

The top half of the cover features a collage of Euro banknotes in shades of orange and brown. A large orange circle in the top left corner contains the Eesti Pank logo, which consists of the words "EESTI PANK" in white, uppercase letters, followed by a stylized "18" logo where the "1" is a vertical bar and the "8" is two stacked circles.

EESTI  
PANK 18

FINANCIAL STABILITY  
REVIEW

1  
2019

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## ASSESSMENT OF FINANCIAL STABILITY AND MACROPRUDENTIAL MEASURES

**The deterioration in the outlook for economic growth puts pressure on corporate profits and through that puts pressure on the ability of companies to pay their loans.** Both the Estonian economy and corporate sales revenues grew rapidly in 2018, but growth in profits was held back by a notable rise in wage costs. Slower growth in Estonia's main export partners means though that the Estonian economy and corporate sales revenues can expect to grow somewhat more slowly as well. Labour shortages suggest that slower growth in the economy will not necessarily lead to any reduction in wage pressures. An ever larger part of corporate revenues has gone on wage costs in recent years, and so profits for companies being smaller could mean it is notably harder for them to cope with wage rises than it was a few years ago.

**The danger remains of households overestimating their long-term capacity to borrow and borrowing more than they can manage.** The favourable position of workers in the labour market and strong growth in wages has given households confidence, and so demand for loans has been quite strong. Activity declined in the housing market in the second half of 2018 though, and prices rose more slowly. The growth in new loans to households also slowed. As labour shortages mean that wages will probably continue to rise quite quickly in the years ahead, and base interest rates will remain low for the time being, demand for loans will still remain quite strong.

**Having been fast in recent years, growth in the real estate and construction sector has slowed slightly, though the risks have not disappeared.** Growth slowed in the construction of buildings in the second half of last year, and the number of construction permits issued for new buildings suggests that fewer are being added than previously. The banks have become more conservative in their lending to real estate and construction companies, and financing conditions have become less favourable. However, the contribution of construction and real estate companies to the total output of the economy is quite large, and loans to such companies make up a large part of the loan portfolio of the banks. If the business cycle

were to turn or demand to decline, the ability of construction and real estate companies to service their loans could deteriorate, and this could affect the loan quality of the banks.

**The suspicions of money laundering that have affected several banks operating in Estonia and the Nordic banking groups that own Estonian banks may harm the funding conditions for the banks.** Although the suspicions have pulled down the share prices of the Nordic banking groups, the effect on the financing of the banking groups has so far been small. However, the suspicions of money laundering could start to affect their financing more than they have done so far. The banks operating in Estonia largely fund themselves from domestic deposits, and this reduces the risk to financial stability in Estonia. Loans from Nordic banking groups made up less than a fifth of the liabilities of the banks operating in Estonia at the end of 2018.

**The conversion of the Latvian and Lithuanian subsidiaries of Luminor group into branches and their merger with the head office based in Estonia will increase the structural risk to the Estonian banking sector and create new sources of risk.** The structural change in the Luminor group made the total assets of the Estonian banking sector a substantial 1.4 times larger. The increase in the share of foreign branches means that the Estonian banking sector is affected more than before by developments in the Latvian and Lithuanian economies. On top of this, the Luminor group uses a larger share of loans from Nordic banking groups in its financing than the Estonian banking sector as a whole does. As these will need to be replaced over time by other liabilities, the sensitivity of the Estonian banking sector to events in international financial markets and to the reputational risk of Estonia and the surrounding region will increase. This risk is reduced by the strong financial position of the Luminor group and its high level of own funds.

### RISK ASSESSMENT

**In the assessment of Eesti Pank, the risks to the functioning of the financial sector in spring**

**2019 are low.** The risks from a reduction in foreign demand are higher than they were. Risks are being kept down above all by the improved financial position of companies and households, and by the large liquidity reserves and high capitalisation of the banking sector. The three main medium-level risks to financial stability are:

### Risk 1

**If financing conditions worsen for Swedish banking groups, it could make the funding of the banks operating in Estonia more expensive and affect their liquidity. Reduced economic activity in the Nordic countries would have a negative effect on the income of Estonian exporters and their ability to service loans.**

### Risk 2

**Consistently rapid growth in wages and strong confidence may increase demand for housing and accelerate the growth in housing loans. Households may borrow more than they can manage and this could make the banks more vulnerable to risks from the real estate sector.**

### Risk 3

**Labour, investment and financing are concentrated in the construction and real estate sector. If the business cycle were to turn or demand to decline, the ability of construction and real estate companies to service their loans would deteriorate as would the loan quality of the banks.**

## Main risks affecting Estonian financial stability

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Consistently rapid growth in wages and strong confidence may increase demand for housing and accelerate the growth in housing loans. Households may borrow more than they can manage and this could make the banks more vulnerable to risks from the real estate sector.



Labour, investment and financing are concentrated in the construction and real estate sector. If the business cycle were to turn or demand to decline, the ability of construction and real estate companies to service their loans would deteriorate as would the loan quality of the banks.



1 = minor risk and 6 = major risk. The arrow indicates changes in the risk level from the assessment of November 2018



## Macroprudential measures

**Eesti Pank has introduced capital buffer requirements and requirements for issuing housing loans to reduce the risks to the financial sector** (see Table). The systemic risk buffer and the additional buffer for systemically important institutions provide protection against an unexpected deterioration in the economic or financial climate. The systemic risk buffer takes account among other vulnerabilities of the large share of the loan portfolios of the banks operating in Estonia that is made up of loans to real estate and construction companies. The housing loan requirements help avoid excessively fast growth in loans and increase the resilience of households and banks.

As the number of transactions in the housing market has fallen and prices are growing more slowly, Eesti Pank does not think it necessary to change the housing loan requirements at present.

**An additional measure that Eesti Pank plans to introduce is a minimum level of 15% for the average of the risk weights applied to the housing loans in the calculation of capital requirements of the banks.** The economic environment remaining favourable has allowed those banks that use internal risk models in assessing their needs for capital to estimate the risk from mortgage loans lower and lower, meaning that less and less capital is required to cover that risk. As the banking sector in Estonia is sensitive to

risks from the housing market, it is important to be sure that the banks have sufficient capital to cover those risks. The current capital buffers of the banks that use internal risk models are substantially larger than required, and so the introduction of this measure will not leave them needing to raise any additional capital. The introduction of the measure will need to be coordinated first with the institutions of the European Union, after which it can be entered into force in the third quarter of 2019.

**In the first quarter of 2019, Eesti Pank also assessed the cyclical risks from credit growth to the Estonian financial sector and decided to leave the countercyclical capital buffer rate at zero.** Although the rate of growth in the debt of companies and households increased overall, it still remained lower than the nominal growth in GDP last year and also below the long-term average nominal rate of GDP growth. Debt has grown faster because companies have borrowed

more, which was partly because of an increase in investment. At the same time, the growth in new loans to households slowed in the second half of 2018 and the housing market calmed down. The level of investment will remain quite low in future though, and so no major increase in the growth rate of corporate debt is expected. If debt should grow notably faster in future though, Eesti Pank can raise the countercyclical capital buffer rate.

**The structural change in the Luminor group will increase Eesti Pank's responsibility for ensuring financial stability.** The macroprudential measures introduced by Eesti Pank at the consolidated level will start to have an impact on the other Baltic states, making macroprudential coordination and cooperation even more important than before for Eesti Pank. On top of the macroprudential responsibility that the location of Luminor's head office in Estonia brings, if the bank were to need any liquidity assistance, it would fall to Eesti Pank to decide and provide it.

#### The macroprudential measures of Eesti Pank

Instrument	Requirement	From
Systemic risk buffer	1%	1 August 2016
Other systemically important institutions buffer		
Swedbank AS, AS SEB Pank	2%	1 August 2016
Luminor Bank AS	2%	1 July 2018
AS LHV Pank	1%	1 January 2019
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	

\* The 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

# DEVELOPMENTS AND RISKS AFFECTING FINANCIAL STABILITY

## NON-FINANCIAL COMPANIES AND HOUSEHOLDS

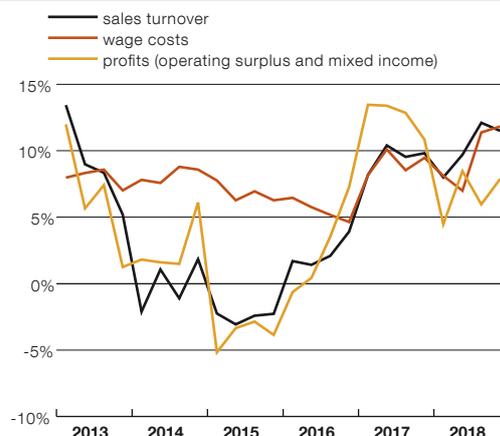
### Companies

**The strong growth in the global and European economies has faded away and there are several risks clouding over the outlook for the future.** Some three quarters of Estonian exports go to the markets of the European Union, where the capacity for growth declined in the second half of 2018. The main reason for this is the unfavourable external environment, where there is a danger of trade war and uncertainty about global trade policy. The uncertainty was increased by problems in European Union member states, such as the social tensions in France and Spain, the lack of clarity around Brexit, the high debt levels of some states, fiscal policy tensions, and problems in the car industry. Although expectations for growth in the economy in Europe are more modest than they were, it is still assumed that growth will continue, and not that economic activity will decline. Slower growth in foreign demand means that it will be harder for Estonian companies to maintain the earlier growth in export revenues.

**The Estonian economy and Estonian companies have so far done well given the general developments in Europe, though it is probable that growth will still slow.** Growth in the economy was around 4% in the fourth quarter of 2018 and for the year as a whole. Domestic demand grew rapidly in the second half of the year, and Estonian companies managed to increase the growth in their exports in the fourth quarter despite the slowing growth in the global economy. Corporate sales revenues grew rapidly in almost all sectors. Although there is some contradiction in the data, profits probably also grew despite the rapidly rising wage costs, though more slowly than in 2017 (see Figure 1). Looking forward, the growth in the economy and in corporate revenues will slow, because of a shortage of available resources in the economy. Labour shortages especially will cause problems for companies. The openness of the economy means that the outlook for growth is made worse by the weak position of foreign markets.

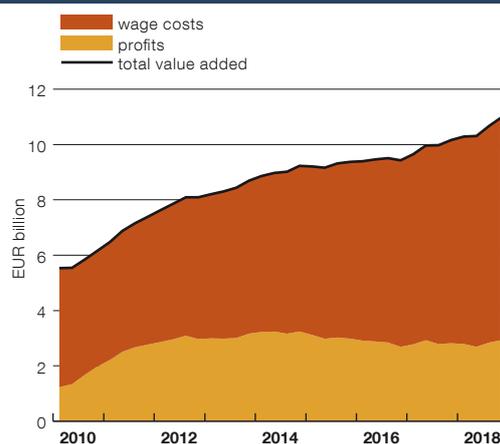
**The outlook for growth worsening while wage pressures remain strong will further hurt cor-**

Figure 1. Sales turnover, wage costs and profits of non-financial companies



Source: Statistics Estonia

Figure 2. Wage costs and profits of non-financial companies



Source: Statistics Estonia

**porate profits and competitiveness, and so also the ability of companies to service their loans.** Although growth will slow in the economy, this will not necessarily at present lead to a notable reduction in wage pressures. Four or five years ago, companies were able to cope with a similar situation by raising wages at the expense of profits, but now this would be harder for them because an ever larger part of the total income of companies is going on wage costs, meaning there is less space to reduce profits further (see Figure 2). This in turn could lead to difficulties in making payments.

**The risks from cyclical growth in the construction and real estate sector have not disappeared, but some signs of slower growth are observable.** Construction volumes continued to

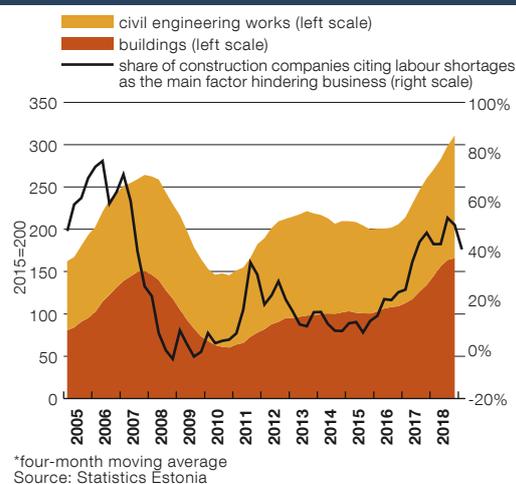
grow fast in the second half of 2018, but this is largely down to the construction of facilities, while growth in the construction of buildings slowed (see Figure 3). The number of construction permits issued suggests that growth has slowed further in 2019. The data are contradictory, but it is probable that the number of people working in the construction and real estate sector rose further in the second half of 2018 and that wages rose very fast. The biting labour shortages in the sector could lead wages to rise even faster, and this would spill over into higher wage pressures in other sectors. When the cycle turns, both construction companies and their employees would find it harder to service their loans. Furthermore, problems in the construction sector would reduce demand for products and services from other sectors, and so the negative impact would be passed on into those other sectors.

**Corporate debt grew in 2018 by substantially less than nominal GDP, and corporate indebtedness continued to decline.** The debt grew faster at the start of the year, but the growth slowed in the second half of the year. Corporate indebtedness, or the debt-to-GDP ratio, fell by two percentage points over the year to around 74% (see Figure 4). Companies increased their liquid assets further and corporate liquidity can again be considered good. This means that the Estonian business sector is mainly relatively well protected against any short-term negative shock. As is typical of good times in the economy, the payment behaviour of companies has been exemplary as the share of companies with payment difficulties seen in overdue payments to suppliers, tax debts or insolvency is small.

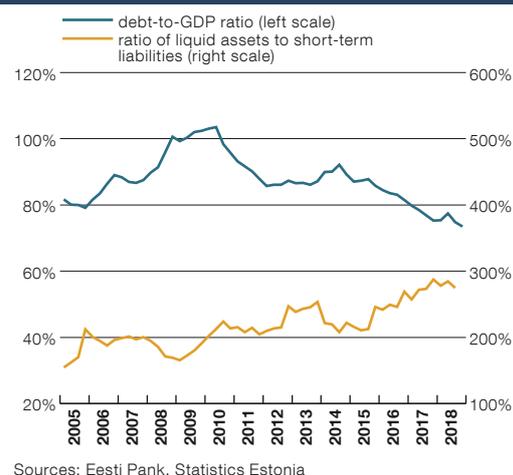
### Households

**The demand for loans from households and their ability to service their loans are supported by the low level of unemployment and rapid growth in incomes.** The unemployment rate fell to 4.4% in the fourth quarter of 2018, and the yearly growth in the average gross monthly wage reached some 9% (see Figure 5). Confidence, which affects the financial decisions of households, remained strong in the second half of 2018 and early 2019, and there were more families that forecast an improvement in their own economic

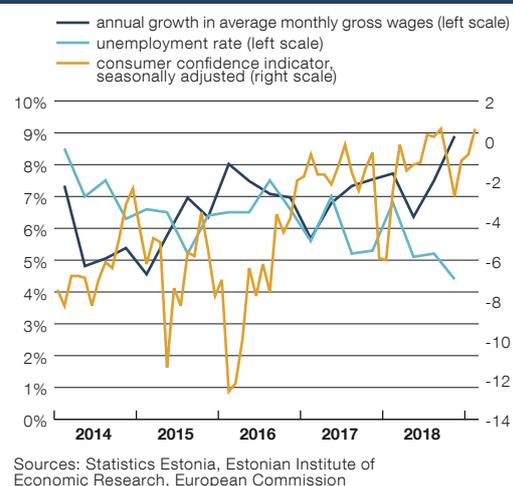
**Figure 3. Construction volume index\* and labour shortages at construction firms**



**Figure 4. Indebtedness and liquidity of non-financial companies**



**Figure 5. Wage growth, unemployment rate and consumer confidence**



circumstances in the next 12 months than that forecast a deterioration.

**Demand from households for loans remained high in the second half of 2018.**

The stock of bank loans and leases grew rapidly, and the yearly growth rate was 7% at the end of February 2019. The growth in new loans slowed though, for both housing loans and other loans (see Figure 6). The turnover of housing loans increased because of a rise in the average amount borrowed, but the number of loans was lower than a year earlier.

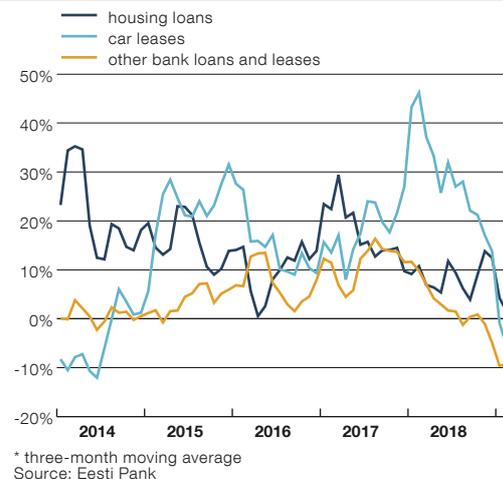
**As both incomes and debt liabilities rose quickly, the debt burden of households remained at a similar level to that of a year earlier in the third quarter of 2018.**

The ratio of debt to disposable income was around 71% and the ratio of debt to GDP was around 39%. The survey of the financial behaviour of Estonian households found that around 40% of families have loan liabilities, and that share has not changed in recent years. The household interest burden, which is the cost of interest on loans over the year as a ratio to disposable income, has risen because the average interest margin of the loan portfolio has risen, though in comparison over the past ten years it remains low (see Figure 7). Loan payments most commonly take up to 10% of income for families with loan liabilities, and more than one third of families are in this category. Around 5% of families had loan payments of over 40% of their income in September 2018, and that share has fallen over the past five years<sup>1</sup>.

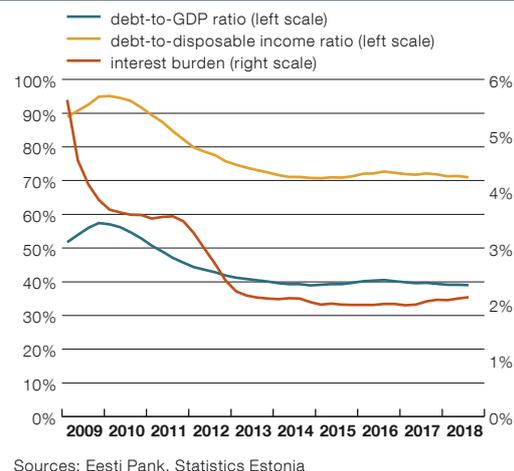
**The risks from growth in loans to households are eased by the growth in savings.**

Deposits were 10% larger by the end of 2018 than at the end of 2017 and the ratio of deposits and cash to debt had risen by the end of the third quarter to around 89% (see Figure 8). The survey of the financial behaviour of Estonian households found that 72% of families had savings in 2018, which is more than in earlier years. The savings of many families are still too small though to let them cope with an unexpected emergency. Families with loans have higher incomes than the average, and this means their savings are also larger than the average.

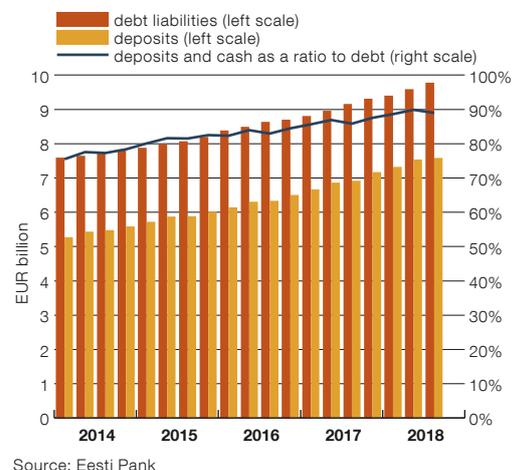
**Figure 6. Annual growth in new loans\* issued to households**



**Figure 7. Household indebtedness**



**Figure 8. Household debt liabilities and deposits**



1 Turu-uuringute AS. Financial Behaviour of Estonian Households 2018. September 2018.

**As the economic circumstances of households are good, they are able to repay their loans.** The share of loans to households overdue by more than 60 days in the portfolios of the banks has fallen in recent years and it was below 0.5% at the end of February 2019. The share of loans overdue for a shorter time has also fallen. The survey of the financial behaviour of Estonian households found that 10% of families with loan liabilities had had payment difficulties during the past year in September 2018, and this share had not changed in recent years. In some 30% of these cases the payment difficulties were caused by ongoing financial difficulties caused by interest rate rises, declining incomes or the loss of a job for example.

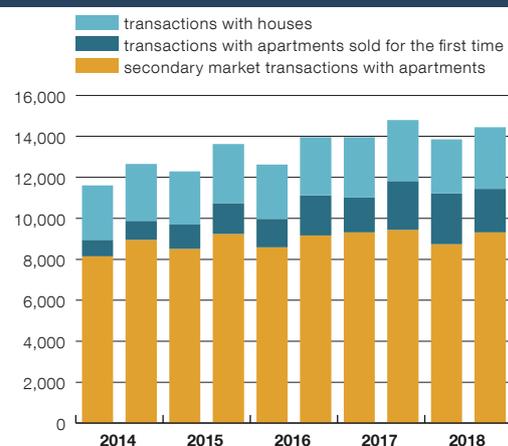
**With wage growth remaining high for a long time and interest rates low, there has for some time been a danger that households may overestimate their ability to service their loans.** Households may expect wages to continue rising at the same rapid rate in future and so may borrow accordingly, though this may in future be more than they can cope with. When taking on financial liabilities, it is important to remember that wage growth may slow and interest rates may rise.

## THE REAL ESTATE MARKET

### The housing market

**There were fewer transactions in the Estonian housing market in the second half of 2018 and early 2019.** There was a slight rise in the number of transactions for houses, but the number of transactions for apartments fell and the total number of purchase and sale transactions for housing was around 2% lower in the second half of 2018 than a year earlier. There were fewer transactions both for new apartments<sup>2</sup> and in the secondary market, though the relative fall was larger for new apartments (see Figure 9). The reference base of 2017 was very high however, and in the perspective of the past five years there were still quite a lot of new apartments bought.

Figure 9. Number of transactions with dwellings



Source: Estonian Land Board

Figure 10. Annual growth in prices of dwellings



Sources: Statistics Estonia, Estonian Land Board

**The average price of a housing transaction rose a little more slowly in the second half of 2018 than in the first half.** The yearly growth in the dwelling price index was 5.7% in the fourth quarter, as apartment prices rose by 5.7% over the year and prices for houses by 5.6%. This meant that on average housing prices rose by a similar rate in 2018 to that of 2017. Data from the Land Board show that the rise in prices of apartments in Tallinn slowed in the fourth quarter of 2018 (see Figure 10). This was because of a fall in the number of transactions for new and more expensive apartments, and also because the prices of new apartments rose more slowly. The

<sup>2</sup> New apartments are taken here to mean ones in new buildings that are being sold for the first time.

average price of apartment transactions elsewhere in Estonia rose more quickly in 2018 than it did in Tallinn (see Box 1).

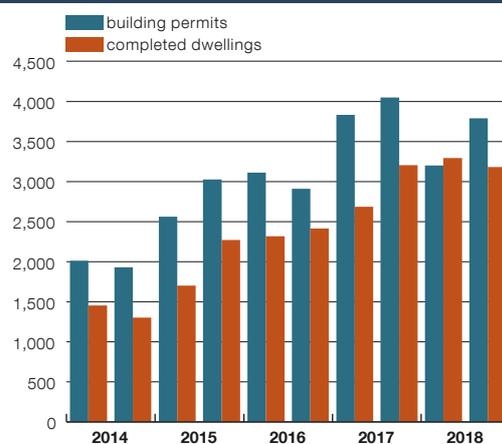
**The change in housing prices in 2018 was probably better aligned than earlier with the long-run rate of growth stemming from the fundamental factors that affect real estate prices of compensation of employees, the real mortgage interest rate, and the number of dwellings.** The model used to show whether the real estate market is under-priced or over-priced shows that the price level for real estate in Estonia in 2014-2017 was around 5-10% higher than fundamental factors would suggest, but the wide confidence bounds of the estimate mean it cannot be said that real estate is overpriced (see the Appendix). Incomes rose faster in 2018 than they did in 2017, while the number of dwellings rose more slowly and the real interest rate on housing loans remained low, which suggests that real estate prices edged closer to the level justified by the fundamental factors.

**As the housing market calmed, so the growth in new housing loans also slowed.** Some 3% fewer new housing loans were issued in the second half of 2018 than a year earlier. A rise in the size of the average loan meant though that the turnover of loans still increased. The average interest rate on new housing loans also rose in 2018, but there was no particular change in other lending conditions.

**Demand remains strong in the rental market in Tallinn.** The number of active adverts for property to rent has remained at essentially the same magnitude in recent years and the average price asked for rent has risen a little<sup>3</sup>. The stability in the number of adverts and the rise in the average price asked have been seen in several town districts, indicating that demand has been quite general in the rental market.

**Although new dwellings are being added at a slower rate than earlier, development of residential property will probably continue rapidly.** A lot of new dwellings have come to the market

**Figure 11. Building permits and completed dwellings of new construction by number of dwellings**



Source: Statistics Estonia

so far, and this has helped keep the rise in prices moderate even with demand strong. Fewer building permits were issued for new construction of dwellings in 2018 (see Figure 11), though the reference base from 2017 was very high. The supply of residential space is limited by labour shortages in the construction industry, but it is also probable that developers are paying closer attention in observing demand. A fairly large number of new dwellings will be added to the market in the near future, which is also indicated by the issue of some 14% more in bank loans to finance development projects for residential real estate in the second half of 2018 than in the second half of 2017.

**Overall the risk of an acceleration in the rise in housing prices is a little lower than it was earlier.** As the factors that are supporting demand for housing will not change in the near future though, it is probable that housing prices will continue to rise at a similar rate to the current one, which is not higher than the rate of growth in incomes.

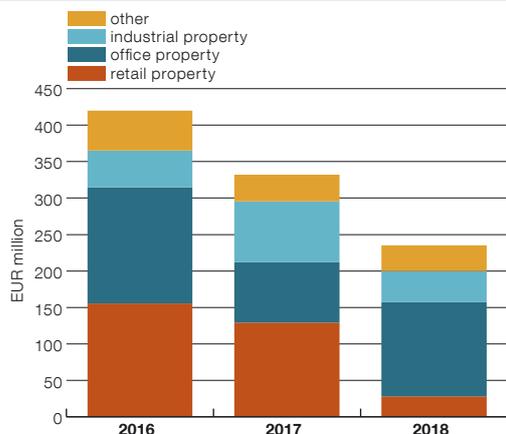
### The commercial property market

**Fewer transactions were made in the commercial property market in Estonia in 2018 than in earlier years<sup>4</sup>.** Transactions worth 235 million euros were made, which was around 30% less than in 2017 (see Figure 12). The largest share of

<sup>3</sup> Data from the real estate portal kv.ee.

<sup>4</sup> This section uses data and analysis from Colliers International, data from Statistics Estonia on building and use permits, and data from Eesti Pank on bank loans issued to finance commercial real estate.

**Figure 12. Value and structure of transactions with commercial property**



Sources: Colliers International, Eesti Pank calculations

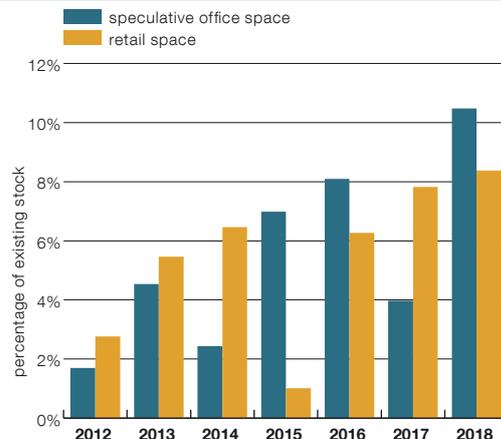
these transactions were for office property, which accounted for 34% of the number of transactions and 55% of their value. The next largest shares were for industrial and retail property. The prime yields for first class commercial property, which is of the highest quality with the best location, were not notably different from what they were in 2017.

**Quite a large amount of new office and retail space was added to the market in 2018.**

Permits for use were granted for more than twice as much new retail space and 15% more office space in Estonia than in 2017. There was an increase over the year of around 10% in speculative office space<sup>5</sup> in Tallinn (see Figure 13). It is expected that in future less new office and retail space will be added, as fewer building permits were issued in 2018 than in 2017 (see Figures 14 and 15) and less new construction was started. There were still more permits issued than a year earlier for the reconstruction of retail properties, which may be a sign of an increase in competition in this segment and some desire of owners to adapt existing buildings to meet demand.

**The vacancy rate for retail property was raised a little in the second half of 2018 by the arrival on the market of one large shopping centre, though it still remains quite low.** Market participants consider the increase in vacancies to be a sign that the market for retail space is becoming saturated. There has so far been suffi-

**Figure 13. New office and retail space added during the year in Tallinn**



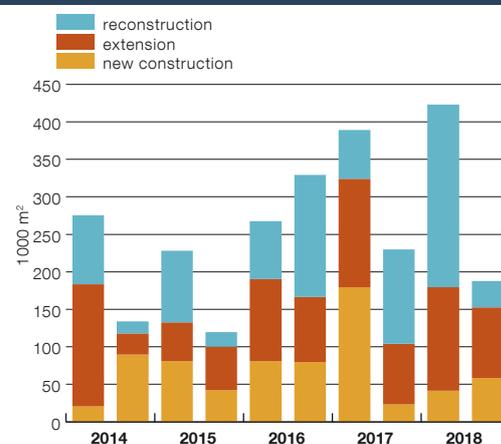
Sources: Colliers International, Eesti Pank calculations

**Figure 14. Building permits for office premises**



Source: Statistics Estonia

**Figure 15. Building permits for retail premises**



Source: Statistics Estonia

<sup>5</sup> Development or construction with no formal commitment from the end users of the finished product.

cient demand for new office space and the average vacancy rate has not particularly changed. Rental prices for office and retail property have not particularly changed either, though the rapid addition of new office space has widened the gap between the lower and upper margins asked for rents for offices, while downwards pressure on rental prices for retail space has increased a little.

**The portfolio of bank loans issued to finance commercial property was around 5% larger at the end of 2018 than a year earlier.** The fastest growth was of around 10% in the loan portfolio issued to finance office properties, though this was largely because of lending decisions taken in earlier years, as fewer new loans were issued in 2018 than in 2017. The average interest margin on loans

issued for property development rose a little and the attitude of the banks to financing commercial property became a little more cautious in 2018.

**Overall there was no significant change in the risks associated with commercial property.** Demand has been quite strong for new offices and the average vacancy rate has not risen despite the rapid addition of new buildings. However, demand may not remain sufficient for older commercial buildings, which may reduce the occupancy rates for such buildings and make it harder for owners to service their loans. It can be expected in future that commercial property development will calm, as the price of funding real estate projects has risen and the attitude of the banks has become more cautious than before.

### Box 1. Rises in apartment prices outside Tallinn

While the average price of apartment transactions rose more slowly in Tallinn in 2018, it rose rapidly outside Tallinn. The average square metre price rose by around 5% in Tallinn on average over the year, while it rose by 11% elsewhere in Estonia. This was because the number of transactions for new apartments rose and the growth in the average price for apartments in the secondary market accelerated outside Tallinn.

Last year there were over 20% more transactions for new apartments outside Tallinn than in 2017, while the number of transactions for apartments in the secondary market fell slightly. This led the share of new apartments in all transactions to rise (see Figure B1.1), and their higher price level meant that the average transaction price also rose. More than one third of the rise in prices in 2018 can be put down to the increase in the share of new apartments. The rise over the year in the average square metre price for new apartments slowed in Tallinn and elsewhere in Estonia in the second half of 2018, but it was still quite fast outside Tallinn at close to 5%.

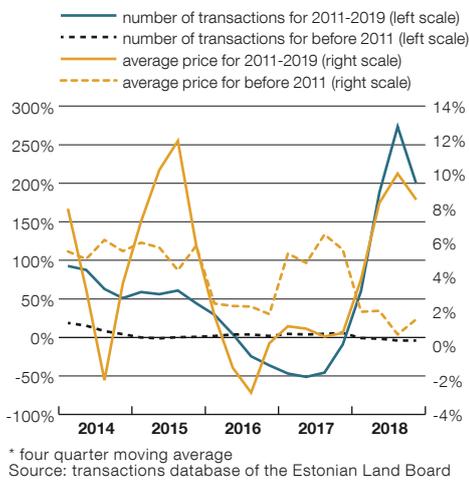
At the same time the prices for apartments in the secondary market outside Tallinn rose faster than previously. The yearly growth in the average square metre price increased in the second half of 2018 to around 10%. Statistics from the Land Board on apartment transactions by the year the building first came into use suggest that this was because ever more relatively new apartments are also being traded on the secondary market, and their higher price level means that the average price of an apartment transaction on the secondary market has also risen. There

**Figure B1.1. Annual growth in the average price of apartments and share of new apartments**



Sources: Estonian Land Board, Eesti Pank calculations

**Figure B1.2. Annual growth\* in the number of transactions and average price of apartments by year of construction**



was a major rise in 2018 in the number of transactions for apartments in buildings completed in 2011-2019 and there was also quite a rapid rise in the average square metre price of such transactions (see Figure B1.2)<sup>6</sup>. Although these transactions probably include some apartments being sold for the first time, it may be assumed that there were more transactions with apartments that were recently completed but were not brand new.

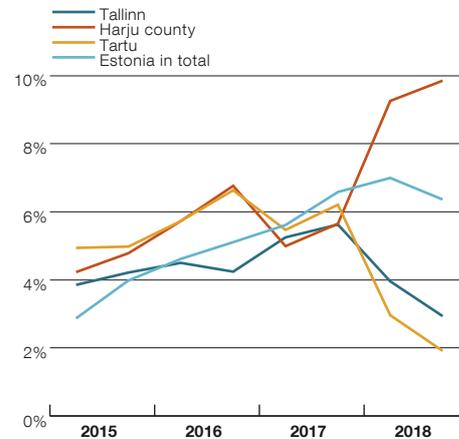
The average price of apartments was also affected by an increase in the number of transactions in Harjumaa<sup>7</sup> and in Tartu, while the total number of apartment transactions outside Tallinn actually fell in 2018. This meant the share of transactions in Harjumaa and Tartu increased, and these have the highest price levels in Estonia outside Tallinn, which then pushed up the average square metre price for transactions. It may be assumed that the impact of the increase in the share of transactions in Harjumaa and Tartu on prices can largely be associated with the impact of the increase in the share of new apartments described above.

The rise in the number of apartment transactions in Harjumaa and the relatively rapid rise in prices is also reflected by the rapid growth in the portfolio of bank loans to households in that area. The portfolio of loans to households in Harjumaa had grown by around 10% over the year at the end of 2018, while the portfolio for Estonia as a whole grew by 6.4% (see Figure B1.3). Although there are other loans alongside housing loans in the portfolio of loans to households, housing loans still account for the majority of the portfolio.

<sup>6</sup> The number of transactions rose because of the increased number of transactions for apartments in buildings that were used for the first time in 2016 and later. The average square metre price in transactions rose rapidly for those transactions where the building first came into use in 2016 or later, and for those in buildings that first came into use in 2011-2015, and the average square metre price was higher in transactions with buildings that were first used in 2011-2015.

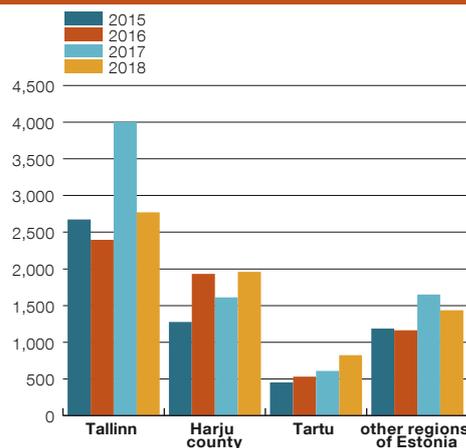
<sup>7</sup> Harjumaa is taken here as excluding Tallinn.

**Figure B1.3. Annual growth in the stock of bank loans issued to households by region**



Source: Eesti Pank

**Figure B1.4. Building permits for new construction by number of dwellings**



Source: Statistics Estonia

Building permits issued indicate that quite a large amount of new residential property can be expected to be added to the market outside Tallinn in the near future. While fewer building permits for dwellings were issued in Tallinn in 2018 than a year earlier, more such permits were issued in Harjumaa and Tartu than in 2017 (see Figure B1.4). This is probably because the rising prices of apartments in Tallinn have increased demand for living space in the area surrounding Tallinn. The demand for new apartments in Tartu is estimated to have remained quite strong because supply has grown substantially more slowly than in Tallinn.

## THE FINANCIAL ENVIRONMENT

### International financial markets

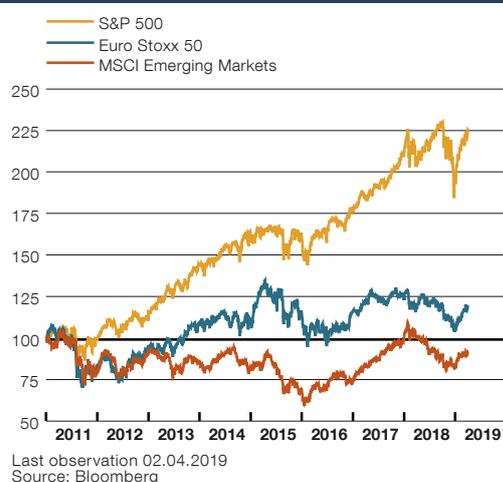
**The performance of international financial markets at the end of 2018 and in early 2019 was directed by expectations that growth in the global economy would slow on the back of tighter funding conditions, increased uncertainty about current politics, and the trade conflict between the USA and China.**

One of the biggest risks to the global economy as a whole is that growth in the Chinese economy may slow more sharply than expected. Economic activity declined last year in the euro area too, as economic growth slowed in its three largest members, Germany, France and Italy, and the rate of growth in the US economy, which leads growth in advanced economies, was also falling.

**Monetary policy remained accommodative in the largest economic regions.**

The US Federal Reserve announced at the start of the year that it is planning to tighten monetary policy markedly more slowly than it had earlier planned, and financial markets have by now priced in the first interest rate cut for the first half of 2020. Monetary policy has remained accommodative in the euro area. The European Central Bank ended its asset purchases in December last year, but it announced at the start of March that it was planning to hold interest rates at their current levels not until summer as earlier announced but at least until the end of the year. It also announced the launch of a new programme of long-term loans to banks in September. The outlook for the monetary policy of the Bank of England is tightly connected to the final outcome of Brexit, though market participants currently expect interest rates to rise this year.

**Figure 16. Main stock market indexes, 1 January 2011 = 100**



**Figure 17. Interest rates on ten-year government bonds of the USA and Germany**



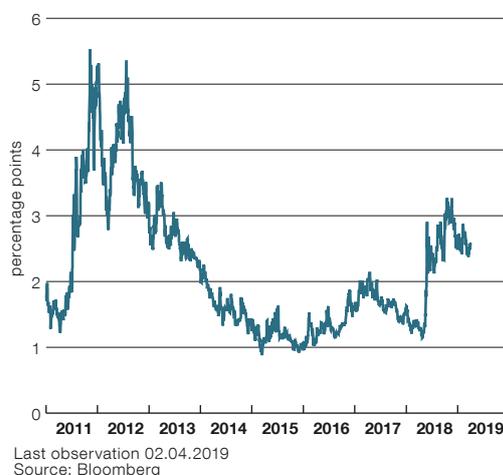
**Financial markets were volatile at the end of 2018, but they recovered in the first months of 2019.** The deterioration in the outlook for growth in the global economy given the tightening expected in funding conditions made market participants more nervous at the end of 2018 about the sustainability of high price levels for

financial assets and about the outlook for corporate growth. This led share prices to fall and the risk premiums on corporate bonds to rise, at the same time that demand increased for safe assets and interest rates on sovereign bonds from many advanced economies fell (see Figures 16 and 17). However, when the Federal Reserve and other large central banks confirmed at the start of 2019 that they will keep monetary policy accommodative, the earlier losses in financial markets were largely reversed.

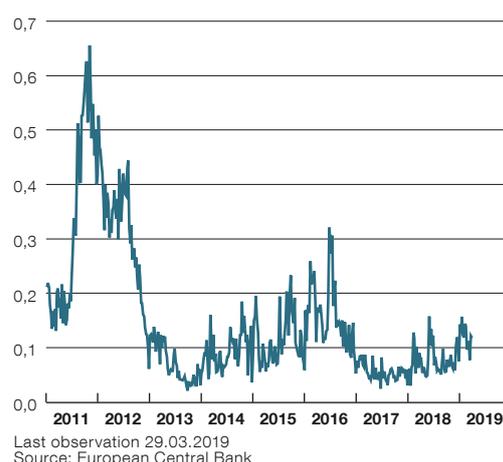
**Financial markets in the euro area have moved differently in different countries.** Market participants see a significant risk from the loose fiscal policy of member states with high levels of debt and sustained budget deficits. The interest rate spreads on Italian sovereign bonds over those of Germany have narrowed a little from where they were during the discussions about the state budget in Italy in September last year, though they remain wide (see Figure 18). A rise in interest rates would increase the debt level of the state and put pressure on the banks there. Confidence is also being undermined by the uncertainty around Brexit, which may be making investors much more risk averse. The recovery in stock markets in Europe has also been weaker than those in other large economic regions. Low interest rates and expectations of weak growth and structural problems have all kept the pressure on the share prices of European banks.

**The outlook for stock markets will mainly depend in the near future on the sales revenues of companies and their profitability.** Growth is slowing in the economy and possible rises in excise and internal inflation pressures could start to eat into the profit margins of companies. Although the wave of selling at the end of last year raised the risk premiums on riskier assets, they remain low on US shares but are above their long-term average in Europe. The low risk premiums indicate that investors searching for yield have invested in instruments with a lower rating, less liquidity and longer maturities, which may have caused risks to build up. However investors are not necessarily ready for the drawbacks brought by slower economic growth or a decline in the economy, which could cause a sharp increase in volatility and a repricing of financial assets.

**Figure 18. Interest spread on Italian ten-year government bonds over German bonds**



**Figure 19. Composite indicator of systemic stress (CISS)\* of the euro area**



## The European financial system

**The European Central Bank and the European Systemic Risk Board (ESRB) assessed the risks to the financial sector of the euro area and of the European Union as quite high.** The European Central Bank finds that the risks to financial stability in the euro area increased at the end of 2018 and in the first months of 2019, mainly because of the weaker outlook for the global economy (see Figure 19). Concern increased particularly about the sustainability of the high debt levels of both the private and public sectors, while the outlook for profitability at banks worsened at the same time.

**It considered the biggest risk to the European financial sector to be the sharp and deep fall**

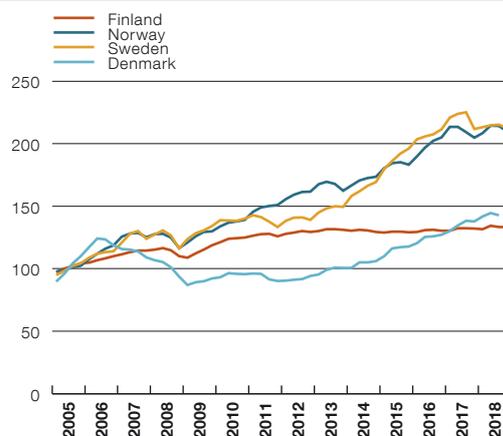
**in the risk premiums on corporate bonds and some other classes of assets.** Risk premiums are low despite having risen a little, which increases the chance that they could rapidly rise a long way if the outlook for growth changes. This could cause the cost of funding to rise for the banks and reduce their profitability and their capacity to supply credit.

**The vulnerability of the European financial system is increased by the weaker financial position of banks, insurers and pension funds, and by the high debt levels of some countries.** Low interest rates make it hard for financial institutions to earn income, while the assets of the banks in some countries still contain many problem loans from the previous economic crisis. The profitability of insurers and pension funds is under pressure from their liabilities with guaranteed rates of return that are common in several places. The high debt levels make it harder for governments to cope with any unexpected and unfavourable changes in their economic circumstances.

**Although the profitability of the euro area banks improved in the third quarter of 2018, it remains low.** This is because interest rates are low, and also because of the sluggishness of the economy and some structural factors. In some countries there are too many banks and their cost effectiveness is too low next to that of banks in other advanced economies. The low level of profitability of the banks is one of the main risks that could hurt their ability to finance the economy. The rapid reduction in the volume of bad loans has contributed most to improving profitability. At the end of the third quarter of 2018, bad loans accounted for only around 4% of the total loan portfolio of the most important banks in the euro area.

**The rapid growth in investment funds in the years since the crisis is considered one possible danger to the financial sector in the euro area, as their assets now make up around 20% of all the assets of the euro area financial sector.** These funds have increased the share of fairly illiquid bonds and risky assets in their investments, while reducing their liquidity buffers at the same time. If there were a sharp increase in requests to buy back fund units, funds would have to meet

**Figure 20. Residential real estate prices in the Nordic countries, 2005 = 100**



Sources: statistical agencies, Eesti Pank calculations

it by putting a large amount of securities into the market, which would push the prices of those securities down. As the investments of funds and banks are largely similar, this would reduce the value of the investments of the banks.

**How Brexit affects the European financial sector depends largely on whether and in what form it actually happens.** The European Central Bank believes that Brexit with a deal will have a limited impact on financial stability, but the uncertainty following a no-deal Brexit could pose a much more serious risk to financial stability. One impact would be to raise the price of funding in international financial markets and reduce its availability. This could also affect the funding of banks operating in Estonia through the cost of funding of their parent banks or the planned issue of bonds by domestic banks.

### Banking in Sweden

**The Swedish economy was in a good position in 2018, as the economy grew by 2.3% over the year and employment remained high.** The central bank is forecasting that growth will slow a little in 2019. Inflation is at its target level of close to 2%, and in December 2018 the central bank raised its repo rate from -0.5% to -0.25%.

**Having fallen in the second half of 2017, real estate prices started to rise again in 2018** (see Figure 20), but the earlier optimism in the real estate market has weakened. Prices rose by

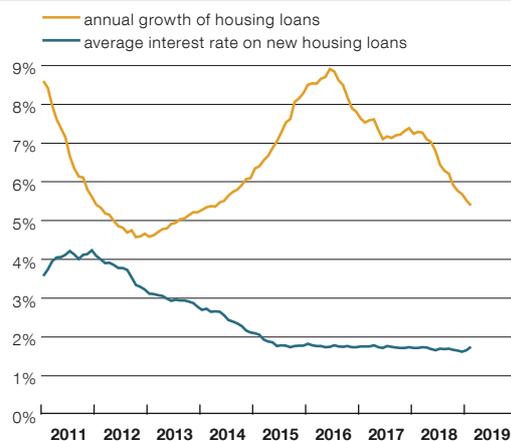
1-2% in 2018 and the small rise in prices and expectations of stabilisation probably reflect the growth in construction volumes and the tightening of lending policies in response to supervisory measures<sup>8</sup>.

**The growth in household debt has also slowed a little.** The growth in gross household debt slowed from 7% in 2017 to around 5% in 2018 (see Figure 21). Household debt and disposable income grew at almost the same rate in 2018, and if this trend continues it will slow the increase in vulnerability while not directly reducing it.

**The Nordic banks, including the Swedish banks, are also relatively exposed to the real estate sector through the large share of loans that have been issued to companies in real estate<sup>9</sup>** (see Figure 22). The Swedish central bank finds that the dangers from residential property primarily affect the broader consumption by borrowers, but problems in the commercial real estate market pass through more quickly and more directly into the loan portfolios of banks.

**It is expected that real estate prices and household indebtedness will continue to grow in Sweden, though at a slower rate than earlier.** The expectations of consumers for inflation in future have come down a little. Confidence has

**Figure 21. Annual growth of housing loans and the interest rate in Sweden**



Source: Statistics Sweden

been increased though by high levels of employment and low interest rates, and the impact of a rise in base interest rates will be modest in the near future. The consumer-focused measures imposed by the Swedish financial supervision institution limit the debt burden of new borrowers, but the risks that have already built up will only feel the effect over the longer term.

**The reduction in the loans-to-deposits ratio of the Swedish banking groups that operate in Estonia continued in 2018** (see Figure 23). The fall in the ratio has been due to growth in depos-

**Figure 22. Exposures to real estate activities and construction as a share of exposures to non-financial corporations**



Source: EBA Risk Dashboard Q3 2018

<sup>8</sup> Loan to value (LTV) limit of 85%. Since June 2016, 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, while clients whose loan is 50-70% of the value of the collateral must pay at least 1%. Since March 2018, new borrowers taking loans that are 4.5 times their pre-tax income or more should pay off a further 1% of their loan.

<sup>9</sup> Also includes loans to housing associations. Indicators for the third quarter of 2018 reflect the base of Nordea Group in Sweden.

its, which has surpassed the growth in loans. Deposits increased by 11% at SEB in 2018 and by 9% at Swedbank. The volumes of deposits at both banks changed by about the same amount as the volume of the loan portfolio in 2018, which indicates that the loan portfolio is being funded increasingly by deposits. Even so, bonds play a very important role in funding the banking groups, which leaves the banks exposed to any possible unfavourable events in the financial markets.

**The cost of market-based funding for the banking groups rose a little in the second half of 2018, though it still remains relatively favourable.**

The rise in the market interest rates on Swedish sovereign bonds was accompanied by a rise in the past six months in the interest rates on the covered bonds of the banking groups. Suspicions about money laundering have affected the share prices of the banking groups most (see Figure 24) and have had much less impact on the market interest rates for unsecured bonds and covered bonds (see Figure 25). Despite this, the reputational risk from suspicions of money laundering could in future make the financing for the banks more expensive and less accessible.

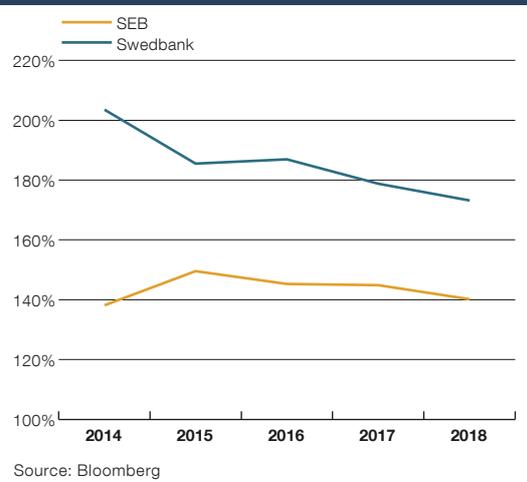
**The liquidity of the Swedish banking groups generally remained good.**

The liquidity coverage ratio<sup>10</sup> for the banks as a whole passed the 100% mark with a large margin at the end of June 2018. For the Swedish krona though, the liquidity coverage ratio was still on average below 100%. The liquidity of the Swedish krona is managed using currency swaps, but the swap market may not necessarily function so well if there is a market shock, and so banks could face liquidity management problems.

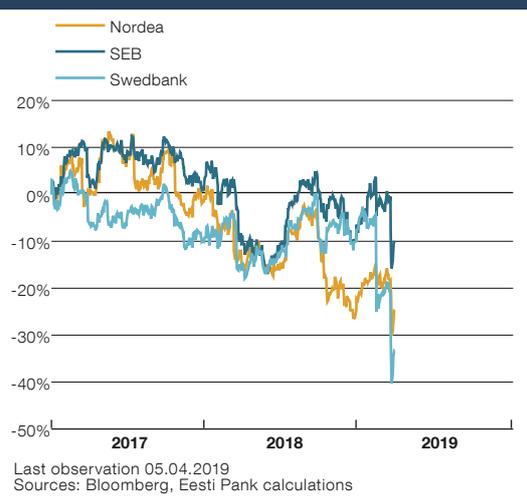
**The profitability of the banking groups remained strong in 2018.**

The return on equity of the SEB and Swedbank groups of 13-16%<sup>11</sup> (see Figure 26) and the return on assets of 0.8% for both groups were almost double the average for the largest groups in Europe. Loan quality remains good, write-downs are small, and market confidence has allowed funding to be provided at a price that has raised net interest income. Profitability was also increased by credit growth,

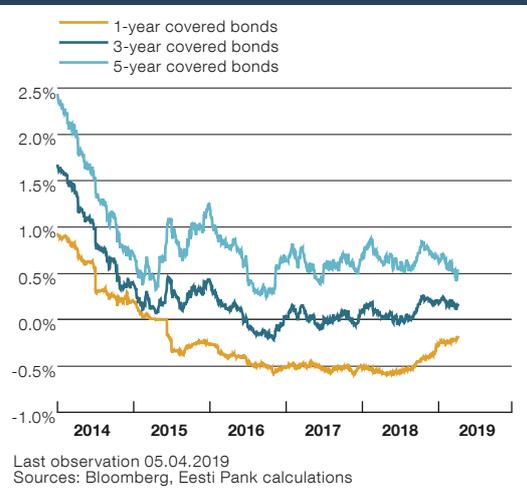
**Figure 23. Loan-to-deposits ratio of banking groups**



**Figure 24. Change in the share prices of banking groups since the start of 2017**



**Figure 25. Average covered bond yields to maturity of the Swedbank and SEB banking groups**



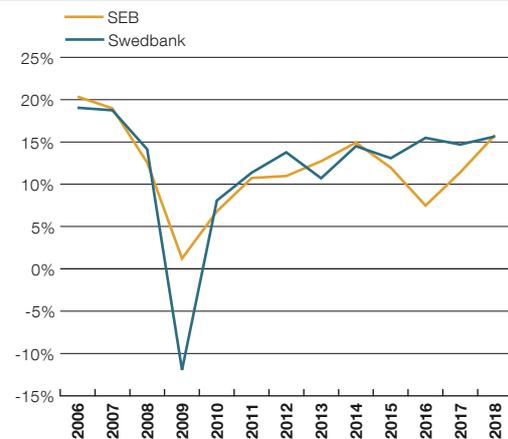
<sup>10</sup> The liquidity coverage ratio shows the proportion of net outflows of cash during a 30-day stress period that is covered by liquid assets.

<sup>11</sup> Annual reports published by banking groups.

in which housing loans issued in Sweden played an important role. Service fee income increased as the economy performed well.

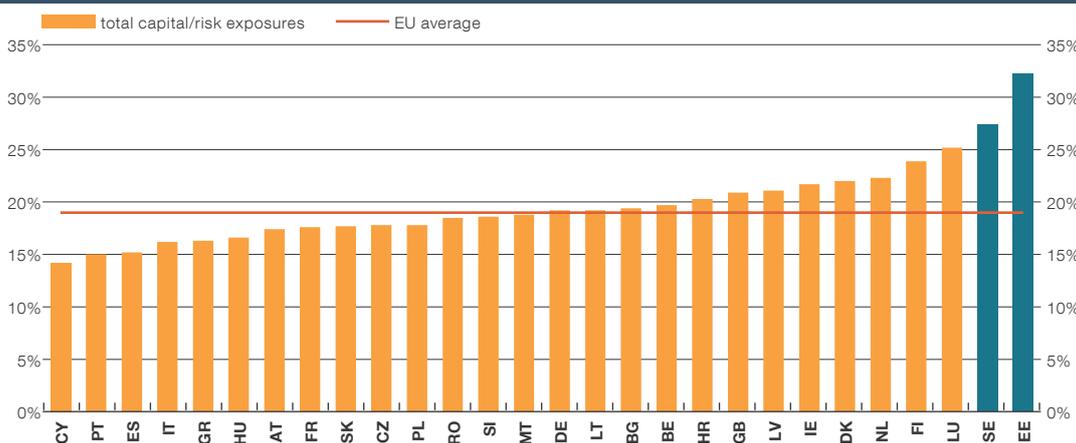
**The risk-based capitalisation indicators for the SEB and Swedbank groups are strong.** At the end of 2018 the total own funds of the Swedbank group were 22.2% of risk-weighted assets and Core Equity Tier 1 capital (CET1) was 17.6%, while the figures for SEB group were 21.5% and 16.3%. The indicator for financial leverage for both the SEB and Swedbank groups was 5.1% at the end of the year, which is around the average level for the large banking groups in Europe (see Figures 27 and 28). On top of the earlier additional

Figure 26. Return on equity of banking groups



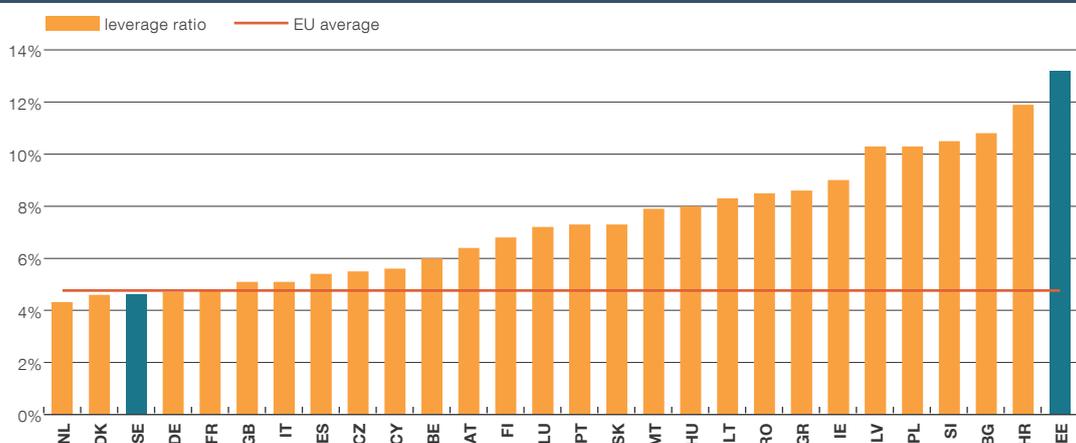
Source: Bloomberg

Figure 27. Capital ratios of European banks



Source: EBA Risk Dashboard Q3 2018

Figure 28. Leverage ratios of EU banks



Source: EBA Risk Dashboard Q3 2018

buffer requirements that had been introduced<sup>12</sup>, Finansinspektionen decided in September 2018 to increase the countercyclical buffer rate appli-

cable to loans issued in Sweden by 0.5 percentage point to 2.5%. The requirement will apply from September 2019.

12 The biggest banking groups have to hold an additional 5% of Common Equity Tier 1 in Sweden against systemic risk, on top of the usual requirements. In calculating the own funds requirement to cover the risks in Swedish and Norwegian housing loans a risk weighting of at least 25% is used as the average, and a risk weighting of 15% for loans issued in Finland.

### Stress tests by the European Banking Authority in 2018<sup>13</sup>

In 2018 the European Banking Authority assessed the resilience of the largest banks in Europe to scenarios that were less favourable than the baseline forecast. The assessment applied to 48 banking groups, among which were Swedbank and SEB, which have subsidiaries in Estonia.

The negative scenario was developed jointly with the ESRB and considered

a fall in gross domestic product in the European Union, a rise in long-term interest rates, and a fall in real estate and share prices. The exercise looked not only at changes in the economic environment, but also at the impact of the introduction of the new IFRS 9 financial reporting standard. The new standard requires the banks to make provisions for expected losses at an earlier phase in the credit cycle.

The results for both the SEB and Swedbank groups were better than the average for the banks that partici-

pated in the exercise. The Core Equity Tier 1 capital (CET1) level of the banks that participated in the exercise fell in the negative scenario from 14.2% on average to 10.1% by the end of 2020, and the financial leverage rate fell from 5.1% to 4.2%. The CET1 rate of the Swedbank group remained close to 22% at the end of the third year of the scenario, and the financial leverage rate stood at 5.4% while the figures for SEB group were 16.5% and 5.2%.

13 <https://eba.europa.eu/-/eba-publishes-2018-eu-wide-stress-test-results>

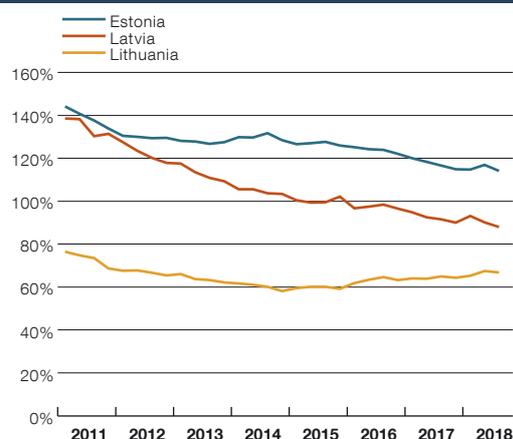
**Overall the vulnerability of the largest banking groups operating in Estonia has changed little.** Slowing growth in prices of residential real estate and household indebtedness in 2018 slowed the increase in vulnerability, but did not reduce it. Household debt remains high and loans to the real estate sector continue to make up a large part of the loan portfolios of the banks. The dangers that come from the reliance of the Swedish banking groups on market-based financing also remain. The capitalisation of the banks as a ratio to risk-weighted assets is still strong with the backing of supervisory measures, but the measures taken so far have not been enough to reduce the vulnerabilities that have already built up.

### Latvia and Lithuania

**The economic and financial environments of Latvia and Lithuania have a significant impact on the Luminor Group, which is systemically important for the Estonian financial system and has large branches in those countries<sup>14</sup>.**

Growth in the economies of both countries has in recent years been strong, as it has in Estonia. It has been supported by strong foreign demand, but growth in the biggest export markets is expected to slow down in future. All the Baltic states are very vulnerable to a deterioration in the

Figure 29. Non-financial sector indebtedness



Indebtedness calculated as a ratio of debt to GDP. Sources: central banks

external environment. The capacity of the economies to grow further is reduced by shortages of qualified labour and of investment that could raise productivity. If these trends do not change then there is a danger that the competitiveness of the economies will suffer.

**Growth in debt has accelerated in Latvia in recent quarters.** As the debt of the non-financial sector did not grow in earlier years, indebtedness has fallen by more than one third from where it was at the time of the financial crisis (see Figure 29). The yearly growth in debt increased to 4.5% in the

14 See also Box 2. How the changes at Luminor Group affect the risks to the Estonian financial sector.

third quarter of 2018 however (see Figure 30). The Latvian central bank believes that the financial cycle is starting its upswing and cyclical risks remain low.

**Debt has been growing fast in Lithuania since 2016, at an average rate of 10% a year** (see Figure 30). Demand for debt capital has been encouraged by the favourable economic conditions and the resulting rapid growth in wages. The portfolio of housing loans and real estate prices have both increased rapidly. Although indebtedness has risen slightly, it is still clearly at a lower level in Lithuania than in the other Baltic states (see Figure 29) and the Lithuanian central bank finds that there are no excessive imbalances. It has however decided to raise its countercyclical buffer in periods of moderate systemic risk, so that it can be released again if unexpected shocks were to hit the financial system. This policy has led to the introduction of a countercyclical buffer rate of 1%.

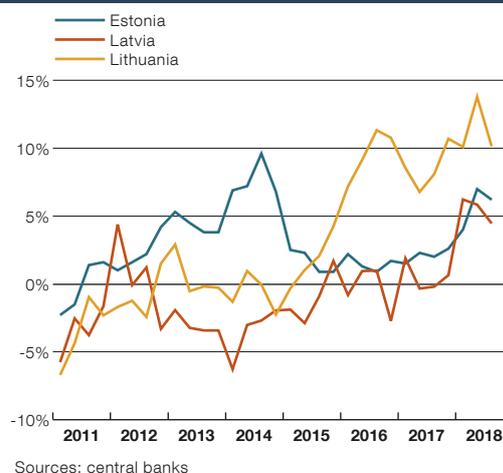
**The financial indicators for the banking sector remain mainly strong in Latvia and Lithuania.** However several banks there have been affected in recent years by suspicions of money laundering similar to those in Estonia. In consequence the reputation of the banking system of the entire region has been damaged, which could weaken the whole of the sector in the future. The banking sector as a whole is well capitalised and liquidity buffers are large. The quality of the loan portfolio has gradually improved in both countries, as the share of overdue loans in Latvia is 4% and in Lithuania it is 2.7%, and this supports the profitability of the banks.

## BANKS

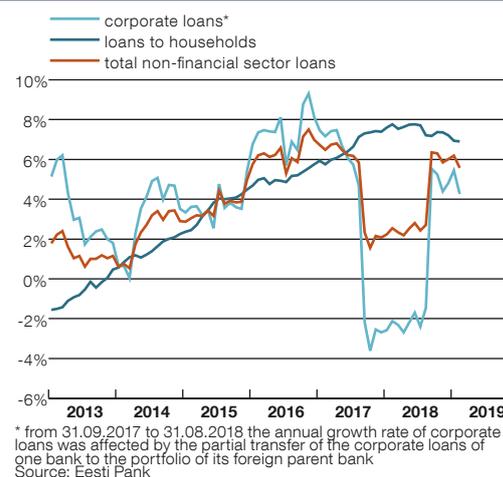
### The loan portfolio<sup>15</sup> and the quality of it

**The loan portfolio of the banks operating in Estonia has continued to grow at a relatively fast rate.** The stock of loans issued to businesses and households was larger by 1 billion euros, or 5.6%, in February 2018 than a year previously (see Figure 31). Growth in the loan portfolio was

**Figure 30. Annual growth of non-financial sector debt**



**Figure 31. Annual growth of banking sector loans and leases to businesses and households**



driven by both corporate and household loans.

**Lending to households was supported by demand-side factors.** New loans and leases have been added at a slightly slower rate than previously in all the large lending segments, but the stock of loans to households continues to grow rapidly. Rapid growth in wages, high levels of confidence and low interest rates together pushed the yearly growth in the portfolio of loans to households to 6.9% in February (see Figure 32). The biggest contribution to this growth came from housing loans and car leases. The yearly growth in the housing loan portfolio was 6.9%

<sup>15</sup> The loan portfolio in this section covers loans to businesses and households, including non-residents, and also leases and factoring issued by leasing companies owned by the banks. As loans to the general government are only a small part of the loan portfolio of the banks at around 3% and the majority of loans to financial institutions are leasing company loans that are used to fund leases to households and companies, changes in the loan portfolios of those sectors are not covered in this section.

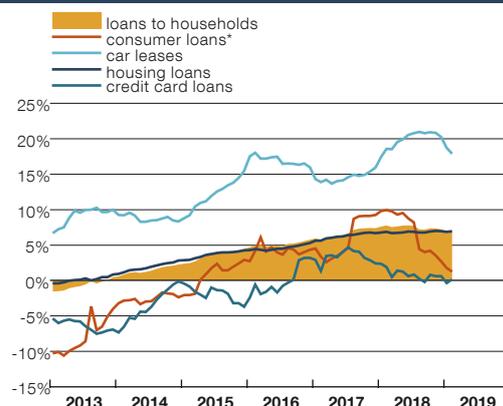
in February, while the yearly growth in car leases reached 17.9%.

**The behaviour of the banks has not driven the rapid growth in lending to households.** The largest part of the loan portfolios of the banks consists of housing loans, and so the credit risk is affected above all by the ability of households to service their housing loans. No sign has been shown in this segment of increased risk appetite. There has been no significant change in the conditions for housing loans, which are the loan-to-deposit ratio, the debt service-to-income ratio, and the average maturity. At the same time the interest margins have risen slightly. At a time when wage growth is very fast and is faster than growth in productivity, the lending policy in the credit market is restraining excessive optimism among households by balancing it and reducing the risks of credit growth accelerating.

**The portfolio of consumption loans at smaller banks is growing strongly.** The growth in consumption loans over the year in the Estonian banking sector was 1.3% in February, but this modest average conceals very different growth trends at different banks (see Figure 33). The rate of yearly growth in consumption loans at most smaller banks has shown double-digit figures. The consumer segment is becoming attractive to banks because of its relatively large returns. Larger returns come together with larger risks though. Loan losses would be a larger share of the consumer loan portfolio than of the housing loan portfolio if the economy were to take a sharp turn for the worse. Although the banking system as a whole currently shows no sign of increased vulnerability from the growth in consumer loans, it is important that the search for yield should not in future lead to excessive risk-taking.

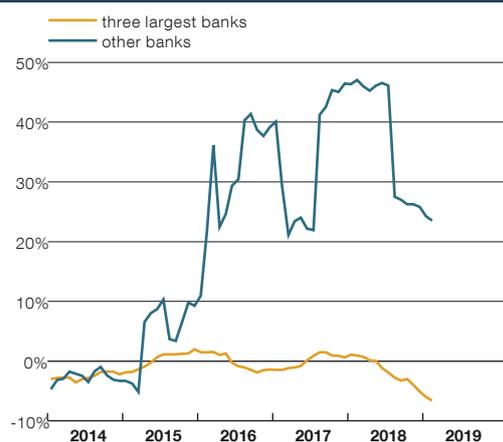
**Growth in corporate borrowing has slowed a little.** Borrowing by energy companies led the corporate loan portfolio to grow by 4.3% in February. Loans issued to the infrastructure sector grew by 54% over the year, but yearly growth in the loan stock in the other main sectors slowed (see Figure 34). There is no sign of a general or substantial increase in demand from companies for bank loans. The growth in corporate loans has also been restrained by changes in the banking

**Figure 32. Annual growth of banking sector loans and leases to households**



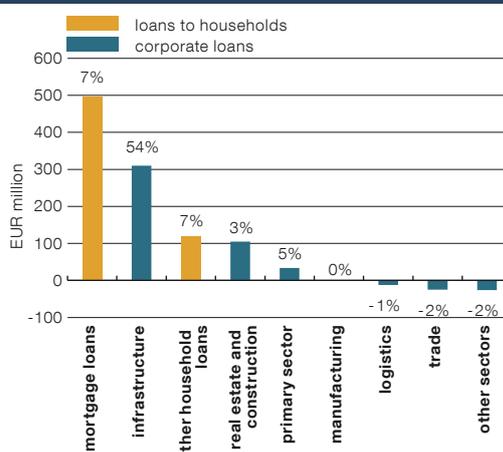
\* in August 2017, the branch of one credit institution was added to the list of credit institutions, which affected the yearly growth figures for consumer loans throughout the year, but the effect disappeared in August 2018  
Source: Eesti Pank

**Figure 33. Annual growth of consumer loans across larger and smaller banks**



Source: Eesti Pank

**Figure 34. Annual growth in loans and leases as at 28/02/2019**



Source: Eesti Pank

market in Estonia. As there are now fewer banks offering large loans in the Estonian banking market, the position of the banks in pricing loans has strengthened. The small rise in interest margins points to the fading of the signs seen in the past couple of years of loan prices for certain large projects not adequately reflecting the risks of those projects. If some riskier projects are cancelled because of higher interest margins, this would reduce the danger of loan losses building up in the future.

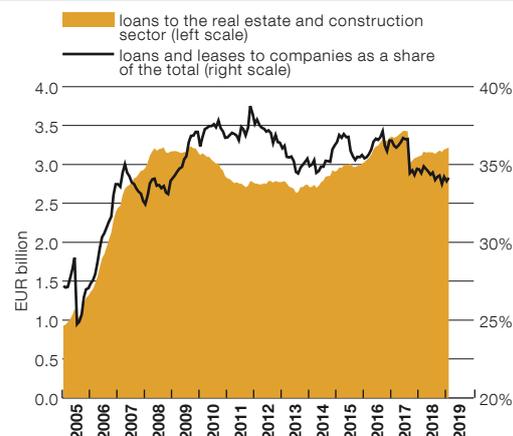
**Given that loans to real estate and construction account for a large share of the portfolio of the banks, it is a good sign for financial stability if growth in lending to that sector cools down to some extent.** Loans to companies in real estate and construction have of late grown more slowly than the corporate loan portfolio as a whole. In this way the current situation is different from that of a couple of years ago or that of the boom period, when the corporate loan portfolio increased as a share of the loan portfolio of the banks (see Figure 35). The growth in loans to real estate and construction has been slowed partly by the more cautious attitude of the banks towards funding real estate projects. The rapid growth in this sector in recent years means the banks probably consider real estate projects to be riskier. Furthermore, the reduction in competition in the banking market has allowed banks to choose their projects more carefully. Although the share of loans that go to the construction and real estate sector is a little smaller than it has been in recent years, it remains very large at 34%. This means that the Estonian banking sector remains very exposed to risks from the real estate market.

**In a favourable economic environment the quality of loans remains good.** There were fewer overdue loans than a year earlier in almost all sectors in February 2019. Such loans made up 0.6% of the total portfolio, which is 0.3 percentage point less than a year earlier (see Figure 36).

### Financing and liquidity

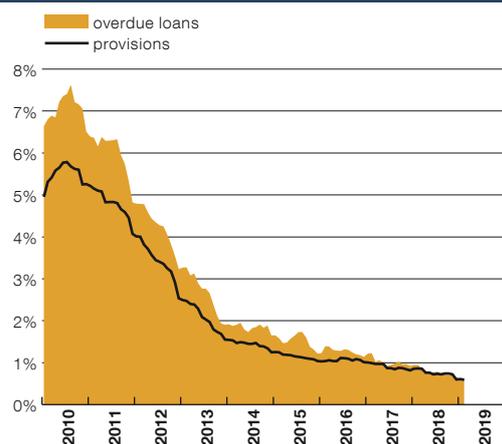
**Like they did in 2017, the banks operating in Estonia largely financed the growth in their assets in 2018 from domestic deposits** (see Figure 37). The relatively rapid growth in domes-

**Figure 35. Loans to real estate and construction companies**



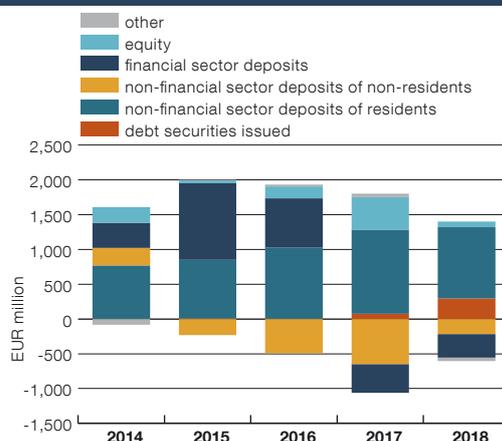
Source: Eesti Pank

**Figure 36. Share of overdue loans and provisions in the loan stock**



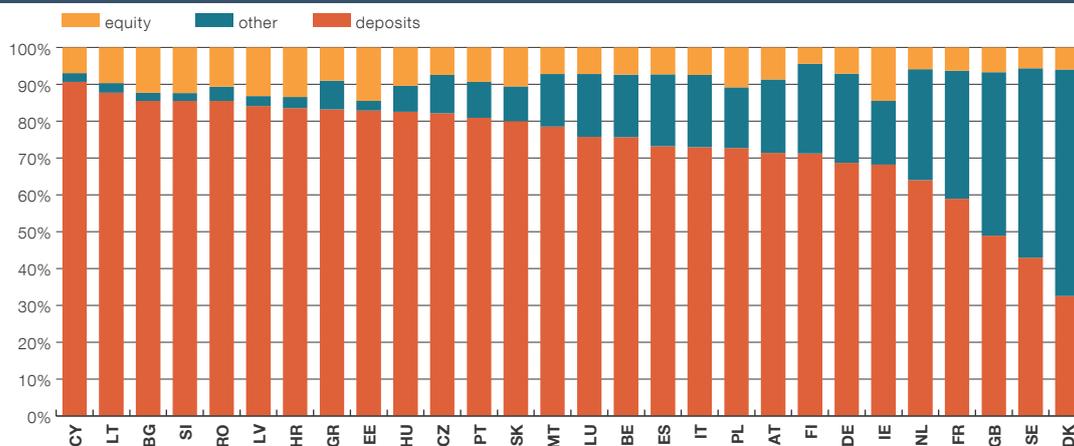
Source: Eesti Pank

**Figure 37. Change in Estonian banking sector liabilities and equity**



Source: Eesti Pank

**Figure 38. Funding structure of EU banks as at 30.09.2018**



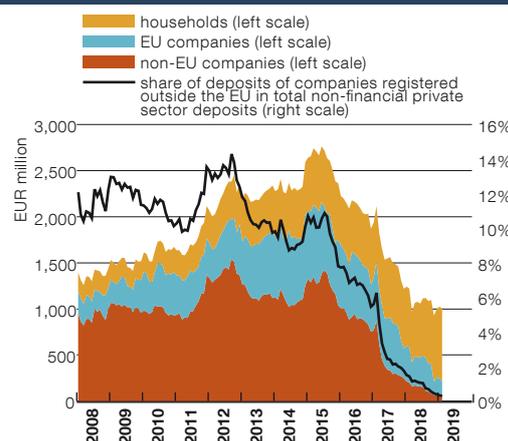
Sources: European Central Bank, Eesti Pank calculations

tic deposits reduced the need of the banks for other sources of funding. Alongside deposits, funding was also accessed by issuing bonds, but to a much lesser degree. Although the financing structures of the banks differ to some extent, deposits remain the main source of funds. The Estonian banking sector also stands out next to other countries in the European Union for the relatively large share of deposits in its funding (see Figure 38).

**The deposits of non-resident clients, which are considered to bear a larger risk of money laundering, have been steadily reduced in recent years.** At the peak in 2012, deposits by companies registered outside the European Union exceeded 14% of the non-financial sector bank deposits, but by February 2019 this was only 0.3% (see Figure 39). This sharp decline is partly a consequence of the work of Estonian supervision institutions to combat money laundering. Non-resident deposits accounted for 5% of liabilities in January 2019 and had shrunk by almost 17% over the year, while resident deposits accounted for 67% of liabilities.

**The suspicions of money laundering that have affected several banks operating in Estonia and the Nordic banking groups that own them may harm the funding conditions for the banks.** Money laundering suspicions have so far had only a small impact on the funding of banking groups, but it is not inconceivable that this impact could increase. The banks operating in Estonia largely fund themselves from domestic deposits,

**Figure 39. Non-resident non-financial private sector deposits**



Source: Eesti Pank

and this reduces the risk to their funding. Loans from Nordic banking groups made up a little less than a fifth of the liabilities of the banks at the end of 2018. However the reputation of Estonia and the surrounding region has suffered from the suspicions of money laundering, and this may affect the funding plans of some domestic banks. As bonds play only a small role in funding and client deposits are growing rapidly, the impact of the money laundering scandal on total funding will remain small at the moment.

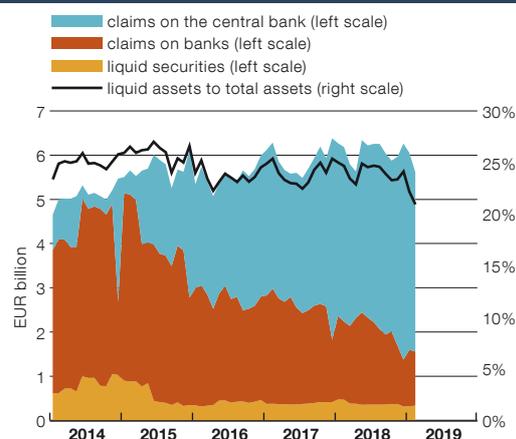
**The volume of liquid assets at the banks shrank in 2018, but they continue to be held at a relatively high level.** The volume of liquid assets fell over the year to the end of February 2019 by 9% and they accounted for 21% of assets (see Figure 40). The level of liquid assets

in the Estonian banking sector remains high though, and the resilience of the banks to short-term liquidity shocks is good, as is confirmed by the liquidity coverage ratios of the banks, which show their liquid assets to be substantially larger than the possible net outflow of funds during a 30-day stress period. The Estonian banking sector also has a larger share of liquid assets in total assets than the average for the countries of the European Union (see Figure 41).

### Profitability

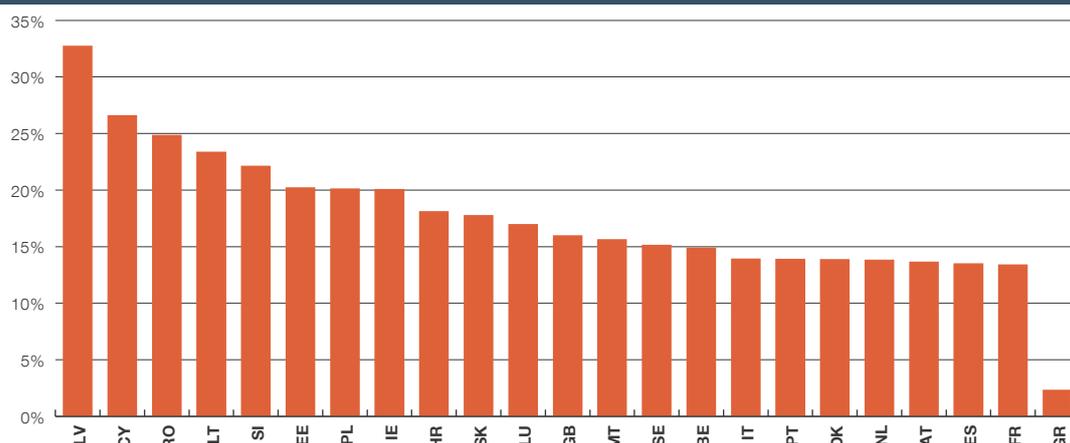
**The profitability of the banks remained strong in 2018.** Tax payments indicate that the combined net profit of the banks during the year

**Figure 40. Banking sector liquid assets and their share in total assets**



Source: Eesti Pank

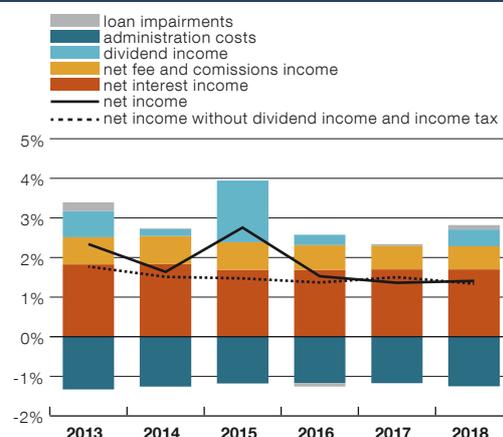
**Figure 41. The share of liquid assets in total assets as at 31.12.2017**



Sources: European Central Bank, Eesti Pank calculations

was 356 million euros, or 6% more than in 2017. The growth in profit largely came from dividends paid by subsidiaries. Net interest income grew at almost the same rate, as assets and loans that had earlier been written off were taken back into account, though income tax expenses and staff costs increased even further. This meant that net profit without dividend income declined from 1.5% as a ratio to total assets in 2017 to 1.3% in 2018 (see Figure 42), which is still more than double the average figure of 0.49% for the European Union. Income tax of 88 million euros was paid, which was more than twice what was paid in 2017.<sup>16</sup>

**Figure 42. Banking sector income, expenses and profit as a ratio of total assets**



Source: Eesti Pank

<sup>16</sup> The rules for the taxation of income for credit institutions changed from the second quarter of 2018 so that banks started to pay income tax in advance on the profit earned in the first quarter.

Figure 43. Banking sector return on assets

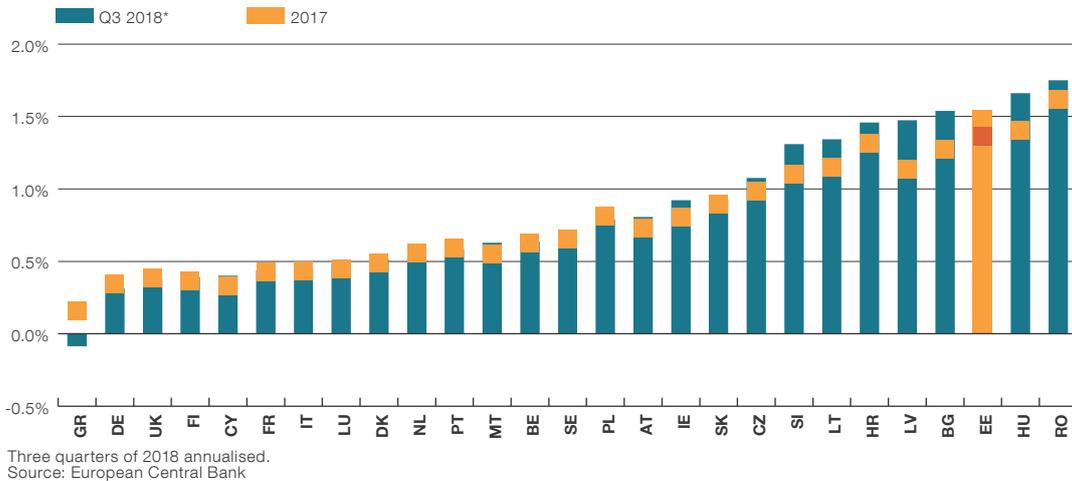
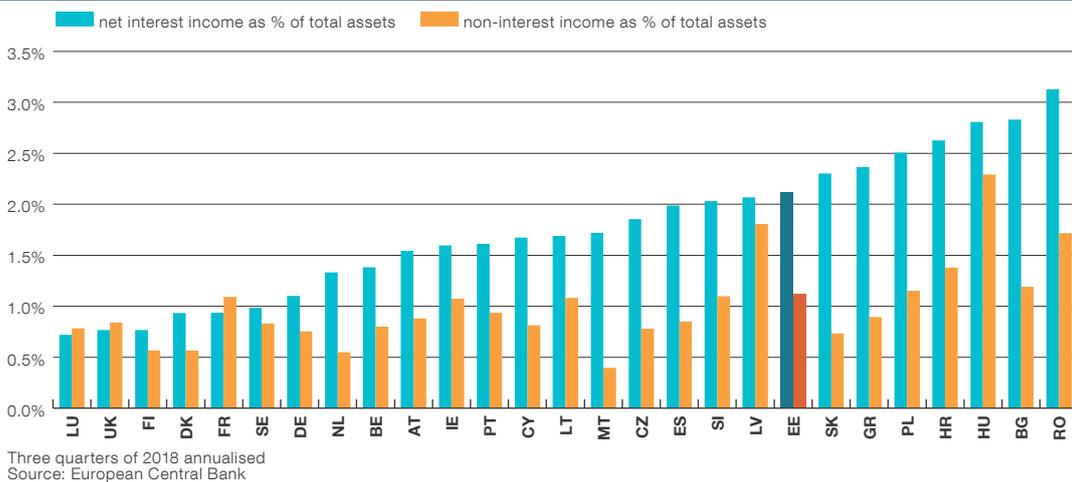


Figure 44. Banking sector income as a ratio of total assets



**The profitability of the Estonian banking sector is high in comparison to the other countries in Europe** (see Figure 43). Comparison of the components of profitability show the main sources to be low interest expenses, high efficiency and good quality assets.

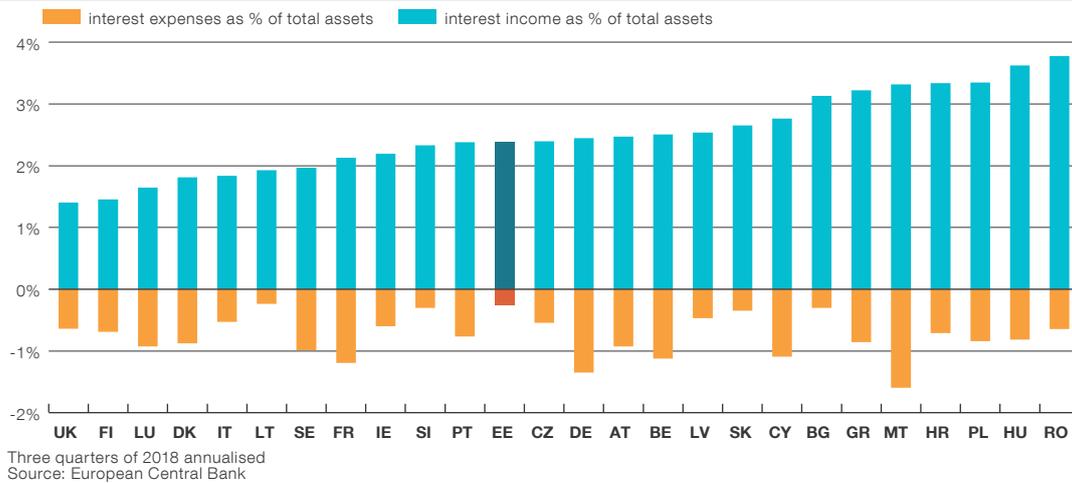
**Net interest income is supported by low interest expenses.** Comparison of data compiled by the European Central Bank show Estonian banks to be in the top third for both net interest income and other income (see Figure 44). They are closer to the average for interest income however (see Figure 45).

**The low interest expenses are mainly a consequence of the large role that deposits, and especially low-cost demand deposits, play**

**in the liabilities of the banks.** Deposits make up the largest share of the liabilities of banks in Estonia and more than 80% of them are demand deposits (see the section on financing and liquidity). Funding costs can also be reduced by being part of a larger banking group if that allows the bank to access funds more cheaply from other parts of the group than it would be able to by acting alone. The share of funding from groups is currently quite small in the liabilities of the banks in Estonia.

**The profitability of the Estonian banking sector is also supported by cost efficiency.** The ratio of operating costs and revenues for the banks is among the lowest in Europe (see Figure 46). The operating costs of the banks can also be affected to some extent by their position within banking

**Figure 45. Banking sector interest income and interest expenses as a ratio of total assets**



**Figure 46. Banking sector operating expenses as a ratio of total assets and total income**



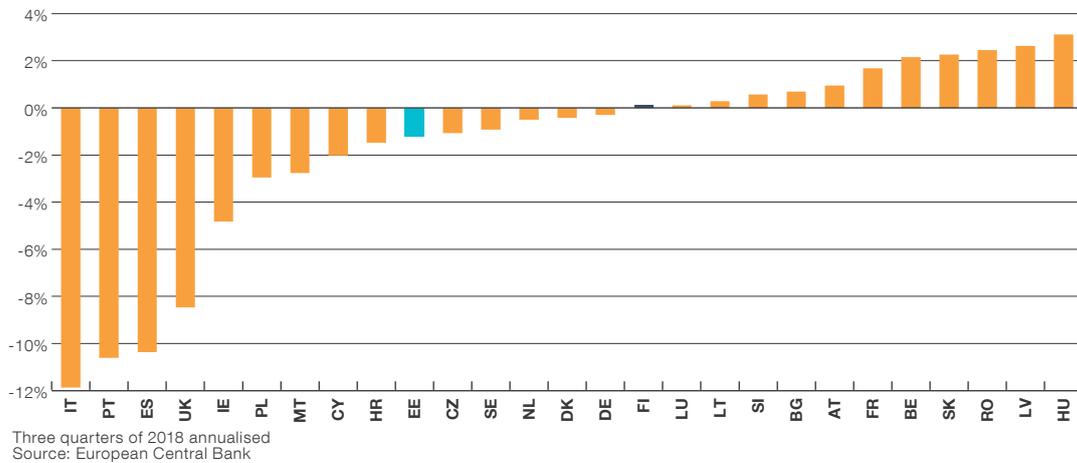
groups, as some types of expense, such as development or IT solutions, are largely recorded for a particular part of the group, while services can be provided to other members of the group. The operating efficiency of the banks in Estonia still comes largely from their active management of costs however. Scale effects have helped to bring down costs, as the growth in assets has not led to similarly large growth in costs. Operating costs have also been reduced by cutting the number of offices and directing clients towards self-service solutions. The banks have cut the number of offices in Estonia by almost two thirds from its peak a decade ago, while the number of staff has been reduced by 10%<sup>17</sup>.

**The profitability of the banks also reflects the good quality of loans in recent years.** Costs from loan write-downs and falls in asset values reduced the aggregate profit of the banks in Estonia by only around 27 million euros in 2018, which is 0.1% of the total assets of the banks (see Figure 47).

**The profitability of the banking sector from its core activities in Estonia is likely to remain stable in the near future.** Growth in the loan portfolio and in margins will help maintain profitability. Any rise in interest expenses will be restrained by the large share of deposits in the liabilities of the banks. When base interest rates start to rise in

17 Public data and Eesti Pank data.

**Figure 47. Banking sector loan impairments as a ratio of total assets**



the longer term, a moderate increase should support the revenues of the banks. As a majority of the loans in Estonia are issued with floating interest rates, a rise in base interest rates is passed on to borrowers faster than it is to depositors. The expenses of the banks will come under pressure from the general growth in wages. Structural changes are also affecting the activities of the whole sector at present as banks merge, separate and expand their activities.

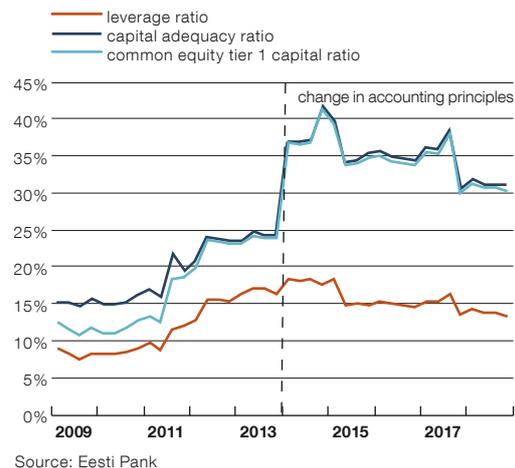
### Capitalisation

**The capitalisation of the banks operating in Estonia has remained strong in total.** The ratio of total own funds of the banks to risk assets stood at 30% at the end of 2018. The lowest figure for capitalisation at the end of the year was 16% (see Figure 48), and the lowest figure for core equity tier 1 (CET 1) was above 11%.

**The capitalisation figures for the largest market participants rose in 2018.** The reduction in capitalisation in some places at banks with smaller market share came mainly from the growth in assets associated with an expansion of activity. In general maintaining the level of own funds has been achieved by leaving profit earned out of the amount of own funds. Some banks that have been growing faster have also used additional capital to support the growth.

**The banks operating in Estonia are currently well capitalised even without considering the**

**Figure 48. Banking sector capital and leverage ratios**



**different risk levels of assets.** The lowest figure for financial leverage at the end of December was 6%, and the average figure for the banks was above 13%.

In assessing the capitalisation of the banks it is important to remember how much of the capital is mandatory capital, and what share of own funds is held by choice.

**All banks in Estonia have to hold own funds of at least 8% of risk assets.** The banks are also all subject to a 2.5% capital conservation buffer requirement, a systemic risk buffer requirement of 1% of risk exposures in Estonia, and an additional requirement that applies to banks according to their systemic importance. Four banks in Estonia are con-

sidered systemically important, and these are subject to additional requirements of between 1% and 2% (see the review of macroprudential measures).

On top of these measures, Eesti Pank is considering the need for a requirement for banks

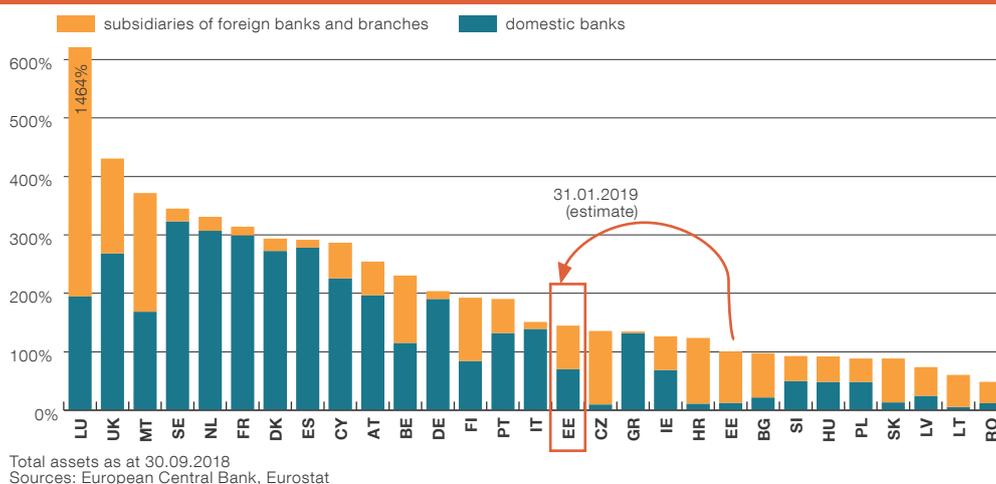
that use internal models to calculate capital adequacy that mortgage-backed retail exposures must be at least 15% of the weighted average risk weight (see the section on the need to introduce minimum requirements for risk rates for housing loans).

**Box 2: How the structural changes at Luminor Group affect the risks to the Estonian financial sector**

The establishment of the head office of one of the largest banks in the Baltic states in Estonia at the start of this year changed the structure of the banking sector in Estonia substantially, and has brought new risks to financial stability in Estonia. Luminor Bank AS started operations in the Baltic market in October 2017 when the local units of DNB and Nordea Bank AB merged. At the start of 2019, Luminor completed the merger of the Estonian, Latvian and Lithuanian units into a cross-border banking group with its head office at the Estonian unit of Luminor and the Latvian and Lithuanian units as branches. Which country the head office is based in is important for defining roles in the micro and macro supervision of banking groups and for resolving any possible crisis. This means that the location of the head office of Luminor in Estonia brings new challenges for Eesti Pank in ensuring financial stability.

The structural changes at Luminor made the Estonian banking sector much larger. Making the Latvian and Lithuanian banks into branches brought their assets and liabilities under the Estonian unit, with the consequence that the assets of the Estonian banking sector increased from 102% of GDP at the end of 2018 to 145% of GDP at the end of January 2019 (see Figure B2.1). Although the growth in the banking sector has not of itself increased the probability of any banking crisis, it could cause substantially greater costs for the economy if problems were to arise.

**Figure B2.1. Total banking assets in relation to GDP**



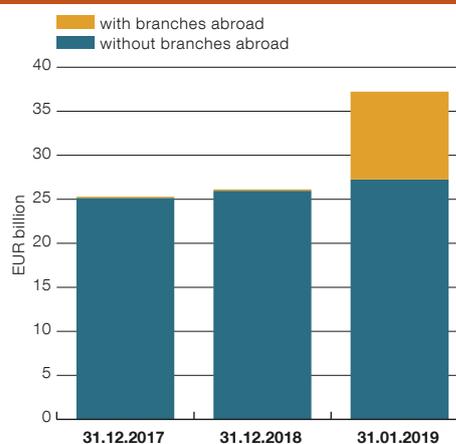
The Estonian banking system is now affected more than before by events in the Latvian and Lithuanian economies and banking sectors. Although banks operating in Estonia have earlier had branches abroad, these were very small by assets and were not systemically important for the banking systems of Estonia or the country the branches were in. The branches of Luminor

in Latvia and Lithuania are systemically important and it is important for the whole of the Latvian and Lithuanian financial systems and the non-financial economies that they function without interruption. Last year branches abroad accounted for less than 1% of the Estonian banking sector, but at the end of January this year foreign branches, especially in Latvia and Lithuania, provided an estimated 27% of the total consolidated assets of the Estonian banking sector (see Figure B2.2). This shows that the situation in the other Baltic states can affect financial stability in Estonia more than before.

Although the loan portfolio of the banking group is geographically diversified, which generally helps banks to reduce risks, the benefit from diversification is limited by the similar structures and tight interconnections of the economies of the Baltic states. Dividing the loan portfolio between the three Baltic states makes the banking groups less exposed to an economic shock in only one country, but the factors that affect the economic climates of the three Baltic states are generally the same. For this reason the performance of the economy or the banking sector in one country affects the other two Baltic states. Furthermore, the structure of the loan portfolios of the Luminor units are relatively similar, though loans to households are a slightly larger share of the loan portfolios of the Latvian and Lithuanian branches than they are of the Estonian unit, and corporate loans are a smaller share (see Figure B2.3).

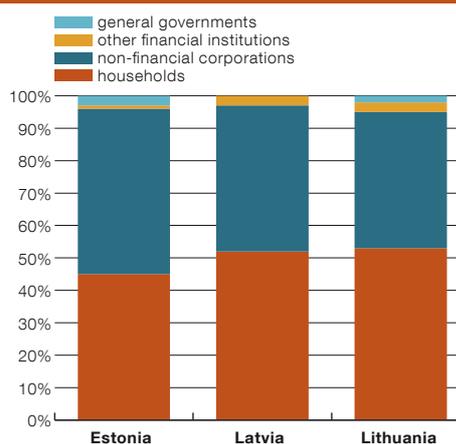
Funds from the banks that own the Luminor Group have played a substantially larger role in its financing than the average for the Estonian banking sector, and so the changes ahead in the funding structure of the group will increase the risks to the funding of the Estonian banking sector. The funding structures of the Baltic units of Luminor are different though (see Figure B2.4). The deposits of the non-financial sector in Latvia and Lithuania account for more than half of funding sources, but in Estonia they provide less than 40% and are around the same in value as the funds received from the owner banks. The Estonian unit also started to use

**Figure B2.2. Total assets of the banks operating in Estonia**



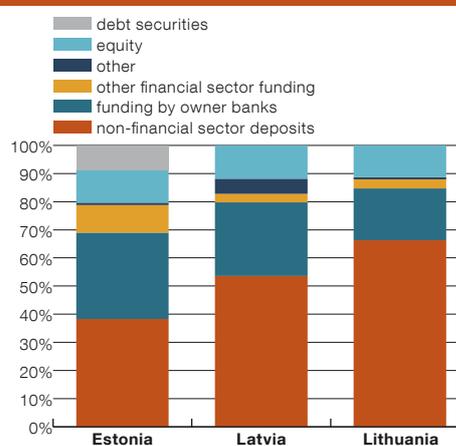
Source: Eesti Pank

**Figure B2.3. Structure of the lending portfolio of Luminor as at 31.12.2018**



Source: public reports

**Figure B2.4. The funding structure of Luminor as at 31.12.2018**



Source: public reports

bonds for funding in 2018, and they provided about 9% of the total funding by the end of the year. The need to replace the liabilities from the owner banks with other liabilities over time, including bonds and covered bonds, means the sensitivity of the banking sector to events in international financial markets and to the reputational risk of Estonia and the surrounding region will increase.

It is not the financial position of Luminor that increases the structural risks to the Estonian banking sector, but rather the increase in the size of the banking sector. The profitability of Luminor<sup>18</sup> in different countries is similar and the capitalisation of the banking group is strong. At the end of 2018 the return on assets was between 0.7% and 1% in all countries, and the capital adequacy was between 17.9% and 18.8%. Financial leverage indicators were also relatively high, as the group uses the standardised approach for assessing risk, and so they were between 10% and 11%. The liquidity of Luminor is also good in all the Baltic states. The liquidity coverage ratios at the end of 2018 were above the regulatory minimum of 100% in all three countries and the stable net funding ratio was above 100% in all three countries.

The risks added by the establishment of the Luminor head office are reduced by Estonia's participation in the European Banking Union. The size of Luminor means that it comes under the direct supervision of the European Central Bank. Although it is the aim of institutions responsible for financial stability to prevent financial crises, even with the best crisis prevention work it is still possible that a crisis could occur. The Single Resolution Mechanism, which is the second pillar of the banking union, is designed to ensure orderly resolution of crises, without them posing any danger to the financial stability of a country or damaging the supply of critical financial services. This helps make sure that the costs to an economy of resolving a crisis are as low as possible. The Single Resolution Mechanism together with the legal framework of the European Union for crisis resolution helps to reduce the risk of a large and systemically important bank that has fallen into difficulties having to turn to the guarantee fund of a country. The growth in the banking sector of Estonia also increased the amount of deposits and investments that the Estonian Guarantee Fund must cover.

The structural change at Luminor has meant an increase in the responsibilities of Eesti Pank as the institution responsible for macroprudential supervision. The macroprudential measures that Eesti Pank has set at a consolidated level will start to apply in the other two Baltic states as well because of the structural change at Luminor. This means that international cooperation will be more important than ever in the supervisory work of Eesti Pank. On top of that, the location of Luminor's head office in Estonia means that if the bank were to need any extraordinary liquidity assistance, it would fall to Eesti Pank to provide it.

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<sup>18</sup> The financial position and liquidity indicators for Luminor are taken from public reports.

### **Box 3. Money laundering as an expression of misconduct risk**

Several cases of suspicions of money laundering have come to the foreground in the Estonian banking landscape in recent years. The amounts of suspicious money that have moved through the banking system are estimated to be in the hundreds of billions of euros, and over time the group of banks under suspicion has widened. In consequence, investigations have been launched to identify the mechanisms used for money laundering, and making sanctions tougher has been discussed.

From the financial supervision point of view, money laundering is the consequence of inadequate management of one operational risk, which is misconduct risk. Misconduct risk is the possibility of banks or bank employees not following the rules, which in this case means all laws, internal bank rules, and operating guidelines, and also ethical and behavioural standards. Failure to follow these rules may lead to unequal treatment of clients and shareholders, mis-selling of financial products, market manipulation or other faults<sup>19</sup>.

Misconduct is generally bank-specific, which means the staff of one bank or one department in a bank act against the principles of operation. In this case it is the bank itself that bears the legal liability and suffers the financial consequences. The appearance of similar breaches at multiple banks means additional costs for society and those costs can be measured in monetary terms. The fines demanded by supervisory institutions from banks in 15 European countries for breach of anti-money laundering rules in 2009-2018 for example totalled more than 1.7 billion US dollars, of which 903 million were paid in 2018<sup>20</sup>. These fines reduce the profits of the banks and so reduce the dividends that shareholders expect, which is reflected in a fall in their share prices. Court proceedings that drag on for years can also make the shares of the banks less attractive to investors and affect the ability of banks to raise funding through bonds or other means over a long period. The Single Supervisory Mechanism finds that the probability of misconduct risk appearing at banks in the euro area and of it having a possible impact is still below the average<sup>21</sup>.

It is harder to measure the damage when misconduct shakes the faith of society in the banking system as a whole. This faith can be damaged if the suspicions affect a systemically important bank or if it is believed that the misconduct uncovered at one bank is actually more common. The behaviour of clients of banks mixed up in misconduct cases has been studied and in general no large outflow of deposits or bank run has been observed. The breach of anti-money laundering rules in Estonia and their international extent damaged the reputation abroad of the whole Estonian banking sector for example, but the financial positions of the banks have remained strong and the deposits of residents are guaranteed by requirements of the European Union<sup>22</sup>.

It is micro-financial supervisory institutions, which is Finantsinspektsioon in Estonia, that are best able to measure and reduce the risk of misconduct. Reducing the operational risk of a bank first requires risk assessment, which includes on-site inspections and the issue of injunctions to improve any shortcomings that are identified. The next option is to set additional capital requirements through the measures of the second Basel pillar, which requires a bank-specific financial supervision decision on capital requirements. The third step is for supervisors to impose fines on banks for breaking the rules. The supervisor in Estonia has the right to fine banks for damage caused up to a maximum of only 400,000 euros, which is apparently insufficient given the size of the operations of the banks. Fourthly, an extreme measure is that the supervisor can close down the operations of the bank if the bank ignores injunctions over a long time. The supervisor in Estonia found it necessary to close down the operations of Versobank and Danske Bank Estonia Branch in connection with long-term breaches of the anti-money laundering rules. If a systemic misconduct risk is uncovered, the macroprudential supervisor, which is Eesti Pank in Estonia, may need to set additional capital buffers to improve the resilience of the banks.

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19 Report on misconduct risk in the banking sector, European Systemic Risk Board, June 2015.

20 A Fine Mess We're In: AML/KYC/Sanctions Fines. A Ten Year Analysis (2008-2018). Fenergo 2018.

21 European Central Bank banking supervision: risk assessment for 2019, European Central Bank, 2018.

22 See Directive 2014/49/EU of the European Parliament and of the Council on deposit guarantee schemes.

#### Box 4: How the Covered Bonds Act could affect the funding of the banks

The Covered Bonds Act came into force in Estonia from March and sets the legal framework for funding banks using covered bonds. Covered bonds are a type of bond issued by banks, which need to have an appropriate licence to issue them.

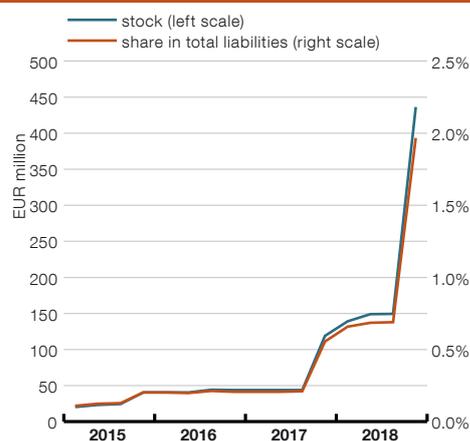
Covered bonds are a very important source of funding in the European banking system. The biggest issuers of covered bonds are Germany, Denmark, France, Spain and Sweden<sup>23</sup>, and between them they issued more than 60% of the 2.5 trillion euros of covered bonds in the global market. The covered bond market is also growing rapidly in several other countries where it is still small, including countries in central and eastern Europe.

The covered bond is a low-risk instrument because it offers double-recourse protection. The bondholder has a claim on the bank that issued the covered bond, but if the bank becomes insolvent then the investor has a preferential claim on the asset used as collateral for the covered bond<sup>24</sup>. The law sets quite strict requirements for the collateral of covered bonds to ensure that they are of good quality, and these include a special control system, requirements for the collateral assets to be of a single type, and a minimum overcollateralisation rate. These requirements mean that the risk level of covered bonds has remained low even during crises. In consequence the rating agencies generally give high ratings to issues of covered bonds, which means they are one of the cheapest ways for banks to access market-based funding.

Bonds have not so far played an important role in the funding of banks in Estonia (see Figure B4.1). The banks in Estonia mainly fund their lending activity through client deposits. They also get some of their funding from their parent banks. The large issue of bonds by Luminor last year increased the total volume of bonds, but they remained very small in the financing of the banking sector at only 2%.

Covered bonds can be a second form of cheap funding for banks alongside deposits. Deposits are most usually the cheapest source of funds for banks<sup>25</sup>. If the banks can increase their deposits enough to increase the loan portfolio by the amount they desire, they should not have any need to issue covered bonds. If the bank wants to increase its share in the credit market quickly though, issuing covered bonds is a cost efficient alternative to taking in extra deposits. Following the structural changes in the Estonian

Figure B4.1. Debt securities issued by banks operating in Estonia



Source: Finantsinspeksioon

23 Covered bonds are most used for funding banks in Denmark, where they provide around 45% of finance, and in Sweden where they provide 22%. The share of financing they provide in other countries is below 10%.

24 The primary cover assets used are a collection of housing loans, but the law also allows loans to the general government and loans backed by commercial real estate to be used.

25 With interest rates currently low it may in some cases be cheaper to access financing by emitting covered bonds, because the interest rates on short term covered bonds issued by banks with very high ratings can even be negative, while the deposit interest rate generally does not fall below zero.

banking market, some banks have started to look for ways to diversify their sources of funding<sup>26</sup>.

It would be good from a financial stability point of view if the banks in Estonia could use covered bonds to balance their funding model based on deposits and parent banks. This would help to reduce the dependency on funds from parent banks and deposits, including the unreliable non-resident deposits. A bank that was active in the covered bond market would be less vulnerable if for some reason it was not able to get all the funding it needed from other sources.

Covered bonds are also a fairly stable source of financing in a crisis. Although it becomes more expensive to issue covered bonds if the economic climate worsens, the previous crisis showed that the effect on covered bonds is notably less than the impact on more risky instruments. This means a funding model based partly on covered bonds would support the loan supply during times of volatility in the economy.

Covered bonds allow banks to access resources with longer maturities than has so far been possible. Banks currently issue loans with long maturities, but fund them largely with demand deposits. Covered bonds are generally issued for 5 to 10 years, and that allows the banks to improve the match in the maturities of their assets and liabilities.

Excessive reliance on market-based funding, including covered bonds, could bring additional risks to financial stability though. It would make the funding of banks more sensitive to events in international bond markets, and to reputational risk. This is illustrated well by the largest risk to financial stability in Estonia, which comes from the funding of the Swedish parent banks. These banking groups get a large part of their funding from financial markets, making them sensitive to risks from financial and real estate markets. If the risk premiums in bond markets were to rise, this would worsen the funding conditions for banks. If a crisis were to hit the real estate market, the quality of the collateral for the covered bonds would be reduced, and as a result the terms on which covered bonds could be issued would deteriorate. These dangers pose a risk to Estonian financial stability by making the finance provided by parent banks to their Estonian subsidiaries more uncertain. Leaning too heavily on market-based funding would expose Estonian banks to similar risks.

The assets that are used by the bank as collateral for covered bonds cannot be realised before the covered bonds have matured. This means that if a bank becomes insolvent there would be fewer unencumbered assets available to use as collateral to cover the claims of investors in unsecured bonds and for accessing additional funding in a crisis. This would be made worse if a fall in the market value of the collateral assets, especially real estate prices, meant the bank had to add additional assets to its stock of collateral. Although covered bonds have generally proven a stable source of funding in a crisis, the large share of assets acting as collateral could in certain circumstances worsen the financial position and liquidity of a bank. For this reason Eesti Pank will be monitoring the covered bond market and assessing how it affects financial stability in Estonia.

<sup>26</sup> See also Box 1 of Financial Stability Review 2/2018, on how structural changes in the banking market affect financial stability.

### **Box 5: Forecast and stress test of overdue loans in the banking sector**

This box forecasts the growth in overdue loans in the base and risk scenarios using the Eesti Pank macro model and the model of credit risk in the banking sector. Macroeconomic indicators

like GDP, corporate profit, unemployment and wages affect the ability of companies and households to service and repay their loans and through that affect the quality of the loan portfolio of the banks, which in turn affects macroeconomic developments through the price of credit and the supply of it.

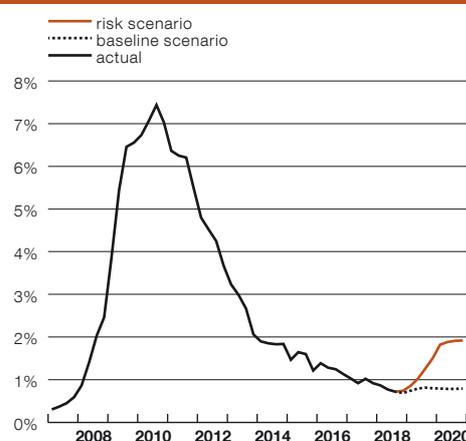
The baseline scenario is based on the Eesti Pank December 2018 economic forecast, which expects real GDP growth of 3.2% in 2019, slowing to around 2% in 2020<sup>27</sup>. The portfolio of bank loans is forecast to grow by an average of around 6-7%, which is a little more than nominal GDP. Data released since the June forecast indicate that growth in 2019 may be a little lower than predicted, but the December forecast appears largely accurate.

In the baseline scenario, the rate of overdue loans this year and next year will be around the same level as at the end of 2018 at 0.7% of the loan portfolio. A slight slowdown in growth in GDP and wages means the volume of overdue loans does increase a little, but at around the same rate as the loan portfolio itself.

The risk scenario is based on the stress test scenario used by the European Banking Authority (EBA) for the largest banks in the European Union and the European Economic Area<sup>28</sup>. This scenario leaves cumulative real GDP in Estonia 10% below where it is in the baseline scenario by the end of 2020, with unemployment rising to around 13%, and real estate prices falling 48%.

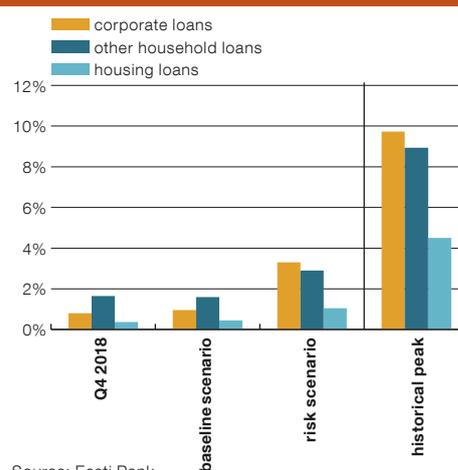
In this risk scenario, non-performing loans increase to around 2% of the loan portfolio (see Figure B5.1). Falling GDP and corporate profits and rising unemployment mean the share of corporate loans that are overdue rises to a little above 3%. Housing loans are less sensitive to negative economic shocks and the share of such loans that are overdue rises the least to a little above 1% of the loan portfolio. The share of other household loans that are overdue rises to around 3%, and the effect of the shock is passed on primarily through slower wage growth and higher unemployment (see Figure B5.2). The additional loan-loss provisions of the banks would be around 70% of their annual profits.

**Figure B5.1. The share of overdue loans in the baseline and risk scenarios**



Source: Eesti Pank

**Figure B5.2. Maximum share of overdue loans**



Source: Eesti Pank

<sup>27</sup> The data for the macroeconomic and overdue loans forecast are from the end of the third quarter of 2018.

<sup>28</sup> The largest banks operating in Estonia participated in the stress tests at group level. For the results, see the section on Swedish banking.

Smaller banks are more susceptible to the risk scenario and the share of overdue loans reaches 4% for them. Small banks are more susceptible partly because corporate and other household loans make up a larger share of their loan portfolios, and the types of loans they have are also more sensitive to shocks than housing loans are.

A structural vector autoregressive (SVAR) model was also used alongside the credit risk model of the banking sector to estimate the impact of the risk scenario. A seven dimensional SVAR model with domestic and foreign parts was estimated for this. The domestic part covers four macroeconomic and financial sector variables, which are GDP per capita growth, the non-performing loan rate, inflation from the GDP deflator, and the interest rate on loans. The foreign part has three variables for the euro area, which are GDP per capita growth, inflation from the GDP deflator, and the three-month EURIBOR<sup>29</sup>. Quarterly data from the first quarter of 1997 to the third quarter of 2018 were used in the model. The reaction of overdue loans to the risk scenario estimated from the SVAR model is around a fifth smaller than that from the credit risk model.

29 For more on the model see Appendix 2 of Financial Stability Review 2015/2 on the impact of domestic and foreign GDP shocks and monetary policy shock on the quality of loans in the Estonian banking sector.

## OTHER FINANCIAL INTERMEDIARIES

### Securities markets

**The prices of shares in Estonian companies on the stock exchange were affected by the sharp fall in prices on foreign markets in the second half of 2018, and the weaker results of some companies.** The OMXT index was down by around 6% in 2018. Prices started to rise again on foreign markets in early 2019, and together with this the OMXT index also climbed, but by the middle of March it was still below its level of the start of 2018 (see Figure 49).

**The capitalisation of the stock market in 2018 was similar to what it was a year earlier.** Tallinna Sadam came to the stock exchange last year, increasing the capitalisation by a fifth, but the departure of Olympic Entertainment Group from the exchange and the general fall in prices reduced the capitalisation by about the same amount. The capitalisation was around 2.6 billion euros at the end of December, or 10% of GDP.

**The listing of Tallinna Sadam shares and the de-listing of Olympic Entertainment Group increased trading activity in 2018.** An average of 18 million euros of transactions were executed each month last year, which is more than half as much again as in 2017, while the number of transactions was up 7%.

Figure 49. OMXT and other indexes, change from the beginning of 2014



Sources: Bloomberg, Eesti Pank calculations

**A total of 196 million euros of new bonds were issued in 2018, and the main issuers were companies in real estate and financial intermediation.** An average of two new bonds were issued each month, which is less than half as much as in 2017. The local bond market in Estonia is still relatively small next to the banking sector, and the market is dominated by individual issues that are quite large because of economies of scale. The average issue in 2018 was for 7.3 million euros, which is some 60 times larger than the average long-term bank loan issued to companies in the year. The total capitalisation of the bond market increased by 10% in 2018, and by the end of the year it was almost 900 million euros, or 3.5% of GDP.

## Investment and pension funds

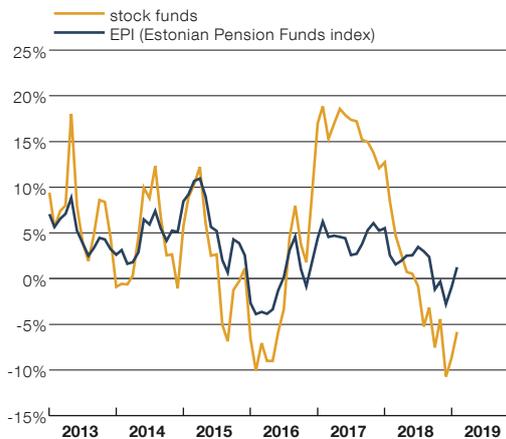
**The sharp fall in prices on foreign markets also had a negative effect on the returns on investment and pension funds** (see Figure 50). Share funds were particularly hit by the fall in prices, and their 12-month return fell to almost -11% by the end of December. The 12-month return of the EPI index, which shows the general return of funded pension funds, was around -3% at the end of 2018.

**The value of investment fund assets fell by 5% in 2018.** The total aggregate assets of investment funds declined because of the net outflow of money from the funds as well as because of the fall in securities prices. Real estate funds managed to increase the value of their assets, because of an inflow of money to a new fund that was added, and because of revaluation of assets. The total assets of investment funds were 953 million euros at the end of 2018.

**The value of pension fund assets increased by 8% in 2018.** As in previous years, it was mainly contributions paid in that increased the assets of pension funds, as the net flow into pension funds was around 412 million euros. The negative impact of the fall in securities prices reduced the assets of the funds by 111 million euros, and overall the assets of pension funds increased by 301 million euros in 2018 to almost 4.1 billion euros at the end of the year.

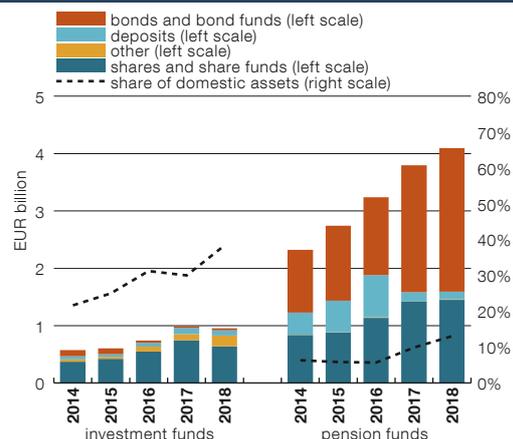
**The share of investments in Estonia increased in the assets of both investment funds and pension funds in 2018** (see Figure 51). The increase of eight percentage points in the share of investments in Estonia to 38% of investment fund assets came from the increase in the assets of real estate funds, where the share of investment in Estonia is very large. The share of investment in Estonia in the assets of pension funds rose by three percentage points over the year to 13% by the end of 2018, because the share of investment in shares and bonds in Estonia increased. There were no major changes in the structure of investment instruments of pension funds in 2018. The biggest change came in 2017, when several pension funds started to invest notably larger amounts directly in securities rather than in fund

**Figure 50. Annual change in the net asset value of funds and the EPI index**



Source: Eesti Pank

**Figure 51. Assets of investment funds and the share of domestic assets\***



\* excluding deposits  
Source: Eesti Pank

units, meaning the share of their investment that was in investment funds fell from 56% to 33%. This share has remained more or less the same since then.

## INSURANCE COMPANIES

**The insurance market continued to grow rapidly in 2018.** The growth was a little faster than in 2017 and was estimated at 11%. The Estonian insurance market is still small in international comparison, and so it may be expected that insurance premiums will continue to grow faster than GDP in future.

**The growth in the insurance sector was largely led by increased sales volumes at non-life insurance companies.** A change in how

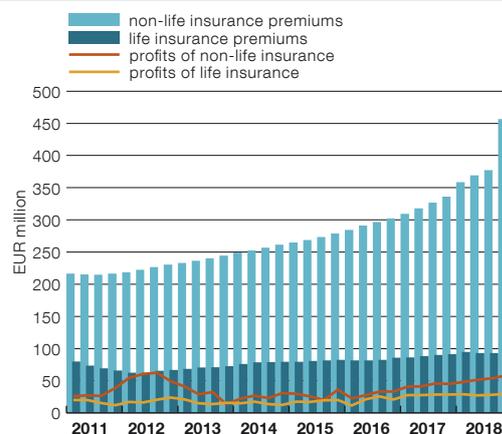
insurance premiums were recorded affected the statistics for last year, as some insurers started to record all the payments expected in a contract period at the moment the contract was signed. It is estimated though that the market grew by around 13% (see Figure 52). All the major types of non-life insurance, including mandatory motor insurance, motor third-party insurance and property insurance, contributed well to the growth in the market.

**The non-life insurance sector has in recent years become much more efficient, which is reflected in its increased profits.** The expense ratio<sup>30</sup> has fallen by more than 10% in the past five years, which means that as insurance premiums have increased, the sales and administration costs of insurance companies have risen by substantially less. At the same time the loss ratio<sup>31</sup>, which shows claims paid out as a share of premiums received, has fallen a little. Adding these two indicators gives the combined ratio, which was 82% last year, which is below the average figure internationally. There are seven insurance companies that compete in the market with a significant market share of over 5%, and they have all increased their sales volumes in the growing market in recent years.

**The growth last year in the life insurance market was at the same level as in recent years, as some 5% more was received in insurance premiums than in the previous year** (see Figure 52). The biggest risk to life insurance companies comes from products sold earlier with a guaranteed interest rate over a long period, as it is difficult in the low interest rate environment to earn the return needed to make these profitable. For this reason the average interest rate on fixed yield insurance products and the market share of such products have declined. In the years ahead, growth in the market will be driven ever more by payouts of second pillar pensions and a rise in the number of people qualifying for income tax relief on third pillar pensions.

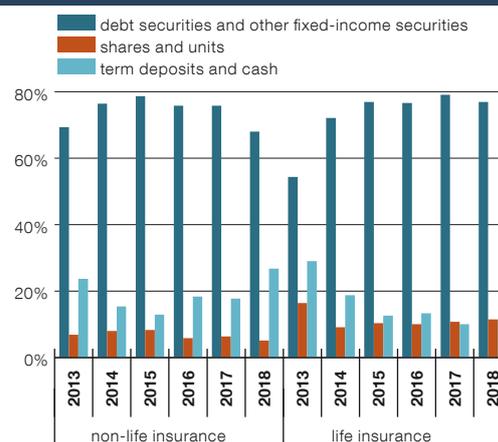
**Life insurance companies can maintain profitability by reinvesting assets in riskier asset**

**Figure 52. Four-quarter premiums and profits of insurance companies**



Sources: Statistics Estonia, public reports

**Figure 53. Investments of insurance companies**



Source: Finantsinspektsioon

**classes that have a higher return, though they have not so far done this.** Life insurers have put an increasing amount of their investment into sovereign bonds (see Figure 53), but only one tenth of assets have been put into shares and other riskier assets. Non-life insurers have also invested mainly in less risky assets, mainly corporate bonds. This investment structure of both life and non-life companies is different from those in other countries. Investments in the European Union insurance sector on average are more diversified and bond investments make up only around half of all investment<sup>32</sup>. Although the risk level of investment in bonds is mainly low, the large proportion of them means there is a risk that any

30 Operating costs / premiums received.

31 Insurance claims paid out / premiums received.

32 Data from EIOPA.

negative impact of a rise in interest rates on the prices of bonds would largely be passed through into the return on the investment portfolio.

**The risks to Estonian financial stability from the insurance sector are limited because the small size of the sector limits the transmission of the impact of any shock into the financial sector and the non-financial economy.** The exposure of the sector to risks is reduced by

the strong capitalisation of both non-life and life insurance companies. As the insurance market is quite small, it has strong potential for growth, which means that companies can grow stably and through this can adapt to changes in the financial environment. Stable growth in the market also indicates that companies and households are better insured against financial risk, which supports their solvency in unexpected circumstances.

**Stress tests by the European Insurance and Occupational Pensions Authority (EIOPA)**

EIOPA assessed the resilience of the largest insurers in Europe last year to three adverse scenarios.

- An abrupt reversal of risk premiums, with the result that financing conditions become tighter. A fifth of insurance clients choose to cancel their non-mandatory life

insurance contracts, and claims inflation increases at the same time.

- A protracted period of low interest rates, with very low rates for longer maturities. Average life expectancy lengthens faster than forecast because of innovations in healthcare.
- Several natural disasters happen within a short period.

The stress tests looked at 42 large insurance groups in Europe. They were

run at group level and the Estonian insurance companies that are part of those groups were also counted.

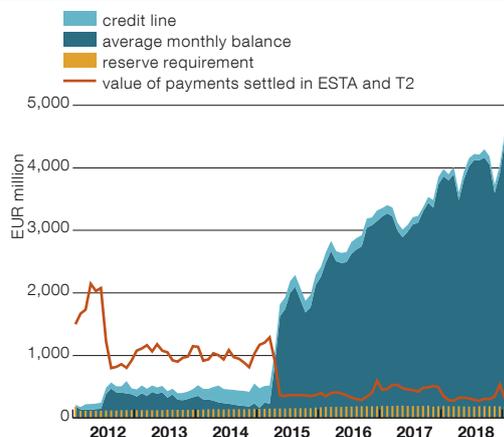
Although the results of the stress tests were not published for insurance groups, the resilience of the average insurer proved good as the scenarios played out. The share of own funds of some individual groups did fall below the required rates. The stress tests showed that interest rates remaining low for a long time and a sharp rise in the yield curve both pose significant risk to the insurance sector.

**PAYMENT AND SETTLEMENT SYSTEMS**

**Eesti Pank oversees three payment and settlement systems in Estonia, which are TARGET2-Eesti, the securities settlement system, and the card payment system.** The cross-border payment and settlement systems that are important for people, companies and banks operating in Estonia are the STEP2 retail settlement system, the RT1 instant payment system, and the TARGET2-Securities securities settlement platform.

**The TARGET2-Eesti settlement system functioned without interruption in the second half of 2018.** The operation of the Estonian component system and the banks operating in Estonia was disrupted in early 2019 by an operating risk that was realised in the central TARGET2 system. The ICM information and control module of the system was unavailable to banks through SWIFT on 2 January, which meant that banks could not use the system to check the status of transactions that had been made. The movement of messages between TARGET2 and T2S was also interrupted. The incident was caused by human

**Figure 54. Interbank payments, reserve requirement and balances at the central bank**



Source: Eesti Pank

error by one of the TARGET2 managers, but it was considered small, and the system availability was 100%.

**The liquidity buffers of the banks continue to be sufficient for settlements and the liquidity risks are minimal.** In the second half of 2018 there were four banks that had contributed pooled collateral<sup>33</sup> to Eesti Pank in connection with monetary policy transactions with the central bank.

<sup>33</sup> The pooling system takes in sufficient underlying assets from a party in a monetary policy transaction and gives them to the central bank to use to cover the credit from the central bank, which means that individual assets are not related to individual credit operations.

The intra-day lending facility, which is a credit line opened against pooled collateral in TARGET2-Eesti that allows banks to borrow automatically within a settlement day up to the limit of the credit line, was only used on a few one-off occasions. Overnight credit was not required by any of the banks. The commercial banks hold substantially more in funds at the central bank than is required (see Figure 54).

**The STEP2 retail payment system operated smoothly in the second half of 2018 without any risks being realised.** From a financial stability point of view, the RT1 instant payment system is becoming important for the Estonian banks alongside STEP2. The banks operating in Estonia, which have so far settled client retail payments in STEP2, are more and more sending payments to the RT1 instant payment system run by EBA Clearing. The system allows payments of up to 15,000 euros to be made across Europe around the clock in only a few seconds. RT1 settles payments one by one and in real time but settlement requires there to be sufficient liquidity in place. Liquidity management is the responsibility of the bank offering the instant payment, as it must make sure that it constantly has sufficient collateral funds to back up the instant payments. Each instant payment settled in RT1 is backed in full by central bank money in TARGET, and settlement finality is immediate. The system is subject to the directive on settlement finality.

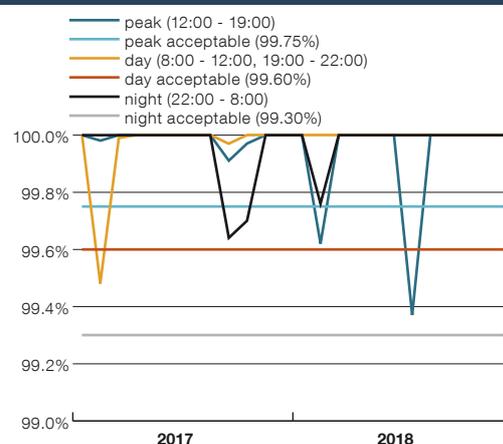
**The total volumes of payments made in this system in Europe as a whole are still small, and so the European Central Bank, as overseer of the instant payment system, has classified RT1 as an other retail payments system (ORPS), and last year it carried out a risk assessment of the instant payment system.** It assessed the clarity of the legal framework of the system and its application in all jurisdictions, the rules of management, the details of settlement finality, how the system manager can cope with insolvency of a system member, and whether the operating risks were suitably minimised. The general opinion was good, and some recommendations were made for the risk management framework, operating risks, and publication of the system rules and service fees.

**Eesti Pank has made preparations for the continuity of provision of payment services in an emergency.** Eesti Pank is responsible for supporting the uninterrupted functioning of payments and settlement both within Estonia and between Estonia and the rest of the world. Eesti Pank must organise payment services not only in normal circumstances, but also as a vital service in an emergency. To this end, Eesti Pank has nominated four banks as providers of vital payment services and has created a continuity solution for cases where external communications do not function and neither the real-time TARGET2 settlement system nor the STEP2 retail payments system can settle payments. As resolving an emergency requires different institutions to work well together, Eesti Pank has successfully tested its emergency solutions with the providers of vital payment services.

**The card payment system managed by Nets Estonia functioned well in the second half of 2018.** It had availability of 100%, and there was not one incident caused by the card payment system that interrupted card payments during the six months (see Figure 55).

**Securities settlements also functioned smoothly and without interruption.** The Estonian securities settlement system managed by Nasdaq CSD worked well in the second half of 2018, with no incidents and no realised risks. The single securities settlement platform of the

**Figure 55. Availability of the card payment system**



Source: Eesti Pank

Eurosystem, T2S, which settles T2S eligible securities transactions, also functioned without any major problem. There were four small incidents in the third quarter caused by software bugs and human error, though they were all resolved before the start of the next settlement day and had no significant impact on Estonian securities settlements.

## 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 and are intended to strengthen the resilience of credit institutions to threats to the financial sector and to limit any possible increase in the risks. Eesti Pank assesses how appropriate the measures are in each case to a regularly planned schedule, with the countercyclical capital buffer requirement assessed once a quarter, the systemically important institution buffer requirement assessed once a year, and the systemic risk buffer requirement assessed once every two years. If there are significant changes in the risk assessment, the requirements may be adjusted more frequently.

The aim of housing loan requirements is to protect both borrowers and lenders from excessive risk-taking and to contain excessively fast growth in credit. Lending requirements, which are limits on the loan-to-value ratio, the debt service-to-income ratio and the maximum maturity of loans, stabilise the credit market over the long term and generally help to keep growth in credit under control. During a phase of rapid growth in the economic and credit cycle, Eesti Pank can step sharply on the brakes by tightening the requirements, by lowering the LTV or DSTI limits or cutting back on the use of exemptions. As the growth rate of new trans-

actions slowed somewhat in the second half of 2018 in the housing market and the credit market and the lending conditions of the banks remained the same, Eesti Pank does not currently consider it necessary to change the housing loan requirements. It is not impossible that the requirements will need to be tightened in future should credit growth accelerate.

The systemic risk buffer and the additional buffer for systemically important institutions increase the resilience of banks to long-term non-cyclical systemic risks. The systemic risk buffer is intended to provide sufficient protection against risks that could materialise as a result of an unexpected deterioration in the economic or financial environment. The systemically important institutions buffer is applied to banks whose smooth and sustainable functioning is important for the financial system as a whole. Eesti Pank last assessed the relevance and sufficiency of these buffer requirements in spring 2018<sup>34</sup>. Following the assessment, Eesti Pank decided to maintain the applicable systemic risk buffer requirement of 1% of the domestic exposures for all banks. There are four credit institutions that are systemically important for the Estonian financial system, and Eesti Pank has applied the maximum buffer rate of 2% of total risk exposures to three of them, Swedbank, SEB Pank and Luminor. LHV Pank is subject to a 1% buffer rate.

Eesti Pank decided to keep the countercyclical capital buffer rate at 0%. The growth in the debt of Estonian companies and households as

**Table 1. The macroprudential measures of Eesti Pank**

Instrument	Requirement	From
Systemic risk buffer	1%	1 August 2016
Other systemically important institutions buffer		
Swedbank AS, AS SEB Pank	2%	1 August 2016
Luminor Bank AS	2%	1 July 2018
AS LHV Pank	1%	1 January 2019
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	

\* The 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

<sup>34</sup> See the Financial Stability Review No 1/2018.

a whole accelerated in 2018, though it remained slower than the growth in GDP. If the growth in debt continues to speed up, Eesti Pank can set a countercyclical capital buffer requirement for the banks at above 0% (see the section on assessing the need for the countercyclical capital buffer).

**In total the banks currently have to hold additional own funds of 1-3% of risk exposures for macroprudential purposes.** 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 exposures, of which eight percentage points must be core equity tier one capital (see Table 2). The requirements for systemically important banks are stricter by the amount of the additional buffer requirements.

**An additional measure that Eesti Pank plans to introduce is a minimum level of 15% for the exposure-weighted average risk weights applied to the housing loans portfolio, to limit the**

**further fall in the risk weights used in calculation of capital requirements by the banks that use internal ratings.** The economic environment remaining favourable has allowed those banks that use internal ratings to reduce their model-implied risk weights for mortgage loans further and further. As the banking sector in Estonia is sensitive to risks from the housing market, it is important to be sure that the banks have sufficient capital to cover those risks. Setting a floor for the risk weights would also help to ensure the effectiveness of the macroprudential buffers (see the section on the need for a minimum level for risk weights for housing loans).

**Banks in Estonia have to comply with the countercyclical capital buffer requirements of the macroprudential authorities in other countries.** If a bank operating in Estonia has credit risk exposures in a country that has set a countercyclical capital buffer requirement above 0%, it has to hold additional own funds against those positions. Twelve countries in the European Economic Area had decided as at 31 March 2019

**Table 2. Capital and buffer requirements in Estonia as at 31.03.2019**

		Systemically important credit institutions	Other banks
Macroprudential buffers	countercyclical capital buffer (Estonian exposures)	0%	0%
	systemic risk buffer (Estonian exposures)	1%	1%
	other systemically important institutions buffer	1-2%	-
Capital conservation buffer		2.5%	2.5%
Minimum own funds requirement		8%	8%
<b>Total capital and buffer requirements</b>		<b>12.5-13.5%</b>	<b>11.5%</b>
<b>of which Common Equity Tier 1 (CET 1) requirement</b>		<b>9-10%</b>	<b>8.0%</b>

**Table 3. The EEA countries with a countercyclical capital buffer rate above 0%**

Country	current rate as at 31.03.2019	from (month/year)	rate applicable in future	from (month/year)
Sweden	2.00%	03/2017	2.50%	09/2019
Norway	2.00%	12/2017	2.50%	12/2019
Iceland	1.25%	11/2017	1.75%	06/2019
			2.00%	02/2020
Slovakia	1.25%	08/2018	1.50%	08/2019
Czech Republic	1.25%	01/2019	1.50%	07/2019
			1.75%	01/2020
United Kingdom	1.00%	11/2018		
Lithuania	0.50%	12/2018	1.00%	06/2019
Denmark	0.50%	03/2019	1.00%	09/2019
Ireland	0.00%	01/2016	1.00%	07/2019
France	0.00%	12/2015	0.25%	07/2019
Bulgaria	0.00%	01/2016	0.50%	10/2019
Luxembourg	0.00%	01/2017	0.25%	01/2020

Source: ESRB

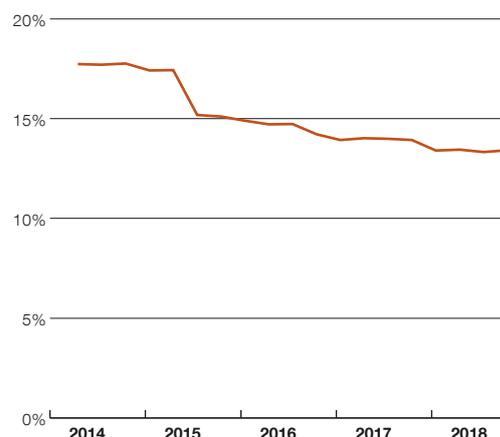
to apply rates above zero, and among those countries, Bulgaria, the Czech Republic, Iceland, Luxembourg and Norway have raised their rates in the past six months (see Table 3).

**On top of the countercyclical capital buffer, the banks in Estonia have to meet the macroprudential measures of other countries if Eesti Pank or the European Central Bank has decided to reciprocate those measures and has introduced a similar or equivalent requirement.** Macroprudential authorities in the European Union base their reciprocity frameworks on the requirements of European Union law and the recommendation issued by the European Systemic Risk Board (ESRB). Eesti Pank assesses the need for reciprocity for each measure individually. The assessment considers the size of the exposures concerned and the legal ability to introduce the corresponding measure in Estonia. At the end of March 2019 there were no requirements in force in Estonia that follow the reciprocity of macroprudential measures taken by other European Union member states.

### Assessment of the need to introduce a minimum required level of risk weights for housing loans

**Risk weights play an important role in assessing the capital needs of banks.** The minimum amount of capital that a bank needs to cover possible risks depends on regulatory requirements and the size of the bank's risk exposures. The size of the risk exposures depends on how high the risk of loan losses building up in the portfolio of the bank is assessed to be, or what the risk weights are for individual loans. The Capital Requirements Regulation<sup>35</sup> of the European Union calls for distinction to be made in assessment of risk exposures between a standardised approach, where each asset class is given a fixed standard risk weight, for example of 35% for housing loans, and the Internal Ratings Based (IRB) approach, in which risk weighting is based on the internal models of the bank, with earlier and current data and forecasts taken into account. This means that earlier losses in the loan portfolio play quite an important role in setting

**Figure 56. Weighted average risk weight of the residential mortgage loans of the IRB banks**



Sources: Finantsinspeksioon, Eesti Pank

the risk weights using internal models. Two banks in Estonia are permitted by the supervision authority to use internal models, and these IRB banks are Swedbank and SEB, which are the largest providers of housing loans in Estonia.

**The average risk weight of housing loans at the Estonian IRB banks has declined.** Over the past five years the exposure-weighted average risk weight of mortgage-backed retail exposures<sup>36</sup> of the IRB banks has fallen by a quarter from 18% to 13% (see Figure 56). The two IRB banks have quite different levels of risk weights and the gap between them has increased over the years, so that the average risk weight at one bank was 1.8 times larger than that at the other at the end of 2018.

**Although the risk weights have fallen, the risks associated with housing loans have not declined.** The fall in the risk weights reflects the favourable economic circumstances of the recent past, which has reduced the volume of non-performing loans. At the same time, indicators for the real estate market, the credit market and the economy as a whole do not show that systemic risk levels have fallen in the same way. So if the downward trend in risk weights continues, the danger emerges of banks being insufficiently conservative about their need to hold capital, and so not being sufficiently capitalised against possible risks.

<sup>35</sup> Regulation (EU) No 575/2013 of the European Parliament and of the Council.

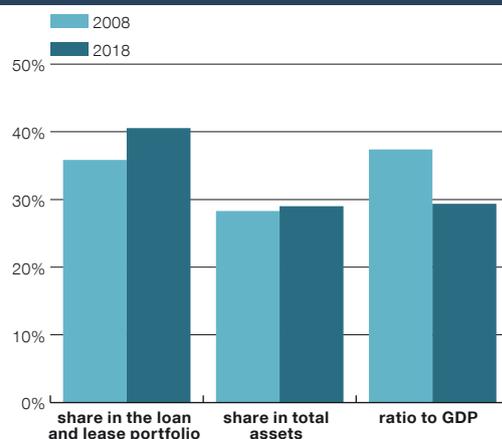
<sup>36</sup> At 97%, the overwhelming majority of the retail exposures secured by real estate of the IRB banks are loans to individuals. The proportion of loans to SMEs that meet the criteria for retail exposures is very small at 3%, and so it does not have any significant impact on the weighted average risk weight of retail exposures.

**The large share of housing loans in the assets of the banks makes them vulnerable to any negative change affecting loan servicing by households or the real estate market.** Housing loans were 41% of the non-financial sector loan and lease portfolio of the banks at the end of 2018, and 29% of the total assets of the banking sector, and were equal to 29% of GDP (see Figure 57). The ratio of housing loans to GDP was eight percentage points smaller than it was 10 years ago, but the share of housing loans in the non-financial sector loan portfolio and of the total assets of the banking sector has grown. The share of housing loans in the loan portfolios of the banks operating in Estonia is one and a half times the average level in the European Union, and twice the average level in total assets. The indebtedness of Estonian households is smaller than the European Union average, but growth in incomes is much more uncertain. This increases the risks to the sustainability of the debt if there is a sharp slowdown in growth or a recession.

**The two IRB banks have issued the majority of housing loans granted to Estonian households by volume.** Housing loans are mainly provided by banks in Estonia, and lending has become concentrated at individual large market participants. Swedbank and SEB had 75% market share for the housing loan portfolio at the end of 2018, which was four percentage points higher than five years ago (see Figure 58). The joint market share of those two banks for new loans was 80% in 2018. If the IRB banks with the large market share were to underestimate the systemic risks associated with lending to households or with the real estate market, their capital buffers could prove insufficient in the event of a negative shock, and this could then threaten the functioning of the entire banking system.

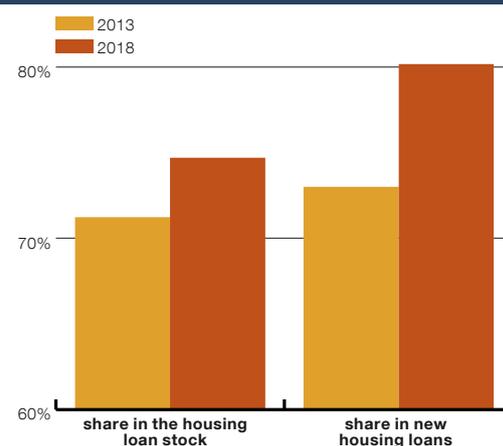
**The weighted average risk weight applied to housing loans by the IRB banks in Estonia is at the average level for the European Union.** However Sweden, Belgium and Finland have introduced macroprudential measures to ensure that the banks hold more capital against risks related to mortgage loans than their risk assessment based on internal models would suggest (see Figure 59). Given the floors imposed by Sweden and Finland for risk weights, the average risk weight for housing

**Figure 57. Share of housing loans in total lending and the assets of banks and ratio to GDP**



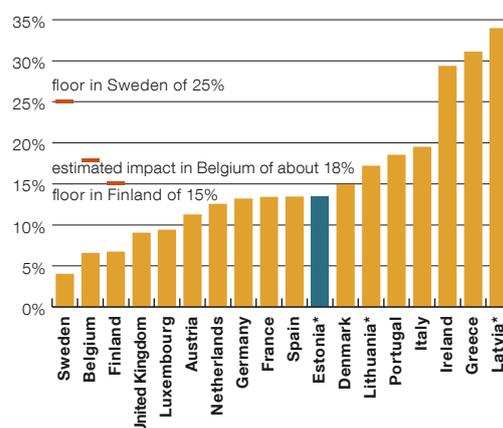
Sources: Eesti Pank, Statistics Estonia

**Figure 58. Share of the two largest banks in the housing loans market**



Source: Eesti Pank

**Figure 59. Average risk weight of the domestic retail exposures secured by real estate property of IRB banks as at 30.06.2018**



\* IRB banks headquartered in Sweden  
Sources: EBA 2018 EU-wide transparency exercise, ESRB, Eesti Pank

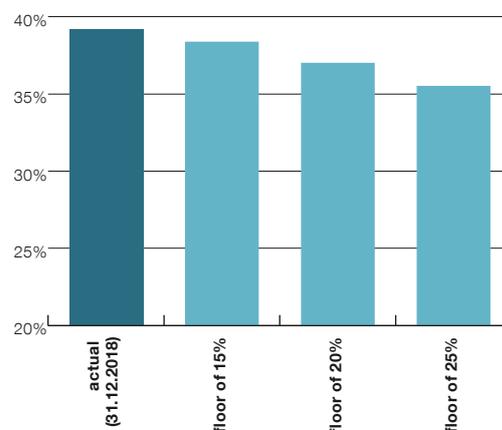
loans at the Estonian IRB banks is the lowest in the Baltic and Nordic states.

**To prevent the risk weights falling any further, Eesti Pank intends to introduce a floor requirement for risk weights.** This is permitted by Article 458 of the European Union Capital Requirements Regulation, under which member states can introduce stricter risk weighting requirements to cope with the effect of bubbles in the residential and commercial real estate sector. The risk weight floor can in principle be introduced for the risk weight of each individual loan, or for the weighted average of the risk weights in the portfolio. In the second case, the bank has more flexibility in calculating the risk level of individual loans.

**Introducing the risk weight floor helps to ensure the effectiveness of other macroprudential measures, such as the systemic risk buffer, the systemically important institutions buffers, and the countercyclical capital buffer, as the buffer requirements are applied to risk-weighted exposures.** If no minimum level for risk weights is set, a continued decline in risk weights would make the buffer requirements less effective and so the buffers that are built up could prove insufficient if a systemic risk were to materialise.

**Eesti Pank finds that in the current financial and economic environment, banks should apply on average at least 15% risk weight for housing loans.** In assessing the appropriate level of risk weights, Eesti Pank used its macro model and the credit risk model for the banking sector. The scenario used in the assessment is of a negative shock to the economy of the same size as that a decade ago in the global financial crisis, with a cumulative fall in GDP of around 20%, a fall in house prices of around 50%, and a rise in unemployment to around 20%. In such a scenario, the loan losses on housing loans would be around 100 million euros, or some 1.4% of the housing loan portfolio. Given the size of the housing loan portfolio and the minimum requirements for total own funds set by the European Union regulation, a minimum risk weight of around 16% would be needed to ensure sufficient capital to

**Figure 60. Average CET 1 ratio of IRB banks at different floors for residential mortgage loans**



Sources: Finantsinspeksioon, Eesti Pank

cover the loan losses. The confidence interval in the estimate of loan losses is relatively wide though, showing that at the 95% confidence level the optimal risk weight may fall in the range of 10-25%.

It can be concluded from the Eesti Pank analysis that at the required rate for minimum own funds the risk weight of 15% calculated for the housing loan portfolio would in current circumstances help to ensure the banks had a level of capital that would allow them to cover loan losses on housing loans to a large extent.

**Setting a 15% floor for the average risk weight for mortgage loans would affect the current capitalisation of the banks very little.**

Introducing the measure would increase the risk exposures of the IRB banks by around 140 million euros, or 2.2%. The Common Equity Tier 1 (CET1) ratio of the banks would fall on average by 0.8 percentage point (see Figure 60). The capital buffers of both IRB banks are substantially larger than required<sup>37</sup>, and so the measure would not leave them needing to raise any additional capital. The introduction of the measure would impact the capital indicators for the banks differently, as the risk weight levels in the internal models of the banks are different.

**Eesti Pank plans to set the 15% floor for the weighted average risk weight of mortgage-backed retail exposures as a preventative**

<sup>37</sup> The average CET1 ratio for the IRB banks was 39.2% at the end of 2018.

**measure to ensure the resilience of the banks to the systemic risks that come from mortgage loans. Setting this minimum level requirement will help make sure that the banks have sufficient capital buffers should loan losses rapidly increase if the economic circumstances deteriorate.**

The introduction of the measure will need to be coordinated first with the institutions of the European Union, including the EBA, the ESRB, the Commission, the Council and the European Parliament, under article 458 of the Capital Requirements Regulation. After that the measure can be introduced in the third quarter of 2019.

### **Box 6. The estimated minimum level for risk weights following the changes in BASEL III**

Regulatory changes that will happen in the future should be considered when a minimum required level for risk weights is set. From 2022 the Basel III changes will start to apply<sup>38</sup>, which will set a regulatory output floor for when the IRB banks calculate risk exposures. If a minimum required level is now set for risk weights as a macroprudential measure, then the move over to the new regulatory rules will be smoother.

Under the revised Basel principles, the level of total risk exposures at IRB banks should be at least 72.5% of the total risk exposure amount calculated using the standardised methods. A gradual transitional period to this rate is foreseen, as the regulatory output floor will be 50% in 2022 and will rise to 72.5% by 2027<sup>39</sup>. The standardised method for calculating the risk weights will also change. Currently the risk weight for residential mortgages under the standardised approach is fixed at 35%, but in the revised standardised approach the mortgage risk weights will depend on the loan-to-value (LTV) ratio of the mortgage.

The weighted average LTV ratio for the housing loan portfolios of the Estonian IRB banks was around 66% at the end of 2018. Given how housing loans are distributed by LTV ratio, the new Basel methodology would give a weighted average risk weight for those banks of around 27%. As the IRB banks will be subject to an output floor of 72.5%, the weighted average risk weight floor for those banks would implicitly be 19.8%<sup>40</sup>. This means that in future the minimum level required for risk weights will be notably higher than the current model-implied risk weights calculated using the internal models of the banks.

38 The standards agreed by the Basel Committee on Banking Supervision apply to banks operating in Estonia through the amendments to the regulation of the European Union.

39 In the first four years the floor will rise by five percentage points, and in the last year by 2.5 percentage points.

40 Only the housing loan portfolio is considered here, but the output floor will apply to the total risk-weighted assets, meaning there is some flexibility between asset classes for banks that use internal models.

### **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 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 borrowed

money 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 in future. 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 standardised credit-to-GDP gap calculated using the methodology of the Basel Committee on Banking Supervision was -15 percentage points at the end of the third quarter of 2018 and the additional gap, which is also used by Eesti Pank, was -23 percentage points at the end of the second quarter of 13** (see Figure 61), so the buffer guide was 0%. As the Basel committee methodology is not appropriate for use with the Estonian time series, additional indicators showing the development of indebtedness are important for analysing the need for the countercyclical buffer.

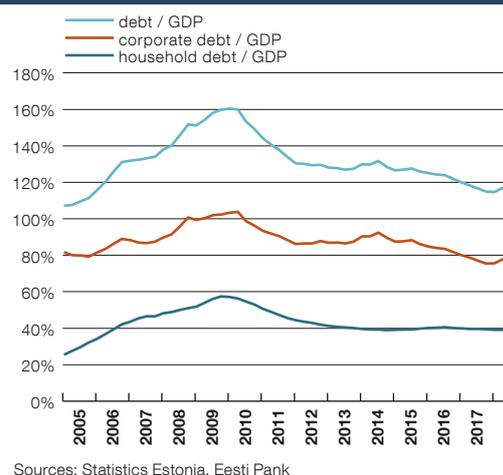
**The level of non-financial sector indebtedness has not substantially changed.** The credit-to-GDP ratio fell to 114% by the end of the third quarter, having risen slightly in the previous quarter (see Figure 62). The Eesti Pank December forecast 2018 does not expect any significant increase in the debt burden in the next two years.

**The debt of the non-financial sector grew a little more slowly in the third quarter of 2018 than in the second quarter.** The yearly growth in debt was 6.2% by the end of the third quarter of 2018. Growth slowed in the debt of both companies and households to a rate that was lower than nominal GDP growth in both cases. The danger of rapid growth in debt may be underestimated when the economy is growing fast though, and so the growth in debt is compared to the long-term average growth in the economy (see Figure 63). The debt of the Estonian non-financial sector has grown more slowly in the past four years than the eight-year average for nominal GDP, though by the end of the third quarter of 2018 its rate of growth had approached that of GDP. The growth in bank loans and leases was 6.6% in the fourth quarter.

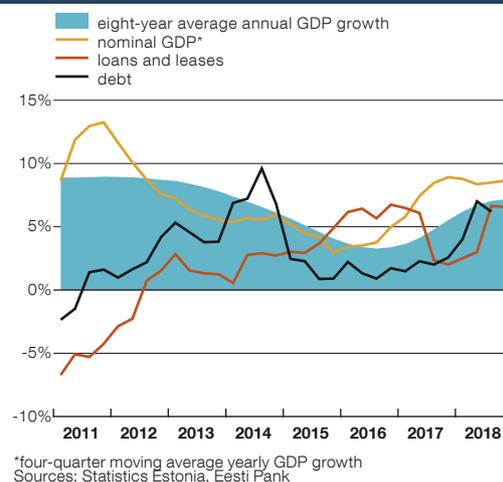
**Figure 61. Credit-to-GDP gap**



**Figure 62. Non-financial sector indebtedness**



**Figure 63. Annual growth of loans and leases, debt and nominal GDP**



### Borrowing by companies has increased a little.

As the ability of companies to finance their activities and investments with own funds has improved, corporate borrowing has remained relatively modest compared to the growth in the economy. Having been unchanged for some three years, the yearly growth in the total corporate debt accelerated in the third quarter of 2018 to around 6% (see Figure 64). The Eesti Pank December forecast expects that companies will invest more in the years ahead, but as investment as a share of the economy is low by the levels of previous decades, this will not lead to any significant growth in corporate debt, and the yearly growth in debt will be around 6-7% over the next two years.

### Growth in borrowing by companies from banks operating in Estonia reached 6% in the fourth quarter.

Such borrowing increased its share in the funding of companies because access to local loans has been relatively good and the main borrowers have been companies that traditionally fund themselves primarily from banks operating in Estonia.

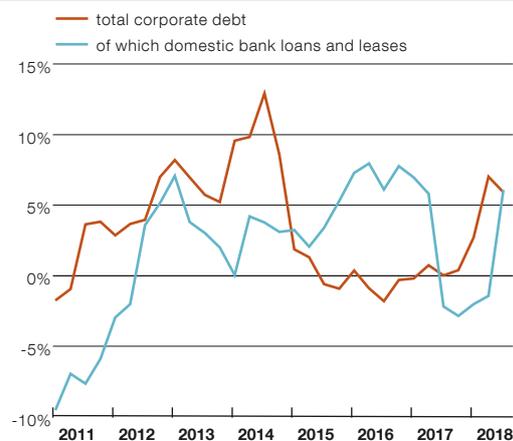
### Demand from households for loans remains strong.

It is supported by the continuing rapid growth in incomes and improved confidence, favourable interest rates, low unemployment, and an active housing market. Growth has been fast for housing loans, consumption loans and car leases. The growth in household debt has not accelerated in recent quarters but has remained at close to 7% (see Figure 65). The strong demand for labour means that wage pressures remain and the growth in borrowing could accelerate further in future.

### The largest share of household debt liabilities is made up of housing loans, and the yearly growth in the stock of such loans was 7% in the fourth quarter of 2018.

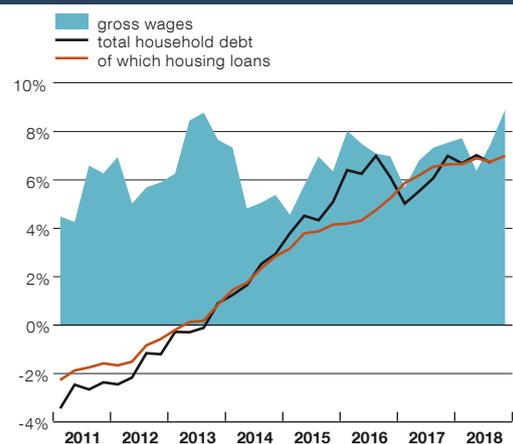
This was driven until the second half of 2018 by a relatively active real estate market, where prices rose quickly (see Figure 66). However, real estate prices have risen at a slower rate since the second half of 2018 and the rate of rise has been below its three-year average, and at the same time the rate of growth of new housing loans has also slowed. The yearly growth rate for new housing loans was 16% in 2017, but by the end of 2018 this had

Figure 64. Annual growth of corporate debt and corporate lending



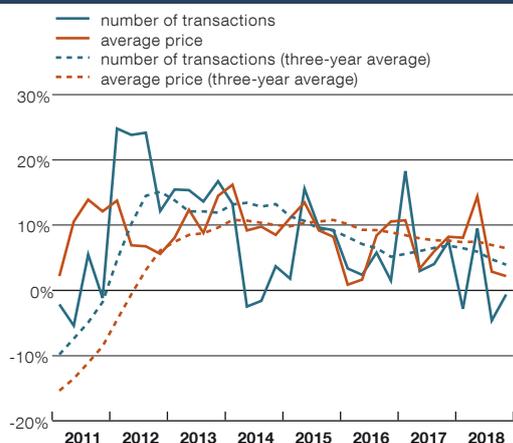
Source: Eesti Pank

Figure 65. Annual growth of household debt and the average gross wage



Sources: Eesti Pank, Statistics Estonia

Figure 66. Annual growth of housing prices and number of transactions



Source: Estonian Land Board

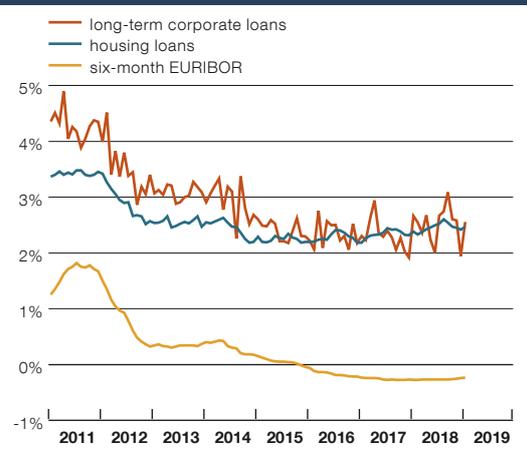
fallen to 9%. To dampen the risks from housing loans, Eesti Pank has set three restrictions for new housing loans that limit their loan-to-value (LTV) ratio to 85%, the debt service-to-income (DSTI) ratio of borrowers to 50%, and the maximum maturity of the loans to 30 years.

**The lending standards of the banks and their lending conditions have not been loosened.**

The bank lending survey shows that banks have tightened their lending conditions slightly in the past two years. Higher margins on both long-term corporate loans and residential loans to households have raised interest rates a little (see Figure 67), which suggests that the banks are not being aggressive about issuing loans.

**In consequence, Eesti Pank does not currently consider it necessary to change the countercyclical buffer rate, though if debt grows faster in future it could consider raising the rate above 0%.** The reason for this is that although the rate of growth in debt in the non-financial sector has increased, it remains below nominal economic growth for the current year and the long-term average nominal growth. Gross debt has grown faster because companies have borrowed more, which was partly because of some increase in investment. The growth in new loans to households slowed in the second half of 2018 and the residential real estate mar-

**Figure 67. Weighted average interest rates on housing loans and long-term corporate loans**



Source: Eesti Pank

ket continued to develop at a gentle pace. The growth in bank loans and leases has been supported in recent years by demand-side factors. The banks have not eased their lending standards and loan margins rose slightly in 2018. This development does not indicate any major imbalance in the credit market, though the relatively good state of the economy and low interest rates mean the risk remains of excessive borrowing that could increase the risks from the credit cycle. For this reason Eesti Pank monitors the growth in debt and indicators that affect it, and can if necessary raise the countercyclical capital buffer rate above 0%.

## APPENDIX 1. ASSESSMENT OF OVER OR UNDERVALUATION OF THE REAL ESTATE MARKET WITH AN ECONOMETRIC MODEL

Housing prices have risen strongly in Estonia since 2013. The real value of the housing price index rose by 27% in 2013-2017, which was more than in the majority of European countries. This sharp rise in prices may have been caused by several factors, notably the recovery in prices after the sharp fall during the recession of 2009-2010, rapidly rising wages, and low interest rates. To measure more accurately how much of this is a long-term change in real estate prices caused by changes in the fundamental factors that set those prices, and how much it reflects a short-term effect that is independent of the fundamental factors, an econometric model has been used to analyse prices with the following estimation steps:

1. the econometric model is used to estimate the coefficients for the long-term real estate prices equation;
2. the model values of real estate prices are estimated using the main underlying factors that set real estate prices;
3. the difference between actual real estate prices and the model values is calculated, which can be interpreted as the amount by which real estate is undervalued or overvalued.

A suitable model for panel data that can identify the difference between long-term and short-term changes in real estate prices is a weighted dynamic ordinary least squares model:

$$\tilde{y}_{it} = \tilde{X}'_{it}\beta + \sum_{j=-q_i}^{r_i} \Delta\tilde{X}'_{it+j} \delta_i + \tilde{u}_{it}$$

where  $\tilde{y}_{it}$  and the vector of explanatory variables  $\tilde{X}'_{it}$  contain the data purged of the individual deterministic trends. The model also eliminates the asymptotic endogeneity of the variables and serial correlation.

The base is the long-term model for property prices, where the dependent variable is the price index for residential property, adjusted seasonally and for the CPI, in log values. The explanatory variables are:

1. compensation of employees, adjusted seasonally and for the CPI, in log values;
2. the real mortgage interest rate, seasonally adjusted;
3. the number of dwellings, adjusted for population, in log values.

The model assumes that differences between countries come from the different levels of real estate prices and short-term fluctuations, but the contribution of fundamental factors to price changes is the same across countries. The sample period runs from the first quarter of 2005 to the fourth quarter of 2017, and there are 16 European countries in the sample for which all the necessary data are available. The robustness of the estimated coefficients is tested by running the model with different specifications.

The baseline model finds a positive correlation between the housing price index and compensation of employees, and a negative correlation with the number of dwellings and the real interest rate. If compensation of employees rises by 10%, housing prices rise by around 13.5%, and if the interest rate falls by one percentage point, the housing price index rises by 0.6%. An increase of 1% in the number of dwellings reduces the housing price index by around 1.9%.

Figure A1.1 shows the difference between the actual real estate prices and the values found from the baseline model with 95% confidence bounds. The model finds the real estate market was most overpriced in the third quarter of 2007, when actual prices exceeded the model values by an estimated 36%. In the third quarter of 2009, the real estate market was undervalued by around 21%. Real estate prices have been overvalued by 5-10% since 2014 according to the point estimates, but given the 95% confidence bounds this cannot be concluded for the recent years, because the equilibrium value of zero is within the confidence bounds. More accurate results could be achieved by extending the time period covered by the estimations in the model.

**Figure A1.1. Residential real estate market over or undervaluation in the baseline model**

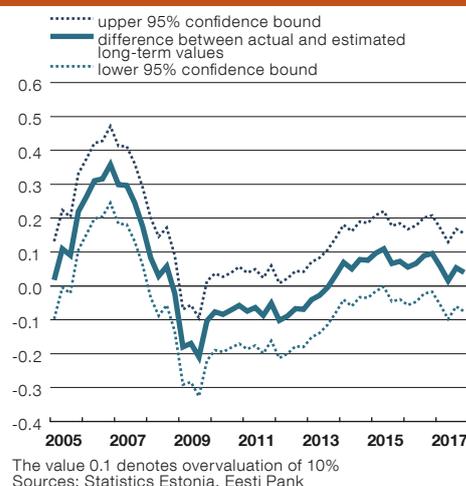


Figure A1.2 shows the contribution of each core factor to the yearly changes in the model values for Estonian real estate prices. The main driver of real estate prices throughout the period has been rising incomes. The actual rise in real estate prices exceeded the rise indicated by fundamental factors in 2016, but in 2017 prices rose more slowly than the model values, which meant the market was overvalued by less. The increase in compensation paid to employees in the fourth quarter of 2017 gave some 7.8 percentage points of the yearly growth in the model value, the fall in real interest rates gave around 1.5 percentage points, and the increase in living space lowered the model value by around 2.9 percentage points. In total the model values for real estate prices increased because of changes in fundamental factors by around 6.4% in 2017, meaning that the increase exceeded the growth in real prices by more than five percentage points.

**Figure A1.2. Change in the equilibrium price level and contributions of variables**

