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THE PRINCIPLES FOR IDENTIFYING THE SYSTEMICALLY IMPORTANT CREDIT INSTITUTIONS IN ESTONIA AND CALIBRATING THE BUFFER RATES

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European Union member states assess the importance of credit institutions for the financial system each year. This lets them identify their O-SIIs, or Other Systemically Important Institutions. O-SIIs are those institutions whose uninterrupted functioning is important for the domestic or European Union financial system and non-financial economy. The goal of identifying O-SIIs and requiring them to hold additional own funds is to increase the resilience of systemically important market participants and through that of the whole system. The requirement to hold additional own funds also reduces the potential impact on the taxpayer of any such bank going bankrupt.

Systemically important institutions that are important to the Estonian financial system are defined by Eesti Pank. Eesti Pank also decides on the rate for the additional capital buffer for O-SIIs, and can set it at up to 2% of total risk exposure.

1. THE LEGAL FRAMEWORK FOR HANDLING SYSTEMICALLY IMPORTANT CREDIT INSTITUTIONS

The principles for identifying systemically important credit institutions and for declaring the list of them

Section 24[1] of the Eesti Pank Act gives Eesti Pank the responsibility for identifying the parts of the financial system whose actions may exert a significant influence on the formation of systemic risks. Section 86[48] (7) of the Credit Institutions Act states that it is Eesti Pank that defines the list of other systemically important credit institutions in Estonia. The list is set by a decree of the Governor of Eesti Pank.

Directive 2013/36/EU of the European Parliament and the Council and Section 86[48] of the Credit Institutions Act define the categories to be used in defining other systemically important credit institutions as:

- their size;
- their importance for the economy of the European Union or of the member state;
- the importance of their cross-border activities;
- their interconnectedness with the financial system.

More detailed instructions on defining other systemically important institutions are given in the EBA/GL/2014/10 guidelines of the European Banking Authority of 16 December 2014[1] (see part two of the methodology for calculating the points score for O-SIIs). European Union member states assess the importance of credit institutions for the financial system each year by 1 December at the latest, and update the list of systemically important credit institutions.

Eesti Pank must inform systemically important credit institutions, the European Commission, the European Systemic Risk Board and the European Banking Authority of the names of the other systemically important institutions, and it publishes the list of names on its website.

Setting the capital buffer requirement for credit institutions that are important for the domestic financial system

Article 131(5) of Directive 2013/36/EU (CRD) permits other systemically important credit institutions to be required to maintain a buffer of up to 2% of the total risk exposure calculated in accordance with Article 92 (3) of Regulation (EU) No 575/2013. The requirement may apply to a credit institution on an

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individual, sub-consolidated or consolidated basis and must be met from core equity tier 1. Eesti Pank assesses how appropriate the buffer rates are, and adjusts them if necessary, at least once a year. The buffer rates are set by a decree of the Governor of Eesti Pank.

Setting the buffer requirement for an O-SII or changing a buffer rate that has already been set needs Eesti Pank to advise the European Commission, the European Systemic Risk Board, the European Banking Authority, and the competent or designated authorities of all countries affected one month before announcing the new rate.

When setting the buffer requirement for an O-SII, Eesti Pank must also consider the principles for setting a systemic risk buffer requirement. If the credit institution is subject to an O-SII buffer and to a systemic risk buffer requirement that applies only to its exposures in Estonia, then the two requirements are merged. If the credit institution is subject to an O-SII buffer and to a systemic risk buffer requirement that applies to its exposures in Estonia and abroad, then it has to meet whichever of the two requirements is set higher.

If a credit institution that has been identified as an O-SII is part of a banking group where the parent bank is subject at the consolidated level to a buffer requirement as a Globally Systemically Important Institution (G-SII) or an O-SII, then an O-SII buffer requirement can be applied to that credit institution in Estonia at the individual or sub-consolidated level. This rate may be up to 1%, or not more than the rate that applies at the consolidated level to the G-SII or O-SII. The higher of these two will set the limit for the rate.

Failure to meet the buffer requirements does not mean that the credit institution may no longer continue in business, but limits will be imposed on its dividends and other payments that would reduce its equity. It also means the credit institution must present a capital conservation plan to Finantsinspektsioon to show that it is able to meet the buffer requirement within an appropriate time.

Setting the buffer rate under single banking supervision

Although the primary responsibility for the implementation of macroprudential measures lies with the national authorities, single banking supervision means the European Central Bank is involved in setting the buffer rate for O-SIIs.

Under the procedures in Article 5 of Council Regulation (EU) No 1024/2013, a national designated authority such as Eesti Pank has to notify the European Central Bank of the preliminary decision on the buffer rate for the O-SII ten working days before the final decision on the buffer rate is taken. The European Central Bank can object to the proposal within five working days, and Eesti Pank must consider the arguments used by the European Central Bank prior to proceeding with the decision-making.

Single supervision allows the European Central Bank to set higher capital buffer requirements than those set by the national authorities responsible, and this also applies to the buffer rate for O-SIIs. It must inform Eesti Pank in advance of its intention to do this, and Eesti Pank may submit reasoned arguments against the proposed rate, which the European Central Bank then has to consider in its own decision-making processes.

2. THE METHODOLOGY FOR DECIDING O-SIIs

On 16 December 2014 the European Banking Authority (EBA) issued its guidelines on the application of Article 131(3) of Directive 2013/36/EU (CRD), which cover the criteria for assessing O-SIIs[2]. In these guidelines, the EBA introduced a scoring process for systemically important credit institutions that has been taken as the starting point for identifying the systemic importance of credit institutions in Estonia.

There are two stages to the assessment under the EBA guidelines. The first step is the calculation by the designated authority of the score for each credit institution within its jurisdiction at the highest possible consolidation level of the group, taking in subsidiaries in other member states and third countries as well. Discretion is granted in leaving out credit institutions whose relative size is up to 0.02% of total assets. The second step is supervisory assessment.

Stage one: automatic assessment

The systemic importance score is given in the first step from ten mandatory indicators in four categories. All the categories have an equal weighting and the indicators in each category are also equally weighted. The score is arrived at by:

1. dividing the indicator value of each individual institution by the aggregate sum for all the institutions in the member state;
2. multiplying the result by 10,000 to express the indicator scores in terms of basis points;
3. calculating the category score for each institution by taking a simple average of the indicator scores in that category;
4. calculating the overall score for each institution by taking a simple average of its four category scores.

Credit institutions that get a score of 350 basis points or more are classed as O-SIIs. The designated authorities can raise this threshold to 425 basis points, or lower it to 275.

The indicators are found from the FINREP financial reporting of the European Union's single supervisory authorities. Alternative values are used for credit institutions that are not covered by the FINREP requirements.

So that the scores can adequately reflect the banking sector of the member state, the indicator values of branches of institutions licensed in other member states or third countries are included in the denominators for the purpose of the scoring process.

The need to adapt the automatic assessment for the banking sector in Estonia

The particular nature of the Estonian financial sector means that the point scores found automatically using the EBA methodology do not adequately reflect the systemic importance of all the banks operating in Estonia. In measuring the interdependence of credit institutions, the EBA methodology considers not only the assets and liabilities within the financial sector, but also the volume of bonds issued. This indicator is of very minor importance for the Estonian banking sector though, because a large share of the banking groups operating in Estonia are foreign-owned, and the local units generally do not issue bonds themselves but mainly access market-based funding through their parents banks. Even so, the EBA methodology needs 10,000 basis points to be divided between the banks in proportion to their outstanding debt instruments, with this making up 8.33% of the final

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2 Credit institution is taken to mean credit institutions and investment firms operating as parent companies in the European Union, financial holding companies operating as parent companies in the European Union, mixed financial holding companies operating as parent companies in the European Union, or credit institutions and investment firms with a licence to operate in the jurisdiction of the designated authority.

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score. In consequence the systemic importance of banks that have issued bonds, even to only a small extent, is overestimated in the EBA methodology.

To avoid distortions, Eesti Pank does not include the indicator for debt securities outstanding in the points score for systemic importance when it is identifying O-SIIs. Having taken account of the particular nature of the Estonian financial system, the assessment of systemic importance follows the principles of the EBA methodology in all other ways, as each category has equal weighting, and each indicator within each category also has equal weighting (see Table 1). So in the adapted methodology, like in the EBA methodology, the category of interconnectedness between credit institutions is as important in identifying systemic importance as the size of the credit institution, its importance for the banking system through substitutability and financial system infrastructure, and its complexity and cross-border activity. As the Estonian banking sector is largely foreign-owned, and as a consequence is connected to other credit institutions through intra-group loans and deposits, the liquidity management of the banking groups and the features of their funding structure are channels through which financial shocks can pass from one financial institution to another. This makes it reasonable to use the adapted methodology for as long as there are no significant changes in the financing structure of the Estonian banking sector.

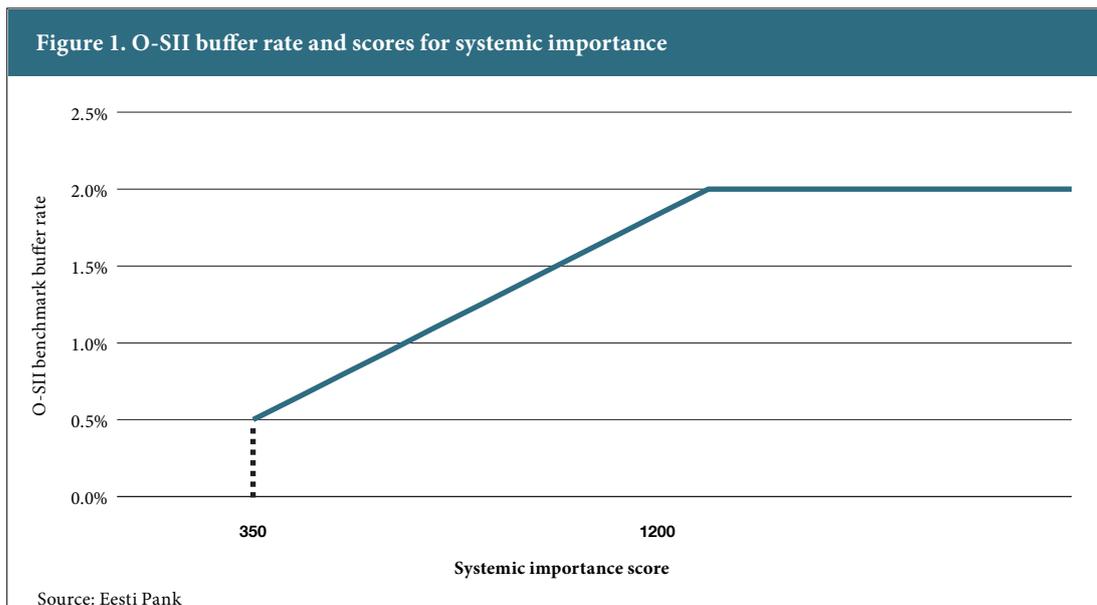| Table 2. The core set of indicators for the scoring of systemic importance based on EBA and adjusted methodolgy			
Criterion	**Indicators**	**Weight - EBA methodolgy**	**Weight - adjusted methodolgy**
Size	Total assets	25.00%	25%
Importance (including substitutability/ financial system infrastructure	Value of domestic payment transactions	8.33%	8.33%
	Private sector deposits from depositors in the EU	8.33%	8.33%
	Privat sector loans to recipients in the EU	8.33%	8.33%
Complexity/cross-border activity	Value of OTC derivatives (notional)	8.33%	8.33%
	Cross-jurisdictional liabilities	8.33%	8.33%
	Cross-jurisdictional claims	8.33%	8.33%
Interconnectedness	Intra-financial system liabilities	8.33%	12.50%
	Intra-financial system assets	8.33%	12.50%
	Debt securities outstanding	8.33%	0%

Stage two: supervisory assessment

The second step of supervisory assessment is where the designated authority assesses whether any other credit institutions that scored below the O-SII threshold in the first step but are still important for the domestic financial system should be classed as O-SIIs. This can be done on the basis of the score in any category or the qualitative and quantitative indicators listed in Annexes 1 and 2 of the EBA guidelines. Credit institutions that scored less than 4.5 basis points in the first step may not be named as systemically important institutions.

As the first step has so far identified all the important credit institutions for the Estonian financial system, there has been no need for Eesti Pank to nominate any additional systemically important credit institutions in the second step. Eesti Pank analyses the developments in the financial sector and if there are major structural changes it adjusts the methodology to reflect the market situation.

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3. CALIBRATION OF THE O-SII BUFFER RATE

When setting the buffer rate, Eesti Pank starts from the principle that the capital buffer rate should be higher the more systemically important a credit institution is. In developing its methodology for calibrating the buffer, Eesti Pank considered various points, including the score given in the assessment of the systemic importance of credit institutions, the buffer rates applied to other banks in the Nordic and Baltic region, and analysis of data collected on the Estonian banking sector (see Appendix 1). The O-SII buffer decision is based on the assessment using the EBA methodology adapted for the particular nature of the Estonian financial system. In this way the indicator for debt securities outstanding, which is less important for the Estonian banking system, does not distort the level of the buffer 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 1). The maximum rate of 2% is applied to those credit institutions that get a points score of at least 1200 basis points. If the points 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. The Eesti Pank O-SII buffer framework is in keeping with the methodology of the European Central Bank for setting the minimum level for O-SII buffers[3].

Figure 1. O-SII buffer rate and scores for systemic importance

Source: Eesti Pank

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3 For more details see the ECB's Macroprudential Bulletin, June 2017.

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APPENDIX 1. FINDING THE THRESHOLD OF THE POINTS SCORE FOR THE SYSTEMIC IMPORTANCE OF CREDIT INSTITUTIONS FOR THE 2% O-SII BUFFER RATE[4]

The capital requirements for banks have three elements: the minimum reserve, additional requirements, and the systemically important institutions buffer:

$$k_{miinimum} + k_{lisa} + k_{O-SIIB}(sib).$$

All banks must meet the minimum reserve and additional requirements, while the systemically important institution buffer depends on the systemic importance points score (sib) given to each bank, where higher scores lead to higher capital requirements. Capital can be reduced below the minimum requirement if large losses occur as the loss from the risk assets reaches $k_{lisa} + k_{O-SIIB}(sib)$. Let the probability of this happening be $P(sib)$. The larger the systemically important institution buffer ($k_{O-SIIB}(sib)$), 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 more important the bank, the higher the economic costs associated with it suffering financial problems.

One way of finding the buffer rate for systemically important institutions is to start from the principle of the equal expected impact[5], which can be expressed with the 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 comparable systemically non-important bank that has an O-SII buffer of 0%.

Firstly, a systemically non-important bank has to be designated. This is a hypothetical bank which has a points score for systemic importance that is the arithmetic average of the points scores of the credit institutions with operating licences in Estonia. Secondly, a distribution is needed of the return on risk-weighted assets (RORWA), which is found as the set of 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. 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 of 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 points score for the systemic estimate, or $\frac{C(sib)}{C(sib^R)} \approx \frac{sib}{sib^R}$. This means the probability of a systemically important bank falling into financial difficulties can be found with the equation:

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4 The analysis was carried out in 2016. The data used in the analysis cover the years 2000-2015.
5 A similar approach has been used for finding the capital buffer rate for systemically important banks by M. Skořepa and J. Seidler in the article *Capital Buffers Based on Banks' Domestic Systemic Importance: Selected Issues*, Czech National Bank, Research and Policy Notes 1/2014.

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

Knowing the probability of falling into financial difficulties and the distribution of 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 points score for the systemic estimate for which the systemic risk buffer should be set at 2%. The previous equation can be rewritten for this:

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

Given that $P(sib^R) = p(RORWA < -3.5\%)$ and $P(sib) = p(RORWA < -(3.5\% + 2\%))$, it is possible to find the points score for the systemic estimate from which the systemically important institution buffer rate should be 2%.

The points score that sets the threshold that is appropriate for the Estonian banking sector depends on the assumed distribution function and on which component or combination of components is used as the basis for the assessment of systemic importance. The points score comes out 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).

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