Eesti Pank

31 Note: Dashed lines represent the 95% credible sets. The solid line represents the median of the posterior response.