SYSTEMIC RISK BUFFER AND OTHER SYSTEMICALLY IMPORTANT INSTITUTIONS BUFFER

Analysis of the setting of the buffer requirements in Estonia

April 2016

1. SUMMARY

The stability of a country's financial system can be affected by risks arising from the financial cycle, and also by risks that are fundamentally linked to the structure of the economy and the financial sector of that country. Possible macroprudential measures for reducing systemic risks that are structural in nature are defined in the European Union's Capital Requirements Directive (CRD IV) as the Systemic Risk Buffer (SRB) requirement and the Other Systemically Important Institutions Buffer (O-SII buffer) requirement.

Earlier decisions. Eesti Pank introduced a requirement on 1 August 2014 for all banks and banking groups authorised in Estonia to hold a systemic risk buffer of 2% of their total risk exposure. The systemic risk buffer requirement that has applied so far is intended to reduce the structural vulnerabilities of the Estonian economy and the financial sector. Eesti Pank designated Swedbank AS and AS SEB Pank as credit institutions that are important for the Estonian financial system, but postponed a decision on their specific buffer rates until the first half of 2016 so as to be able to assess both the appropriate rate for the SRB and the O-SII buffer and the combined impact they would have.

Planned buffer rates. Eesti Pank plans to replace the current 2% systemic risk buffer from the third quarter of 2016 with two capital buffer requirements (see Table 1):

1. A systemic risk buffer of 1% of risk exposures located in Estonia; the buffer rate will apply for all banks and banking groups authorised in Estonia.
2. An other systemically important institutions buffer of 2% of total risk exposure; the buffer rate will apply to Swedbank AS and AS SEB Pank.

Reasons. The reasons behind the systemic risk buffer lie in the structural vulnerabilities of the Estonian economy. The Estonian economy is primarily vulnerable because it is small and open. This lets problems caused by unforeseen negative shocks emerge rapidly and to a greater extent than in many other European countries. The risks are amplified by various structural factors, notably the high proportion and concentration of exports and investment, the relatively large indebtedness of the non-financial sector in relation to incomes, the comparatively modest level of household financial buffers, and the very bank-centred financial sector. Estonia's previous experience has shown that an unexpected worsening of the economic environment can lead to a rapid deterioration in the ability of companies and households to service their debts, meaning that banks need to find additional capital to cover possible loan losses at short notice. Having sufficient capital on hand can help banks cope with unexpected financial difficulties.

The reason for having additional buffer requirements for systemically important credit

Table 1. Planned capital buffer requirements in Estonia		
	Systemic Risk Buffer	**Other Systemically Important Institutions Buffer**
Buffer rate	1%	2%
Scope	all banks and banking groups on an individual and (sub)consolidated basis	Swedbank AS and AS SEB Pank on an individual and subconsolidated basis
Risk exposure	risk exposure located in Estonia	total risk exposure amount calculated in accordance with Article 92(3) of Regulation (EU) No 575/2013 of 26 June 2013
Entry into force	Q3 2016	Q3 2016
Legal basis	Credit Institutions Act § 86[49]	Credit Institutions Act § 86[48]

institutions is the high level of concentration in the Estonian banking sector, where the two biggest banks hold over 60% of the total assets of the banking sector with a value equal to 70% of GDP. In addition, the large banks are indirectly closely connected to each other, as the structure of their assets and funding is similar and thus vulnerable to the same developments or shocks. The additional buffer will help reduce the negative impacts that possible financial distress at one systemically important bank could cause for the functioning of the financial system and for the real economy.

Calibration of rates. There were two reasons why the systemic risk buffer requirement was introduced in 2014. The first was to boost the resilience of banks in the face of the vulnerability of the Estonian economy, and the second was to reduce the risks arising from the structure of the financial system. The new proposals will make the banking sector cover the risks stemming from high concentration with the new buffer, which will apply to systemically important institutions. This shift of the buffer requirements is the main reason why the systemic risk buffer rate is being cut by one percentage point to 1% and applied only to risk exposures located in Estonia. In calibrating the other systemically important institutions buffer rate at 2%, Eesti Pank followed the equivalent rates set elsewhere in the Nordic and Baltic region and the assessment scores of the systemic importance of the banks operating in Estonia. As the rates for the systemic risk buffer and the other systemically important institutions buffer are adjusted, the effective rate for the buffer held to cover structural risks will rise for the Estonian banking sector as a whole from 2% to 2.6%.

Expected impact. At the end of 2015 all the credit institutions authorised in Estonia met the minimum requirements for own funds and the systemic risk buffer requirement introduced for macroprudential purposes with a sufficient margin. The own funds ratios of the systemically important banks exceeded the requirements by more than 25 percentage points. This means that the impact on the capitalisation of banks and the financing of the economy from effectively raising the total buffer requirement will be small in the near future. As

the cross-border activities of the banks authorised in Estonia are modest in scope and their exposure abroad is negligible, the buffer requirements will not have a significant impact on the other member states of the European Union or on the European Union as a whole.

Recognition by other countries. At some 26%, a relatively large part of the assets of the Estonian banking sector is held by branches of foreign banks. In order to increase awareness of the structural vulnerabilities in the Estonian economy, to ensure a level playing field, and to support the effective implementation of the systemic risk buffer requirement, Eesti Pank is requesting the authorities of other member states to apply equivalent additional buffer requirements to the banks that provide banking services in Estonia through branches or directly cross-border for their risk exposure in Estonia.

2. THE LEGAL BASIS FOR THE BUFFER REQUIREMENTS, THE AIMS, AND THE PRINCIPLES OF IMPLEMENTATION

The European Union Capital Requirements Directive 2013/36/EU established the basis for member states to set a systemic risk buffer requirement for credit institutions and an additional buffer requirement for those institutions that have been identified as systemically important. The buffer requirements are added to the minimum requirements set out in Article 92 of Regulation (EU) No 575/2013 of the European Parliament and of the Council and they must be met from Common Equity Tier 1 own funds.

Systemically important institutions are defined as either global systemically important institutions (G-SIIs) or other systemically important institutions (O-SIIs). There are no credit institutions registered in Estonia that meet the criteria for global systemically important institutions, while other systemically important institutions, which are important to the Estonian financial system, are defined by Eesti Pank.

The Capital Requirements Directive was transposed into Estonian law by changes in the Credit Institutions Act in 2014. The requirement for the systemic risk buffer is given in paragraph 86[49] of the act, and the requirement for the other systemically important institutions buffer in paragraph 86[48]. Eesti Pank as the macroprudential authority decides on the buffer rates and they are set by a decree of the Governor of Eesti Pank. As Estonia is one of the European Union member states covered by the single supervisory mechanism, the European Central Bank is involved in setting the buffer rates and has the power to set higher rates if this is justified[1].

Both the systemic risk buffer and the other systemically important institutions buffer help primarily to reduce structural systemic risks:

- The aim of the systemic risk buffer is to avoid or mitigate long-term non-cyclical systemic risks that could have serious negative consequences for the financial system and the real economy of the member state. The buffer helps to increase the resilience of credit institutions and to reduce the possible build-up of risks.
- The aim of the other systemically important institutions buffer is to increase the resilience of systemically important market participants and through that of the whole system. The additional buffer requirement helps to reduce the risks to both the financial system and the real economy that could lead systemically important banks to fail to operate. The higher capital buffer requirement will also help limit excessive risk-taking owing to bailout expectations when credit institutions are perceived to be 'too big to fail'. In this way, the buffer reduces the potential impact on the taxpayer of any such bank going bankrupt.

The Capital Requirements Directive allows the buffer rate applied to other systemically important institutions to be up to 2% of total risk exposure. No upper limit is set for the systemic risk buffer in the directive, but the principles and procedures for coordination with the institutions of the European Union (the European Commission, the ESRB and the EBA) and the other member states differ depending on the buffer level being set. If the rate planned for the systemic risk buffer is up to 3% of risk exposures, the designated authority of the member state must inform the parties listed in the directive one month in advance of the decision being published.

If a systemic risk buffer and an other systemically important institutions buffer are being set at the same time, their interaction must be considered. If the systemic risk buffer only applies to domestic exposures, the other systemically important institutions buffer applies on top of it. If the systemic risk buffer requirement applies to total risk exposure, then whichever of the two buffer requirements is set higher must be met.

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1 See Article 5 of European Union Council Regulation (EU) No 1024/2013.

If the other systemically important institution is part of a cross-border banking group, consideration must be given to the buffer rate that applies to the parent bank on a consolidated basis. The buffer rate that applies for such credit institutions may be up to 1%, or not more than the rate that applies at the consolidated level to the global or other systemically important institution. The higher of these two values will set the limit for the rate.

Credit institutions that are important for the Estonian financial system are designated by Eesti Pank and the appropriateness of the buffer rates applied to them is generally assessed once a year. The appropriateness of the systemic risk buffer rate is assessed by Eesti Pank once every two years.

3. THE REASONS FOR SETTING THE SYSTEMIC RISK BUFFER

3.1 The structural features and vulnerabilities of the Estonian economy

The Estonian economy is small and open, which means it is highly susceptible to any negative influences. Although the flexibility of a small country helps to reduce the risks to it and the Estonian general government has little debt, there are several sources of risk that could compound the negative consequences for the real economy and the labour market of any deterioration in the economic environment. The banks dominate financial intermediation in Estonia, and so any decline in the ability of the real sector to repay loans following such a deterioration could quickly lead to increased loan losses for the banks.

• **The small size and openness of the economy** Estonia's gross domestic product in 2015 was around 20 billion euros, making the Estonian economy one of the smallest in the European Union alongside those of Malta and Cyprus. Per capita GDP has increased from year to year, and in 2014 it was 76% of the European Union average at purchasing power parity.

Estonia's economy is very open and the total value of imports and exports has averaged 164% of GDP over the past five years (see Figure 1), which was double the average of 82% for the countries of the European Union.

Mainly because of this small size and this openness, the Estonian economy reacts easily to negative economic developments. In the past decade the Estonian economy has gone through a dramatic cycle of boom and bust (see Figure 2), which has left the Estonian GDP growth rate among the most volatile of any in Europe. Assuming that convergence with the income levels of the wealthier member states continues, the expectations will remain that the Estonian economy will grow faster than the average for the countries of the euro area, and inflation will be higher. With a single monetary policy, this will mean relatively low real interest rates, which may encourage faster credit growth and lead imbalances to appear in the economy.

Figure 1. Trade openness measured as exports and imports as % of GDP
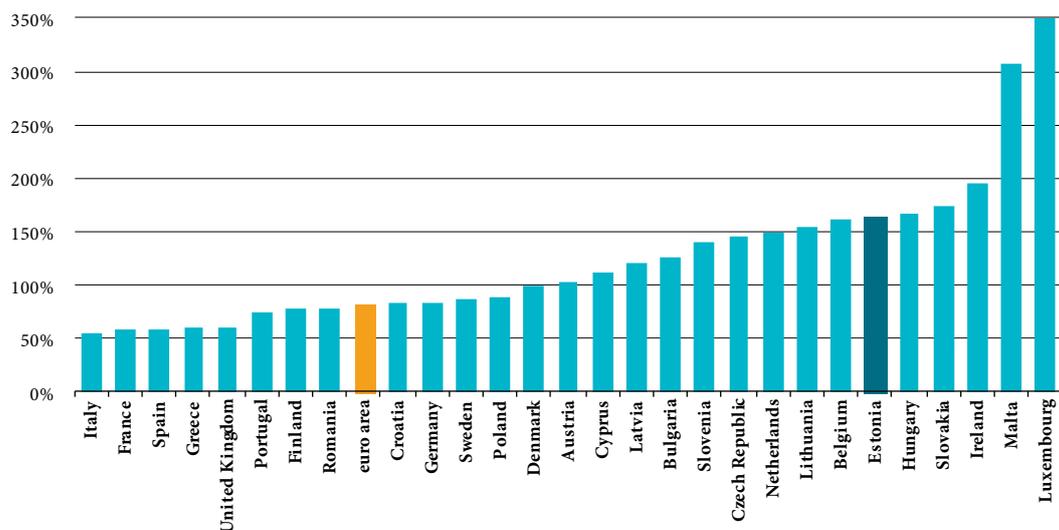
Source: Eurostat
Note: 2010-2014 average

Figure 2. Real GDP growth year-on-year in Estonia and the euro area
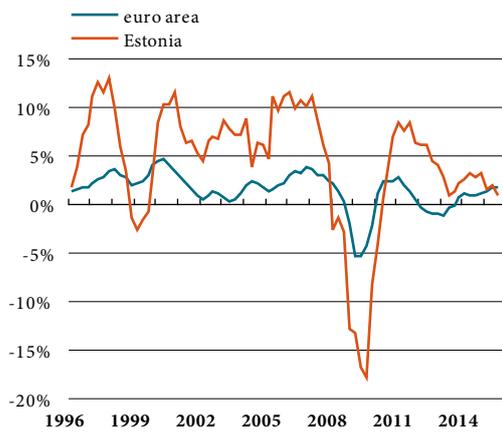
Sources: Eurostat, Statistics Estonia

Figure 3. Geographical distribution of exports

Source: Statistics Estonia

• **The high share and concentration of exports**
Estonia's exports of goods and services have been running at 84% of GDP on average over the past five years, which is twice the average share in the euro area or the European Union. Value added from exports is about 50% of GDP.
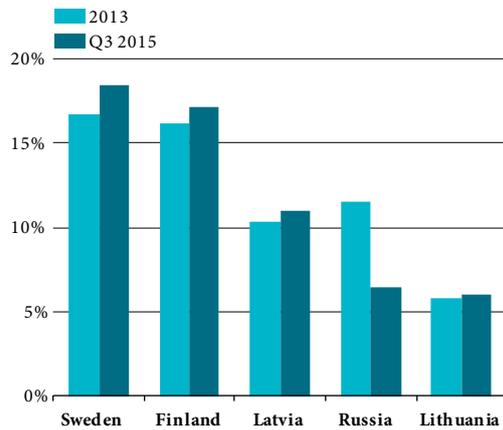
Another key feature of Estonian foreign trade alongside the large share of exports is their relatively high geographical and sectoral concentration. As exports mainly go to neighbouring countries, the economy depends to a large extent on what happens in the local region (see Figure 3).

It is significant for the vulnerability of the economy that many of Estonia's main trading partners, particularly Latvia, Lithuania and Russia, are also among the countries with the most volatile economic growth in Europe. The share of exports going to Russia has declined a long way in recent years however, partly because of the fall in purchasing power in Russia, and also because of the Russian trade sanctions. The share of Estonia's exports going to countries with more stable growth has increased in contrast (see Figure 4).

• **The high share of investment**
Investment generally makes up a higher share of GDP in countries undergoing income convergence than it does in wealthier countries. How-

ever, investment is the component of GDP that is most affected by expectations and estimates, and as a result it is potentially a major source of volatility in economic growth.
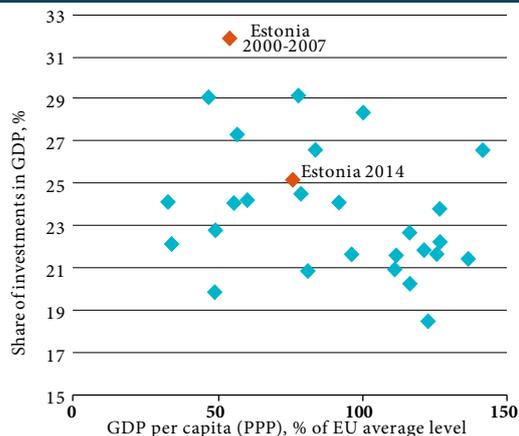
Investment in Estonia was the highest in the European Union in 2000-2007 as a share of GDP at 32%, but in the subsequent years of the economic crisis the share fell steeply (see Figure 5), dropping to 25% in 2014. The Estonian investment rate still remains above the European Union average and it

Figure 4. Change in share of exports by countries
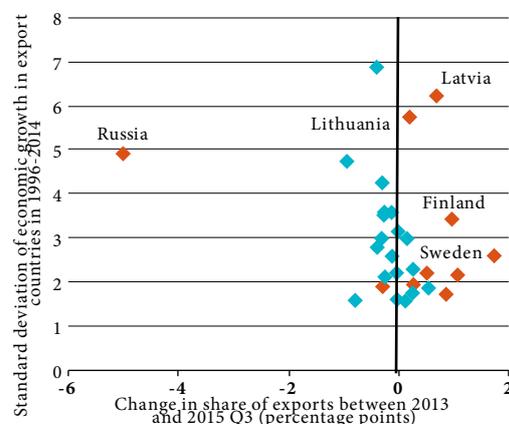
Sources: IMF, Statistics Estonia
Note: 30 main export countries, with the 10 most important shown in red

Figure 5. Investment and income levels in the EU member states

Share of investments in GDP, %

GDP per capita (PPP), % of EU average level

Estonia 2000-2007

Estonia 2014

Source: Eurostat
Note: data for other EU countries are given as an average of 2000-2007

Figure 6. Private sector indebtedness and income levels in the EU member states

Private sector consolidated debt as a share of GDP at the end of 2014

GDP per capita (PPP), % of EU average level

Estonia

Source: Eurostat
Note: Excludes the countries with the highest debt-to-GDP ratio (Cyprus and Luxembourg)

will probably remain higher in future than the rate in the majority of countries with higher income levels.
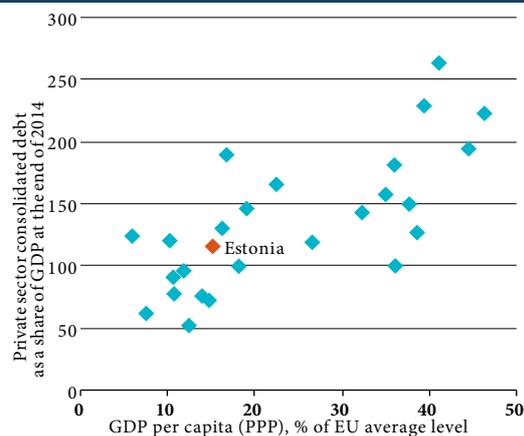
The relatively high volume of investment has meant that inflows of capital to Estonia have been large, with the net international investment position (NIIP) standing in the red in 2014 by some 44% of GDP, which passed the imbalance threshold of -35% of GDP that triggers an Alert Mechanism Report[2] from the European Commission. The negative Estonian NIIP balance was mainly due to direct investment however, which poses a lower risk to the economy.

- **High levels of debt in the private sector in relation to incomes**

The consolidated debt of Estonian households and companies stood at 116% of GDP at the end of 2014, which was 37 percentage points below the peak it hit in 2009. The indebtedness of the Estonian private sector was below the average for the member states of the European Union at the end of 2014, and it was also below the threshold of 133% used in the Alert Mechanism Report of the European Commission. However, indebtedness in Estonia remains higher than in several other coun-

tries with similar levels of income (see Figure 6)[3].

High levels of debt make the economy more vulnerable as they make recovery from any negative developments in the economy or the labour market harder if households have to restrict their consumption and increased problems with loan quality force banks to reduce the supply of credit.

- **The modest level of household financial buffers**

Estonian households have significantly less in financial assets than the average in the European Union (see Figure 7). This gives them less leeway for maintaining consumption at the same level using financial buffers that they have previously built up if the labour market deteriorates or their ability to service their loans weakens.

The Estonian labour market is more flexible than those in other countries in the European Union and employment protection law is less strict. Labour costs have risen very rapidly in Estonia in recent years though. The most recent Alert Mechanism Report by the European Commission found that the growth in nominal unit labour costs of 13% in Estonia over the past three years was faster than in other countries and breached the

2 The European Commission produces an annual Alert Mechanism Report for member states of the European Union based on their economic indicators and using the indicators to estimate and define possible economic imbalances on which the countries should focus.

3 See also *Box 3. The indebtedness of the Estonian private sector in comparison to other European countries.* Financing of the Economy. Eesti Pank, February 2016.

Figure 7. Households liquid assets to GDP

investment funds shares/units
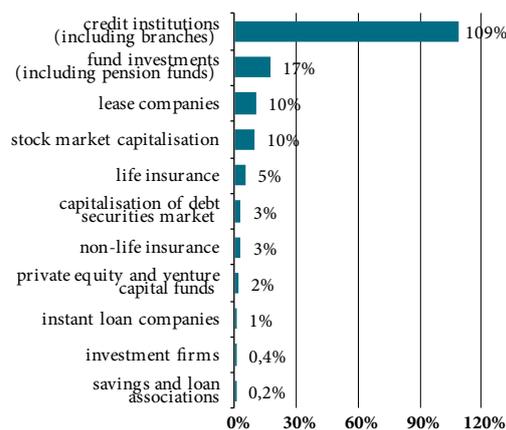listed shares
debt securities
currency and deposits
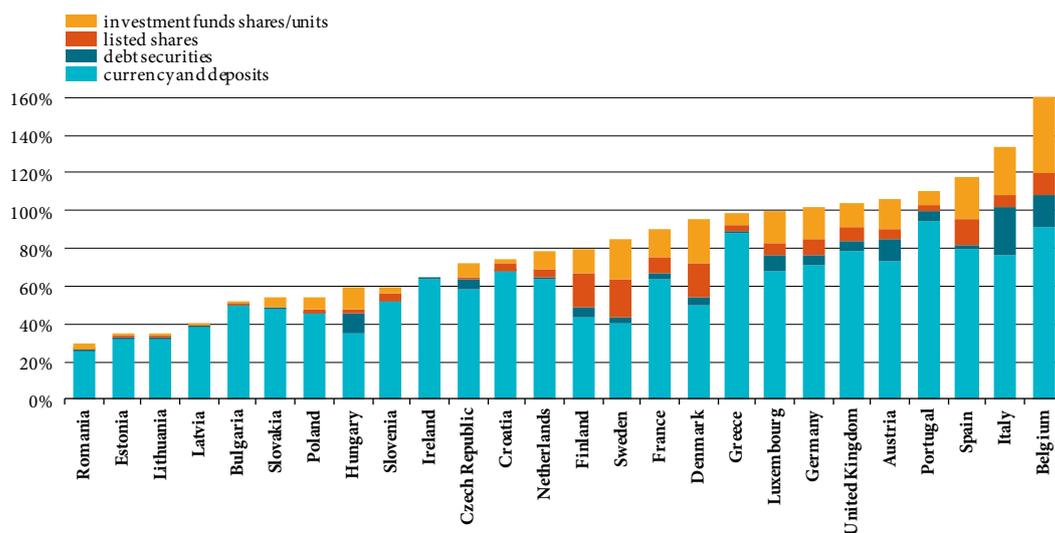
Source: Eurostat
Note: at the end of September 2015

Commission's threshold. The gap between wage growth and productivity growth has widened in recent years, which is a strong indicator of imbalances arising given the modest economic growth in Estonia.

- **A very bank-centred financial sector**

The Estonian financial sector is very bank-focused (see Figure 8). Although the share of banks has decreased slightly since the downturn of 2008-2009, banks still account for around 70% of financial sector assets. Lease companies, which are mostly owned by big banking groups, account for another 6% or so. Local share and bond markets have taken a back seat as a source of funding for companies and make up only 8% of the financial sector. To ensure a stable supply of funding for the economy it is important for banks to have sufficient capital buffers so that they can fulfil their role as the main intermediary of funding even in a harsher economic environment.

Figure 8. Estonian financial sector assets to GDP

credit institutions (including branches)	109%
fund investments (including pension funds)	17%
lease companies	10%
stock market capitalisation	10%
life insurance	5%
capitalisation of debt securities market	3%
non-life insurance	3%
private equity and venture capital funds	2%
instant loan companies	1%
investment firms	0,4%
savings and loan associations	0,2%

Sources: Finantsinspektsioon, Eesti Pank
Note: at the end of March 2015

3.2 The sensitivity of the banking sector to vulnerability in the economy

The effect of a sharp deterioration in the economic environment on the Estonian banking sector is estimated by stress tests in two stages. First the negative macro scenario is set up, then the effect of the scenario on the loan quality of the banking sector is estimated.

A vector autoregressive macro model is estimated to set up the negative macro scenario, allowing account to be taken of the mutual impact of key economic indicators. Two risk scenarios were modelled with this, in which growth is 15 or 20 percentage points lower than in the baseline scenario (see Figure 9). The baseline scenario is taken from the economic forecast published by Eesti Pank in December 2015[4].

The effect of the baseline and risk scenarios on loan quality is estimated with the credit risk model of the Estonian banking sector[5].

In the baseline scenario, the share of overdue loans[6] is approaching the long-term level that may be considered natural in normal lending activity (see Figure 10). There is some small room for a reduction in the shares of overdue corporate loans and other household loans but the share of housing loans overdue is already at its natural level, below which it cannot easily fall.

In the most negative risk scenario GDP drops by about as much as in the last economic crisis. The unemployment rate rises by 8 percentage points more than it does in the baseline scenario, wage growth is 8 percentage points lower and real estate prices fall by around 26%. The result is that the financial situation of borrowers worsens as does their ability to repay debt, and the share of over-

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4 Estonian Economy and Monetary Policy 2/2015. Eesti Pank, December 2015.

5 The credit risk model is a further development of the model described by Kattai, R. in *Credit Risk Model for the Estonian Banking Sector*, Eesti Pank, Working Paper Series 1/2010. The same model is used for forecasting overdue loans in the Eesti Pank Financial Stability Review and for stress testing of the banking sector.
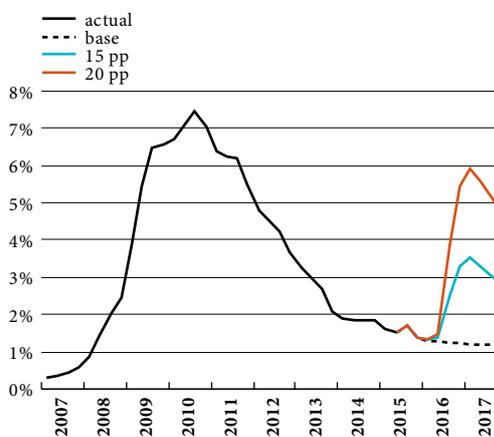
6 Overdue loans are taken as those that are overdue for more than 60 days.

Figure 9. Real GDP assumptions in the base and risk scenarios
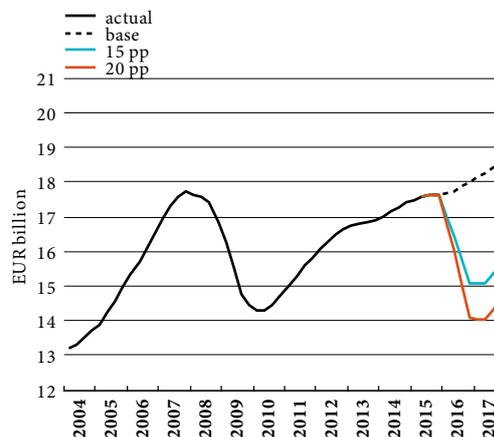
Source: Eesti Pank

Figure 10. Overdue loans ratio for base and risk scenarios

Source: Eesti Pank

due loans in the loan portfolio of the real sector increases to around 6%.

The most sensitive to the risk scenario is the quality of corporate loans (see Figure 11). In the harshest risk scenario the share of overdue corporate loans in the portfolio rises to about the level it was at after the last economic crisis.

However, the capacity of the real sector to cope with negative economic developments is notably better than it was previously. A much steeper fall in the economy is needed to produce the same rate of overdue loans than was the case earlier.

The share of all housing loans that are overdue increases by up to 1.6 percentage points from the baseline scenario, depending on the risk scenario used, while the difference for other household loans is up to 3.4 percentage points.

Write downs of loans made to cover possible loan losses increase in the different risk scenarios by up to 160 million euros, which is up to 2.1% of risk-weighted assets (see Figure 12). After the last economic crisis the volume of write downs was estimated at around 325 million euros, or 2.8% of risk-weighted assets.
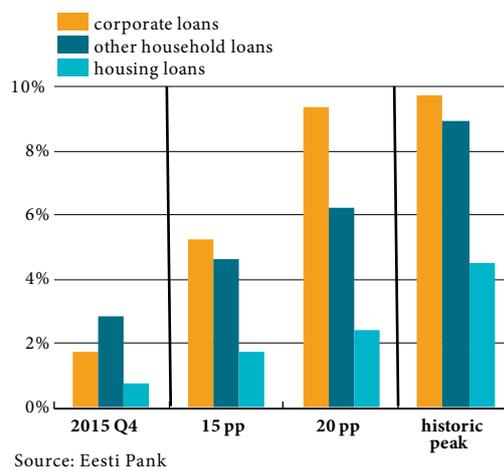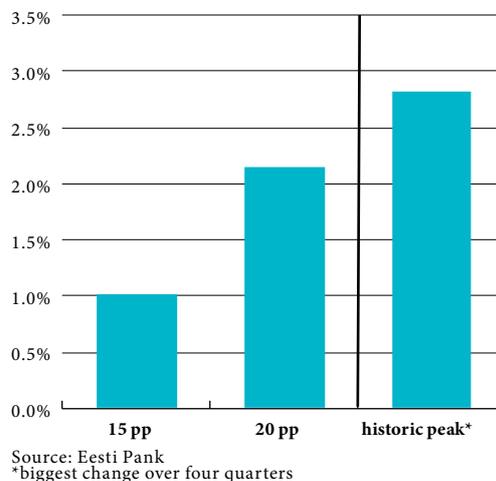
Figure 11. Overdue loans ratio

corporate loans
other household loans
housing loans

Figure 12. Additional loan loss provisions to risk weighted assets

Source: Eesti Pank
*biggest change over four quarters

Systemic Risk Buffer and Other Systemically Important Institutions Buffer

4. THE REASONS FOR SETTING THE OTHER SYSTEMICALLY IMPORTANT INSTITUTIONS BUFFER

The banks make up a large part of the Estonian financial sector. Banks have around 70% of the total assets of the financial sector, and are the main source of funding for the real sector because the local securities markets and other financial intermediaries are so small. The Estonian banking sector in turn stands out for its high degree of concentration and the very large role played by foreign banks.

- **The high concentration of the banking sector**

The Estonian banking sector is one of the smallest in the European Union. The total assets of the banks in Estonia were a little over 110% of GDP at the end of 2014, while the average for countries in the European Union was over 290% of GDP (see Figure 13). At the same time, the Estonian banking sector is one of the most concentrated in Europe. The Herfindahl index, which measures this, was over 24% for Estonia at the end of 2015, which is around twice the average for the European Union.

At the end of 2015, 16 credit institutions were operating in the Estonian banking market. The four largest banks have over 85% of the total assets of the banking sector, and the two largest of them are subsidiaries of foreign banks, while the other two are branches (see Figure 14).

In December 2015 Eesti Pank named Swedbank AS and AS SEB Pank, the two largest credit institutions in Estonia, as systemically important for the domestic financial system[7]. The total assets of these two banks were worth around 70% of Estonian GDP at the end of 2015, they had issued some 65% of the loans to the real sector, and they held 75% of the total deposits of Estonian companies and households.

Eesti Pank finds the two largest banks to be systemically important because if either were to cease functioning it would be very difficult to replace its
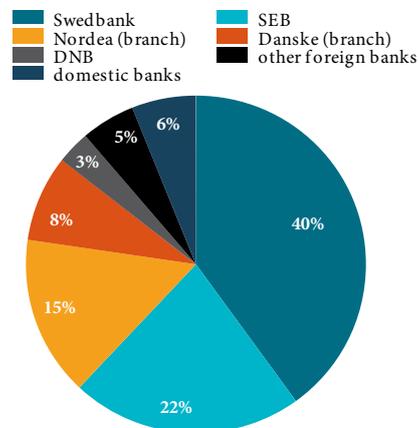
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7 Identifying the systemically important credit institutions in Estonia Eesti Pank, December 2015.

Figure 13. Size and concentration of the banking sector at the end of 2014
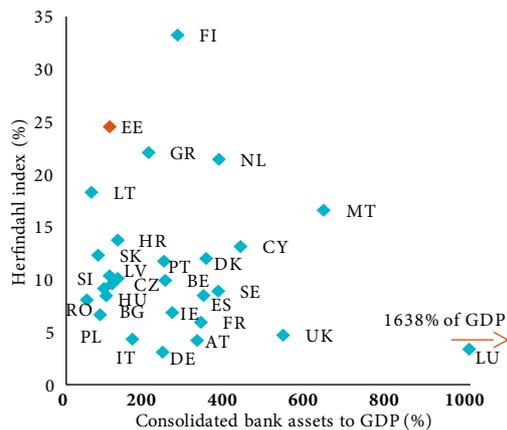
Source: European Central Bank

Figure 14. Market shares of banks by total assets at the end of 2015

Source: Eesti Pank

services quickly. The non-functioning of a systemically important bank would endanger the stability of the Estonian financial system, incur major costs for the state and have a negative impact on the real economy.

- **The close connections between the big banks**

Although there is very little lending activity between the banks in Estonia, as there were only 52 million euros in interbank loans at the end of December 2015, or 0.3% of total assets, the structures of the credit portfolios of the bigger banks

are quite similar and they are equally exposed to the risks from the domestic real sector. The loan portfolio is mostly composed of housing loans to households and corporate loans, these being dominated by credit issued to companies in real estate and construction, and industry, infrastructure and trade.

The Estonian banking market is affected very much by developments in the economies and financial sectors in the Nordic and Baltic region, as some 90% of the assets of the Estonian banking sector are held by large banking groups from the Nordic countries that mainly operate in the same Nordic and Baltic area. Being part of a larger financial group can reduce the risks for banks, but it can also provide a channel through which a negative shock that affects one part of the group can directly or indirectly be passed on to other parts of the group. In this way the terms of funding of subsidiaries and branches operating in Estonia could rapidly deteriorate.

5. CALIBRATION OF THE BUFFER RATES

Current application of requirements

Eesti Pank introduced a requirement from 1 August 2014 for all banks and banking groups licensed in Estonia to hold a systemic risk buffer of 2% of their total risk exposure. In setting the buffer rate, Eesti Pank started from the minimum capital adequacy requirement, which was 10% in Estonia in 1997-2013 until the single rate of 8% set by the Capital Requirements Regulation (CRR) started to apply in the European Union from 1 January 2014.

Eesti Pank found that the systemic risks that had lain behind the earlier higher capital requirement still remained and so it was decided to introduce a 2% systemic risk buffer requirement and therefore effectively maintain an additional requirement that was applied in Estonia mainly for macroprudential reasons.

Eesti Pank explained in 2014 that it was necessary to set a systemic risk buffer because of the structural vulnerabilities in the Estonian economy and the financial sector:

- Estonia is a small and open economy that is undergoing economic convergence and has more volatile economic growth than many other European countries. The financial buffers of companies and households are relatively small for coping with a sharp deterioration in the economic environment.
- Financial intermediation in Estonia is dominated by the banking sector, which is very concentrated. A large majority of the banking sector is exposed to the risks from the same group of countries and economic sectors.

The systemic risk buffer rate

Eesti Pank intends to reduce the systemic risk buffer rate from 2% to 1% from the third quarter of 2016 and to apply this rate only to risk exposures located in Estonia.

The reason for lowering the buffer rate is that the structural vulnerabilities that stem from the high concentration of the banking sector will start to be covered by a new requirement that will apply to systemically important credit institutions. The purpose of the systemic risk buffer will continue to be the reduction of risks that come from the structural vulnerabilities of the Estonian economy[8].

Indicators that describe the structure of the Estonian economy and the financial standing of the real sector reveal some reduction in some of the vulnerabilities highlighted earlier. The indebtedness of companies and households has remained broadly unchanged in the past couple of years, but the rapid growth in the deposits of households at the same time has helped to increase their financial buffers. Major domestic risks remain though, which pose a threat to the balanced development of the economy.

Given the vulnerabilities of the economy it is important that banks hold sufficient capital buffers to soften the negative impact on their capitalisation from any sharp worsening of the economic environment. The results of stress tests show that a systemic risk buffer and an additional buffer for systemically important credit institutions can together cover the potential loan losses that could arise were an economic decline similar to that of 2008-2009 to occur.

The rate for the other systemically important institutions buffer

Eesti Pank plans to introduce a 2% capital buffer requirement from the third quarter of 2016 for two credit institutions that have been identified as systemically important, and will apply the buffer to their total risk exposure.

In calibrating the buffer rate, Eesti Pank started from the maximum rate of 2% given by the Capital Requirements Directive and from the equivalent buffer rates of the other countries in the Nordic and Baltic region. Analysis of the data for the banking market in Estonia support the rate to be

8 The risks to the economy and the financial sector arising from cyclical developments are mainly mitigated by application of a countercyclical capital buffer to exposures held in Estonia. Eesti Pank decided at the end of February 2016 to keep the countercyclical capital buffer rate at 0%, basing its decision on its assessment of the Estonian financial cycle.

applied for the buffer (see Appendix 1. Finding the threshold of the systemic importance scores for the 2% O-SIIB rate).

Eesti Pank generally applies a buffer rate of at least 0.5% to the credit institutions that pass the minimum threshold of 350 basis points in the assessment of systemic importance, which is adapted from the methodology of the European Banking Authority (see Figure 15). The maximum rate of 2% is applied to those credit institutions that get an overall score of at least 1200 basis points. If the overall score for systemic importance is between 350 and 1200 basis points, the benchmark rate is found linearly, and the result rounded to the nearest 0.5 percentage point.

In December 2015 Eesti Pank designated Swedbank AS and AS SEB Pank as systemically important credit institutions, as they had overall scores with the EBA methodology of 3194 and 1930 basis points respectively. The other systemically important institutions buffer applies to these two institutions at the rate of 2%.

The total buffer requirement for the structural systemic risk
As the systemic risk buffer is only being applied to exposures in Estonia, the other systemically important institutions buffer will apply on top of it.

A total buffer rate of 3% will apply to the two largest banks, and a rate of 1% to other credit institutions (see Diagram 1).

Given the market share of the systemically important institutions[9] it is estimated that the effective buffer rate that will apply in the Estonian banking market from the third quarter of 2016 will rise from 2% to 2.6%.

Comparison of the buffer rate with those in other European Union member states

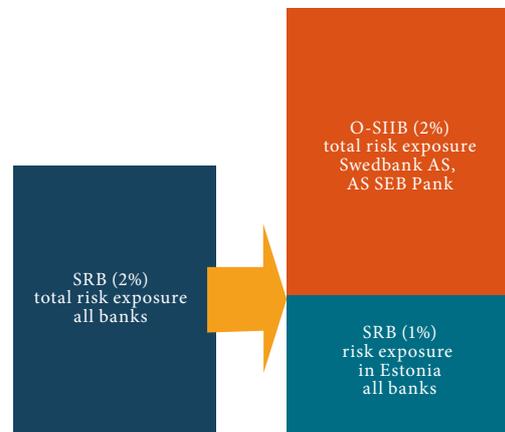Member States of the European Union use both systemic risk buffers and systemically important

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9 The risk weighted assets of the two systemically important institutions accounted for 79% of the total risk weighted assets of the domestic banks and subsidiaries of foreign banks licensed in Estonia at the end of 2015.

Figure 15. O-SII buffer rate and scores for systemic importance
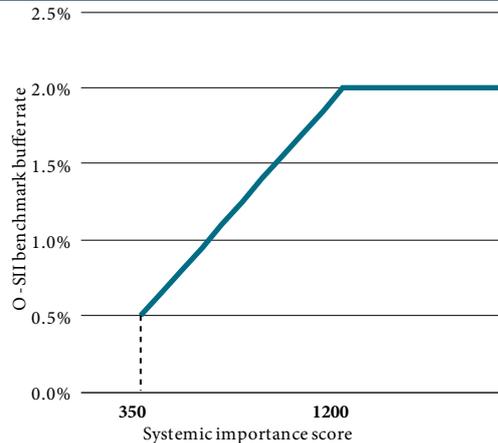
Source: Eesti Pank

Diagram 1. Capital buffer requirements for mitigating structural systemic risk in Estonia

SRB (2%) total risk exposure all banks

O-SIIB (2%) total risk exposure Swedbank AS, AS SEB Pank

SRB (1%) risk exposure in Estonia all banks

institution buffers as tools for reducing structural systemic risk. The buffer rates they apply and the methods used for calibrating those rates vary substantially from country to country.

Comparison of capital buffer rates across countries reveals only a very weak link between those rates and the concentration of the banking sector (see Figure 16). Estonia is one of those countries where higher buffer rates are applied because of the high degree of concentration.

Comparing requirements is complicated though by differences in the risk weights applied by different countries and because the macroprudential requirements are supplemented by microprudential requirements that are harder to assess because they are less transparent.

Figure 16. Concentration of the banking sector and buffer rates
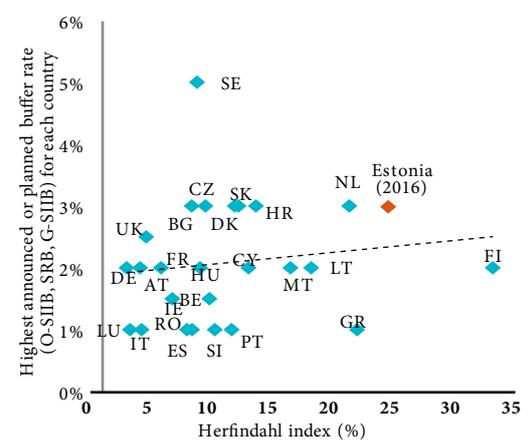
Sources: European Central Bank, ESRB

6. EXPECTED IMPACT OF THE BUFFER REQUIREMENTS

6.1. Capitalisation of the banks and the potential impact of the requirements on the activities of the banks

All the banks in the European Union have to meet the minimum requirements for own funds that were set when the Capital Requirements Regulation (CRR) came into force at the start of 2014 and under which their total capital must equal at least 8% of total risk exposure, and their high-quality common equity tier 1 (CET1) capital must equal at least 4.5% of total risk exposure. Additional buffers were subsequently introduced in Estonia with a 2.5% capital conservation buffer from 19 May 2014 and a 2% systemic risk buffer from 1 August 2014. Banks also have to meet the Pillar 2 capital requirements that are set for bank-specific risks as part of microprudential supervision.

The minimum requirements of own funds and buffer requirements meant all the banks authorised in Estonia had to have a total capital ratio of at least 12.5% at the end of 2015, and a CET1 capital ratio of 9%. After the new buffer rates start to apply in Estonia from the third quarter of 2016, the total capital requirement for systemically important institutions will rise to 13.5% and their CET1 requirement will rise to 10%. The requirements for other banks will be reduced by 1 percentage point though (see Table 2). The effective rate of the capital and buffer requirements for the Estonian banking sector as a whole will rise to 13.1% for total capital and 9.6% for CET1 capital as a ratio to risk-weighted assets.

All the banks operating in Estonia have successfully met the capital and buffer requirements for more than five years now. The quality of capital has remained high in this and has improved over the years, so that the CET1 own funds of the large banks was 100% of their total own funds at the end of 2015, and the share was around 90% for smaller banks.

The total capital ratio averaged 22% of the risk-weighted assets for the small banks at the end of 2015 and the CET1 ratio was 19%, surpassing the regulatory requirements (see Figure 17). A reduction in the capital buffer requirement of 1 percentage point is not expected to have a significant impact on the operations of the smaller banks.

The total capital ratios and CET1 ratios of the two systemically important institutions were close

Figure 17. CET1 ratio of small banks
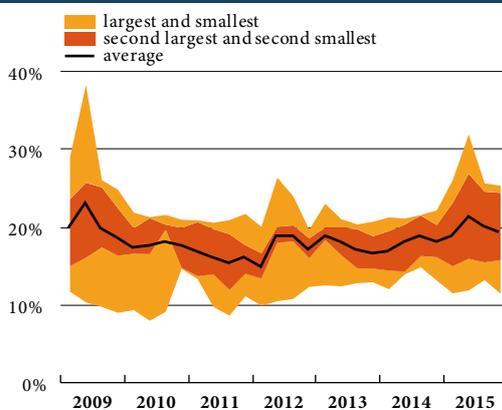
Source: Eesti Pank
Note: small banks are LHV Pank, DNB, Bigbank, Eesti Krediidipank, Tallinn Business Bank, Versobank, and Inbank

Table 2. Capital and buffer requirements in Estonia			Common Equity Tier 1 (CET 1) requirement	Total capital requirement
Macro-prudential buffers	countercyclical capital buffer		0% (from 1.01.2016)	
	systemic risk buffer		1% (from Q3 2016) 2% (1.08.2014 - until new rate applies)	
	other systemically important institutions buffer		2% (from Q3 2016)	
Capital conservation buffer			2.5% (from 19.05.2014)	
Minimum own funds requirement			4.5%	8%
Total capital requirements from Q3 2016 (O-SIIs / other banks)			**10% / 8%**	**13.5% / 11.5%**
Total capital requirements until new rates apply			**9%**	**12.5%**

to 39% at the end of 2015 (see Figure 18). This meant that both banks met the regulatory capital and buffer requirements with plenty to spare and the planned rise in the buffer requirement will not oblige them to find any additional capital or to reduce their risk exposures. The big banks have voluntarily held large capital buffers, so the change in the requirement is not expected to have a significant impact on their lending volumes or conditions.

6.2. Potential cross-border impact

Credit institutions operating in Estonia mainly focus their lending activity in the domestic market. There is little cross-border activity by the banks, and their exposures are small. Loans to non-resident companies and households make up only 2% of the credit portfolio of local credit institutions, and 15% of the liabilities to the real sector are to non-residents.

The cross-border exposures of credit institutions licensed in Estonia to most of the member states of the European Union were below 0.1% of the total assets of the banking sector of any given country at the end of June 2015 (see Figure 19). The cross-border exposures of Estonian credit institutions were less than 0.01% of the assets of the European Union banking sector.

It follows from this that the potential impact of the buffer requirements being applied to Estonian credit institutions will be very small on the financial system of the European Union as a whole and on individual member states.

Figure 18. CET1 ratio of systemically important banks
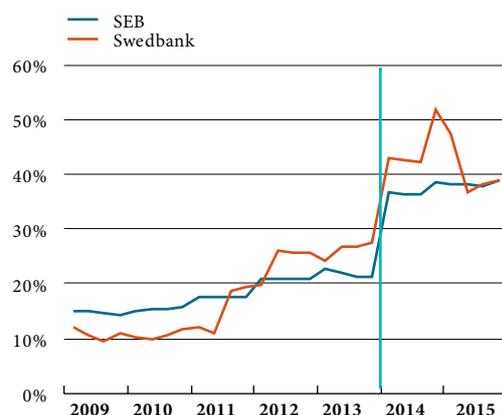
Sources: Eesti Pank, financial reports of banks
Note: In 2014 the reporting method was changed for how the transitional period from Basel I should be reported

Figure 19. Cross-border loans and deposits as a ratio of banks' total assets in different Member States
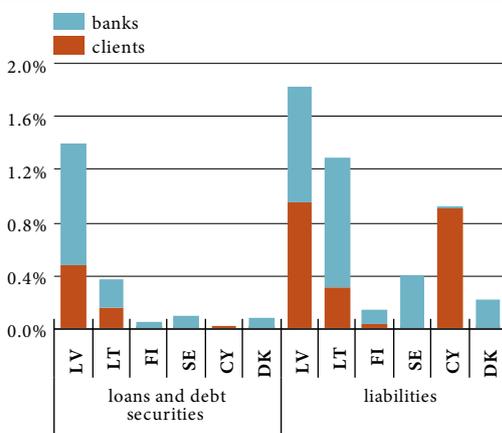
Sources: European Central Bank. Eesti Pank
Note: at the end of June 2015

Systemic Risk Buffer and Other Systemically Important Institutions Buffer

7. RECOGNITION OF THE SYSTEMIC RISK BUFFER REQUIREMENT BY OTHER COUNTRIES

7.1. Application of the principle of reciprocity of macroprudential measures in the European Union

For macroprudential measures to have an effect, it is important that they be applied equally to all the credit institutions operating in a market whether they are domestic banks, foreign subsidiaries, branches of foreign banks or foreign banks providing cross-border services directly. As a large part of the macroprudential toolkit of a country, including the capital buffer requirements, applies only to domestic banks and subsidiaries of foreign banks, the effect of such requirements relies on their mutual recognition by countries working together.

Reciprocity is mandatory only when a country applies stricter risk-weights for mortgage lending[10] or sets the countercyclical capital buffer rate at up to 2.5%. Recognition of other macroprudential measures remains voluntary and the decision to apply them is taken by the designated or competent authorities of each country. The European Central Bank is also able to require that stricter requirements be followed as part of single banking supervision.

The European Systemic Risk Board (ESRB) issued recommendations on 15 December 2015 for assessing the cross-border effect of macroprudential measures and on voluntary mutual recognition[11]. The recommendations set out the principles that member states should follow when notifying and requesting reciprocation of their macroprudential measures and deciding on reciprocity of the measures adopted by other countries. The ESRB assesses how appropriate the request of a member state for its measures to be recognised is, and

if the request is justified, it advises other member states to recognise the measure. If a member state decides not to recognise the measure, it has to give grounds for this decision.

As a general principle, macroprudential measures are primarily justified when they are set on the exposures in the country setting them and apply equally to all the credit institutions operating in the country, like the systemic risk buffer in Estonia does. In contrast, measures that aim to increase the resilience of a limited number of credit institutions and reduce the risks for individual institutions do not have to be applied by other countries, like capital buffers for systemically important institutions. Transparency requires that other countries apply the same tools to the same risks. Where this is not possible, then tools should be used that have as similar an effect as possible.

7.2. Reasons for cross-border recognition of the Estonian systemic risk buffer requirement

In applying a 1% systemic risk buffer requirement to all the credit institutions authorised in Estonia, Eesti Pank intends to request other European Union member states from which banks provide banking services in Estonia through branches or directly cross-border to apply an equal or equivalent requirement to exposures in Estonia.

This request for recognition is driven by the structure of the Estonian financial sector, where branches of foreign banks play a significant role. There were 16 banks operating in Estonia at the end of 2015, of which four were domestic banks, five were subsidiaries of foreign banks, and seven were branches of foreign banks. Foreign banks had market share of 94% of the total assets of the banking sector, and some two thirds of this was held by the two largest subsidiaries.

Branches of foreign banks had market share of 26.4% of the total assets of the banking sector. The largest part of this was held by branches from Sweden and Denmark, but banking services were also provided in Estonia by branches of credit institutions from Finland, Latvia and Norway (see Figure 20).

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10 Article 125 of the CRR on setting higher risk weights in calculating credit risk for banks using the standard methods, and article 164 of the CRR on setting a higher Loss Given Default (LGD) ratio for banks using the internal ratings method.

11 Recommendation of the European Systemic Risk Board of 15 December 2015 on the assessment of cross-border effects of and voluntary reciprocity for macroprudential policy measures (ESRB/2015/2).

Alongside the loans issued by the subsidiaries and branches of foreign banks, a considerable amount of loans are made directly cross-border to the real sector. At the end of the third quarter of 2015 Estonian companies had loans taken from abroad of around 2.2 billion euros and households had 0.2 billion euros of loans, totalling around 15% of the total lending of the Estonian banking sector (see Figure 21)[12]. Although these data may contain loans from other companies[13], the majority of the lending is still in loans from foreign credit institutions. It is possible that these lenders include credit institutions that operate in the Estonian banking market at the same time through subsidiaries or branches.

The need for the systemic risk buffer requirement to be recognised comes primarily from the aim of ensuring equal conditions for all the banks competing in the Estonian banking market. Furthermore, if stricter requirements apply only to some banks, the measures will be less effective and regulatory arbitrage will become a risk.

Figure 20. Market share of foreign banks by home countries
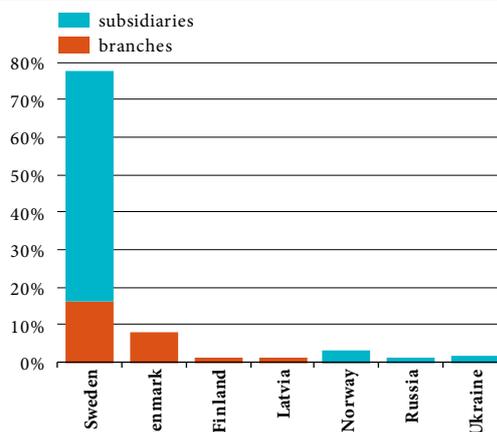
Source: Eesti Pank

Figure 21. Cross-border borrowing of non-financial enterprises and households
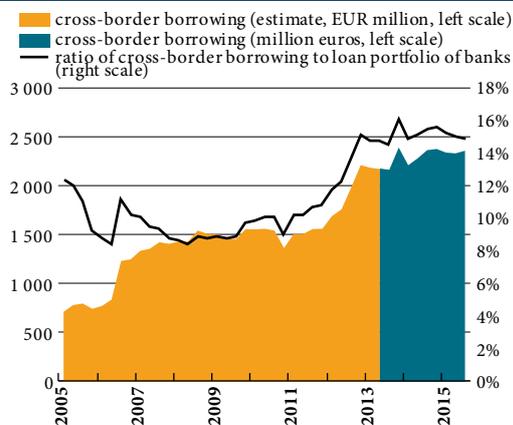
Source: Eesti Pank
Note: based on data on the international investment position, includes loans from credit institutions and other enterprises but excludes intragroup loans

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12 See: Eesti Pank, international investment position. Data from before 2013 are estimated because of a change in the methodology used.

13 The companies that belong to the same group as the borrower are excluded from the data.

APPENDIX 1. Finding the threshold of the systemic importance scores for the 2% O-SIIB rate

The capital requirements for banks have three main elements: the minimum own funds requirement, additional requirements, and the other systemically important institutions buffer (O-SIIB):

$$k_{minimum} + k_{additional} + k_{O-SIIB}(sib)$$

All banks must meet the minimum own funds requirement and additional requirements, while the O-SIIB depends on the scores of systemic importance (sib) given to each bank, where higher scores lead to higher capital requirements.

A large loss may cause capital to fall below the minimum requirement if the total loss relative to risk weighted assets exceeds $k_{additional} + k_{O-SIIB}(sib)$. Let the probability of this happening be $P(sib)$. The larger the O-SIIB ($k_{O-SIIB}(sib)$), the smaller this probability. Should a bank fall into financial difficulties, this will lead to economic costs that are given as $C(sib)$. It may generally be assumed that the larger the bank, the higher the economic costs associated with it suffering financial problems.

One way of finding the O-SIIB rate is to start from the principle of the equal expected impact[14], which can be expressed with the following formula:

$$P(sib) \cdot C(sib) = P(sib^R) \cdot C(sib^R) \; \forall \; sib \geq sib^R$$

Following from this principle, the aim of the O-SII buffer is to reduce the probability $P(sib)$ of a systemically important institution falling into difficulties such that the expected losses $P(sib) \cdot C(sib)$ are equal to the expected losses $P(sib^R) \cdot C(sib^R)$ of a systemically non-important reference bank that has an O-SII buffer of 0%.

Firstly, a systemically non-important reference bank has to be defined. Let it be a hypothetical bank which has a score for systemic importance that is the arithmetic average of the scores of the credit institutions licensed in Estonia. Secondly, a distribution of the return on risk-weighted assets ($RORWA$) is needed, which is the pooled returns on the risk-weighted assets of credit institutions licensed in Estonia since the year 2000, excluding the returns for the first year for newly founded banks and those of banks that entered the market after 2005[15]. Kernel density estimation is used to smooth the distribution and a Cauchy distribution matched using a maximum likelihood method. Assuming the distribution of risk-weighted assets remains the same in the future:

$$P(sib^R) = p(RORWA < -(2.5\% + 1\% + 0\%))$$

Although the costs associated with a bank falling into difficulties are not known exactly, it may be assumed that the cost ratio will be roughly equal to the ratio of the scores for systemic importance, or $\frac{C(sib)}{C(sib^R)} \approx \frac{sib}{sib^R}$.

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14 A similar approach has been used for finding the capital buffer rate for systemically important banks by M Skořepa and J Seidler. Capital Buffers Based on Banks' Domestic Systemic Importance: Selected Issues. Czech National Bank. Research and Policy Notes 1/2014.

15 AS DNB Pank, AS LHV Pank and Bigbank AS

This means the probability of a systemically important bank falling into financial difficulties can be found with the equation:

$$P(sib) = P(sib^R) \cdot \frac{sib^R}{sib}$$

Knowing the probability of falling into financial difficulties and the distribution of return on risk-weighted assets makes it possible to find the return on risk-weighted assets for that probability. Adding to this the additional capital requirement that all banks must meet makes it possible to calculate how big a loss as a share of risk-weighted assets should be covered by the systemically important institution buffer.

The same principle can be used to find the score for the systemic importance for which the O-SII buffer should be set at 2%, and the previous equation can be rewritten for this:

$$sib = sib^R \cdot \frac{P(sib^R)}{P(sib)}$$

Knowing that $P(sib^R) = p(RORWA < -3.5\%)$ and $P(sib) = p(RORWA < -(3.5\% + 2\%))$ it is easy to find the score for the systemic importance from which the O-SII buffer rate should be 2%.

Depending on the distribution function assumed and the systemic importance component or combination of components used as the starting point, the score that should set the threshold for the Estonian banking sector comes out differently, at between 1050 and 1250 basis points with the Kernel density function and between 1180 and 1400 basis points with the Cauchy density function (see Table A1).

Distribution	Size	Importance	Complexity	Interconnectedness	O-SII overall score
Table A1. Thresholds of the systemic importance score for application of the 2% O-SII buffer rate based on different distributions of return on risk weighted assets					
Kernel	1234	1241	1055	1136	1166
Cauchy	1389	1398	1188	1279	1314