FINANCIAL STABILITY COUNCIL

Ministry of Finance and Economic Affairs, Arnarhvoli, 150 Reykjavik
Tel: (+354) 545 9200
www.ministryoffinance.is/financialstability

Reykjavík, 22 January 2016

Recommendation concerning a systemic risk buffer: rationale

According to the amendments to the Act on Financial Undertakings, no. 161/2002, which were passed at the spring 2015 legislative session and are based on the European Union's new Capital Requirements Directive (CRD-IV), the Financial Supervisory Authority is authorised, upon receiving recommendations from the Financial Stability Council, to impose a special capital buffer for systemic risk, or systemic risk buffer. The Financial Stability Council's recommendations shall be based in particular on the analysis and recommendations of the Systemic Risk Committee.[1] The analysis is prepared by the Central Bank of Iceland and the Financial Supervisory Authority.

The purpose of the systemic risk buffer is to prevent or restrict the effects stemming from systemic risk related to the structure and long-term tendencies in the real economy and the financial system.[2] Recent research has shown that financial crises are often accompanied by significant accumulation of sovereign debt, which increases the likelihood of default.[3] In Iceland, financial crises have often occurred in the wake of shocks to the real economy and have had an amplifying effect on economic crises.[4]

When the systemic risk buffer is allowed to extend to domestic exposures only, it shall be cumulative with the capital buffer for other systemically important institutions, when the total capital requirement is calculated. On the other hand, the buffer that is the higher of the two shall apply if the systemic risk buffer also covers foreign exposures. The value of the systemic risk buffer can range from 1% upwards and is not subject to a maximum.[5] If the buffer is imposed, the Financial Stability Council shall review its recommendations within two years of the time they were implemented.

---

[1] cf. the Act on a Financial Stability Council, no. 66/2014.

[2]According to the Act on a Financial Stability Council, systemic risk is defined as follows: *"Systemic risk: The situation that results when the interaction between the financial system and the domestic economy exacerbate cyclicality, financial undertakings become vulnerable to actions taken by other parties, and the risk exists of a chain of events that could jeopardise financial stability, with the associated adverse effect on the domestic economy."*

[3] Reinhart, Carmen M., and Kenneth S. Rogoff (2009). From Financial Crash to Debt Crisis. NBER *Working Paper*, no. 15795.

[4] Bjarni G. Einarsson, Kristófer Gunnlaugsson, Thorvardur T. Ólafsson, and Thórarinn G. Pétursson (2015). The long history of financial boom-bust cycles in Iceland. Central Bank of Iceland *Working Paper* no. 68.

[5] According to Article 84(b), Paragraph 5 of the Act on Financial Undertakings, no. 161/2002, with subsequent amendments according to Act no. 57/2015, the Minister shall set a regulation concerning further implementation of the capital buffer for systemic risk, including case procedure, the involvement of the Systemic Risk Committee and the Financial Stability Council, and communications with foreign supervisory entities if the buffer is set at higher than 3% or 5%.

In imposing a systemic risk buffer, it is necessary to evaluate the risks existing in the economy. The European Banking Authority (EBA) does not issue precise criteria or conditions for a decision on when a systemic risk buffer should be imposed or how high it should be. On the other hand, the European Systemic Risk Board (ESRB) has issued a handbook on macroprudential policy, according to which the assessment of indicators of the need for a systemic risk buffer can be divided into three parts.[6] First, the probability of shocks to the financial system and the real economy may be examined, with emphasis on structural risk factors. For example, economic stability is an important factor, as is the connection between the financial system and the real economy. A second factor to be examined is the potential for amplification, which could magnify losses occurring within the financial system as a result of shocks. In this context, concentration of exposures, the risk of contagion between firms, and the concentration of the financial sector should be considered. Third, indicators of the importance of the financial system to the real economy should be examined, with particular emphasis on the size of the financial sector.

It is important to separate the portion of systemic risk that changes with the business cycle or the financial cycle, so as to avoid overlapping between the systemic risk buffer and the countercyclical capital buffer, which is designed specifically to counteract systemic risk due to procyclicality. By the same token, it must be ensured that the risks taken into consideration in deciding to impose a systemic risk buffer are not used to impose capital buffers under Pillar II and capital buffers for systemically important financial institutions.

The systemic risk buffer enhances financial institutions' resilience and reduces or prevents excessive credit growth and leverage. It increases financial institutions' ability to withstand shocks, thereby supporting financial stability.

Systemic risk in Iceland

The characteristics of the Icelandic economy

The Icelandic economy is small and open, and changes in economic variables are proportionally large as compared with larger, more complex economies. The Icelandic economy is relatively open, which increases its sensitivity to external shocks but can also have a positive impact on output growth. Furthermore, the Icelandic króna and the fluctuations in the nominal exchange rate can affect the business cycle. These effects can be either procyclical or countercyclical.

The business cycle in Iceland most closely resembles that in other small industrialised countries.[7] The business cycle is driven by either supply-side or demand-side shocks. A period of economic slack can also have a direct or indirect effect on the financial system, which in turn can amplify the overall impact on the economy.

GDP growth

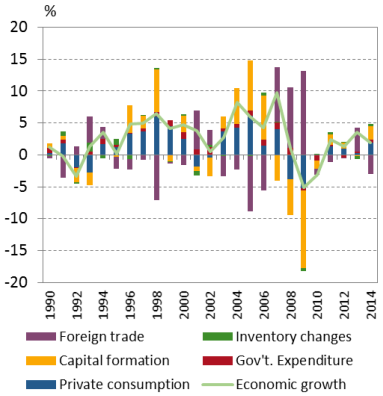
Chart 2 shows the average and standard deviation of GDP growth in Iceland in international context. From 1996 through 2014 Iceland is relatively high on both scales, with both the average and the standard deviation of GDP growth about 3.5% over the period. The contribution of each component of GDP to GDP growth can be seen in Chart 1. Examining the components of GDP reveals large variations in the contribution of private consumption, investment, and

[6] The fourth factor mentioned in the ESRB handbook discusses risks relating to systemic importance of individual institutions, but account is given to these factors in determining the capital buffer for other systemically important institutions.

[7] Central Bank of Iceland (2012). Iceland's currency and exchange rate policy options. Special Publication no. 7, page 256.

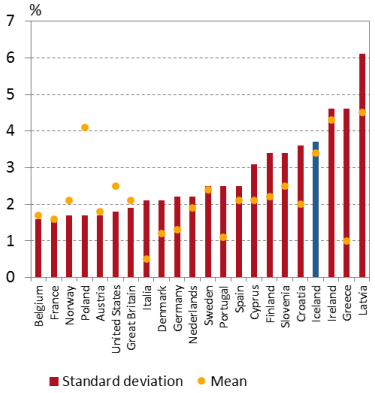
foreign trade to GDP.[8] In general, fluctuations and instability entail increased risk and uncertainty for market agents and complicates their operating environment. The largest items under GDP are private consumption and external trade: in 2014, private consumption accounted for about 53% of GDP, investment 17% and public consumption 24%. At the same time, exports measured 54%, less imports, at about 47%. Exports grew sharply after the 2008 financial crisis, from just over 30% to 54% in 2014, owing in part to the depreciation of the króna.

Chart 1: GDP components contribution to economic growth.



Source: Central Bank of Iceland.

Chart 2: Mean and standard deviation of GDP growth



Mean and standard deviation for the time period 1996-2014.
Sources: Eurostat, Statistics Iceland.

Investment

Chart 3 shows the standard deviation and the coefficient of variation of capital formation in Iceland, where fluctuations in capital formation are among the highest in developed countries. Investment is the component of domestic demand that fluctuates the most, usually leading the business cycle by 1-2 quarters.[9] Among the components of investment, business investment is particularly volatile. On average, about 30% of business investment has been in aluminium and energy-intensive industry, a sector that is dependent on investors' expectations concerning global aluminium prices. Wide fluctuations in investment affect demand for credit; therefore, credit institutions must be able to respond swiftly to rapid credit growth or sudden contractions. Similarly, fluctuations in investment affect labour demand and firms' operational foundations.

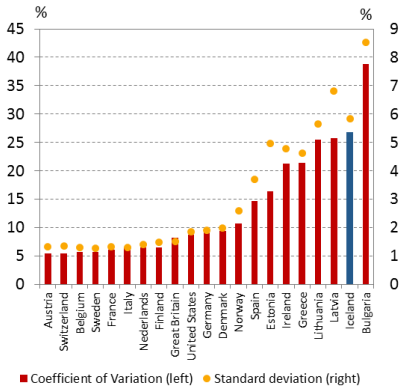
Private consumption

The contribution of private consumption to GDP growth was about 2 percentage points in 2014 (when GDP growth measured 1.9%). It is usually the component that contributes most strongly during upswings. [10] Fluctuations in private consumption in Iceland are very pronounced, and as Chart 4 indicates, the standard deviation of the percentage change in private consumption was about 5.6 percentage points over the period 1996-2013, as opposed to around 1-1.5 percentage points in the other Nordic countries. Wide swings in private consumption make planning and

[8] Bjarni G. Einarsson, Gudjón Emilsson, Svava J. Haraldsdóttir, Thórarinn G. Pétursson, and Rósa B. Sveinsdóttir (2013). On our own? The Icelandic business cycle in an international context. Central Bank of Iceland *Working Paper* no. 63, page 3.
[9] Bjarni G. Einarsson, *et al.* (2013). On our own? The Icelandic business cycle in an international context. Central Bank of Iceland *Working Paper* no. 63.
[10] Central Bank of Iceland (2012). Iceland's currency and exchange rate policy options. *Special Publication* no. 7, page 250.

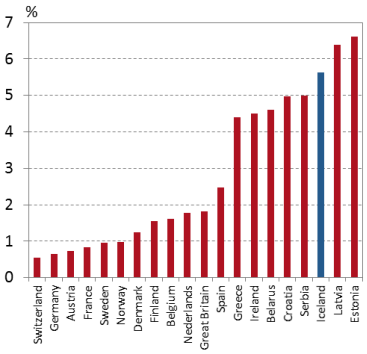
inventory management more difficult for firms, and contractions in demand can cause firms to lose revenues.

Chart 3: Variations in capital formation



Sample period 1995-2014. Capital formation is measured in a ratio of GDP. The coefficient of variation is the ratio between standard deviation and mean.
Source: World Bank

Chart 4: Standard deviation of yearly change in private consumption

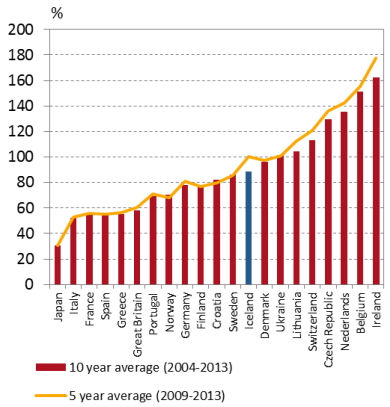


Sample period 1996-2013
Source: World Bank.

Foreign trade and the openness of the economy

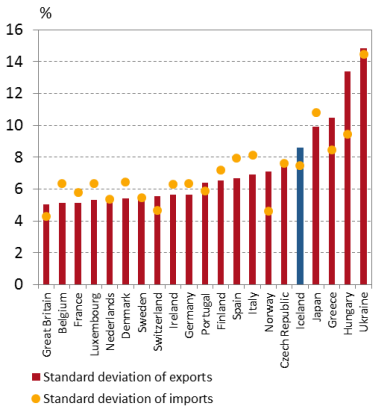
The openness of an economy can be determined, among other things, from the ratio of import and export volumes to GDP. The more open the economy is, the higher the ratio is. The openness of an economy indicates that the economy relies on imports and exports, both because of specialisation and because of a shortage of raw materials and goods that the economy depends on being able to import for further production or consumption. The Icelandic economy is open in international terms, as Chart 5 indicates. It is interesting, however, that in comparison with other small, open economies, the above-described ratio is quite low in Iceland, as there is generally a negative correlation between the size of an economy and the ratio of external trade to GDP.[11] The high foreign trade ratio could mean that the economy is more sensitive to the effects of internal and external shocks, but by the same token, this can enhance stability, thereby increasing resilience to shocks. The contribution of net trade to the business cycle generally has a countercyclical effect, as imports in particular contract during a downward cycle.

Chart 5: Foreign trade as a ratio of GDP



Foreign trade is here shown as the sum of imports and exports.
Source: World Bank.

Chart 6: Standard deviation of the year on year change in imports and exports.



Imports and exports measured as a percentage of GDP.
Source: World Bank.

[11] Central Bank of Iceland (2012). Iceland's currency and exchange rate policy options. *Special Publication* no. 7, page 220.

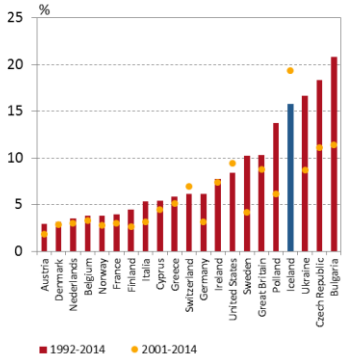
As Chart 6 illustrates, imports and exports fluctuate widely in Iceland. The same is true of terms of trade: commodities constitute a large share of foreign trade in the countries with the most volatile terms of trade. The importance of terms of trade for the business cycle in Iceland has been demonstrated, as research indicates that terms of trade shocks explain nearly half of short-term fluctuations in GDP.[12]

The króna and the price level

Iceland is a small, open economy with an independent currency. Both the nominal exchange rate and the real exchange rate, which indicates the purchasing power of GDP, have generally fluctuated more in Iceland than in other developed countries. As can be seen in Chart 7, the standard deviation of the real exchange rate was higher in Iceland than in comparison countries during the period from 2001 through 2014.[13]

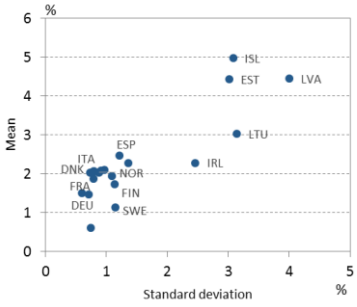
According to the Central Bank *Special Publication* entitled "Iceland's currency and exchange rate policy options", the domestic foreign exchange market is quite immature, and turnover has been low, even during the pre-crisis upswing. Furthermore, the transaction costs associated with foreign currency trading are unusually high.[14]

Chart 7: Standard deviation of real exchange rate



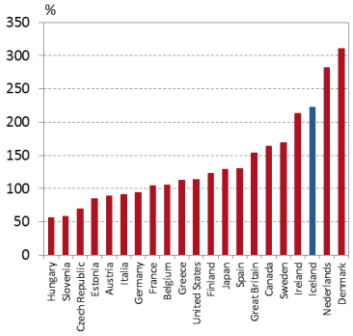
Source: International Monetary Fund.

Chart 8: Mean and standard deviation of inflation



Time period 1995 - 2014.
Source: International Monetary Fund.

Chart 9: Household debt to disposable income ratio



Statistics for the year 2013
Sources: OECD, The Central bank of Iceland, Statistics Iceland.

Household debt

Icelandic households are heavily leveraged in international context, and the ratio of household debt to disposable income was 222% in 2013. It has improved considerably since then, however, owing in part to rising disposable income and the Government's write-downs of indexed mortgage debt, and is now down to 207%. The percentage of individuals who own their homes is and has generally been higher in Iceland than in neighbouring countries; therefore, it is normal that household debt levels should be higher overall. On the other hand, this entails that households' housing equity risk is higher than in many other economies. The large percentage of homeowners also implies that a large share of Icelandic households' capital is tied up in residential housing; therefore, individuals tend to have fewer liquid assets that they can use to ride out periods of temporary financial hardship. This is particularly the case among young people, for whom real estate accounts for a larger share of total assets than it does among older people.

[12] Már Gudmundsson, Thórarinn G. Pétursson, and Arnór Sighvatsson (2000). Optimal Exchange Rate Policy: The Case of Iceland. Central Bank of Iceland. Central Bank of Iceland *Working Paper* no. 8, page 29.
[13] Central Bank of Iceland (2012). Iceland's currency and exchange rate policy options. *Special Publication* no. 7, page 297.
[14] *ibid*, pp. 299-302.

Young people are therefore vulnerable to external shocks such as fluctuations in asset prices or personal income.[15]

A high leverage ratio entails systemic risk that makes households more sensitive to shocks, which in turn increases credit institutions' risk of default.

Characteristics, scope, and the importance of deposit-taking institutions

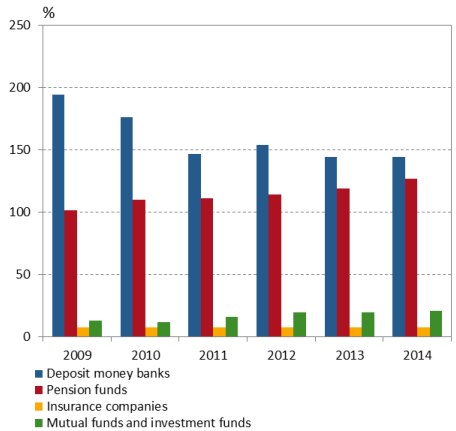
Before the financial crisis struck in 2008, the Icelandic banks' assets totalled about ten times Iceland's GDP, but they have declined significantly since then. Chart 10 shows how deposit-taking institutions' assets had fallen to less than twice GDP by 2009 and have fallen further since then, to just under 150%. At the same time, pension funds' assets have grown considerably, and their combined assets are now approaching those of the deposit-taking institutions. In terms of proportional size, the Icelandic banking system is now around the European average and, in comparison, the Danish and Swedish banking systems are well over three times GDP.[16]

Although the size of the Icelandic banks relative to GDP has declined, the importance of the banking system for the real economy is undeniable. The service that financial institutions provide to the economy is necessary, and it adds value.

There are no foreign banks operating in Iceland, and Icelandic market agents' access to financial services is largely restricted to Icelandic service providers.

In August 2015, there were four commercial banks, four savings banks, and five credit institutions operating in the Icelandic credit market, in addition to the Housing Financing Fund. The total assets of credit institutions and the Housing Financing Fund amounted to 4,222 b.kr., including commercial bank assets totalling 3,177 b.kr.

Chart 10: Size of financial institutions as a ratio of gross domestic production



Size measured as total assets.
Source: The Central bank of Iceland.

The framework for deposit-taking institutions

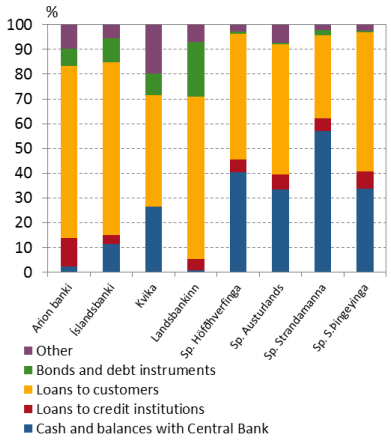
Icelandic deposit-taking institutions' assets consist mainly of loans to customers, which highlights the importance of commercial banking activities at these institutions. The weight of customer loans is higher for the commercial banks than for the savings banks, but the proportional weight

[15] Central Bank of Iceland (2015). *Financial Stability* 2015/1, pp. 52-53.
[16] Finansinspektionen (2014). Memorandum: Capital requirements for Swedish banks, page 45.

of cash and deposits with the Central Bank is much higher for the savings banks. In the composition of loans, there are certain similarities across banks.

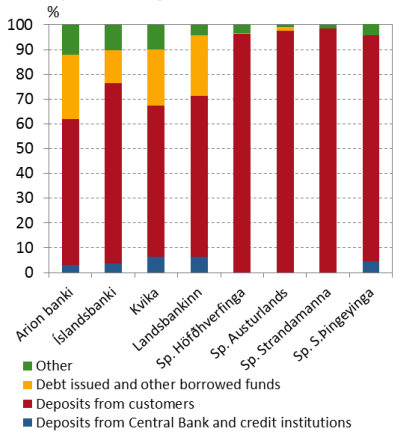
The deposit-taking institutions' risk is almost entirely vis-à-vis residents, as over 86% of their exposures are domestic.[17] Banking system lending therefore reflects the homogeneity of the economy, which is dominated by a small number of sectors.

Chart 11: Composition of the asset side of deposit-taking institutions' balance sheet



Sources: Interim financial statements of deposit-taking institutions from Q2 or Q3 2015 as available.

Chart 12: Composition of the liabilities side of deposit-taking institutions' balance sheet



Sources: Interim financial statements of deposit-taking institutions from Q2 or Q3 2015 as available.

Default

As is stated above, variations in a number of economic variables, such as GDP, private consumption, and exports, is greater in Iceland than it is elsewhere in Europe. There are also clear signs of connections between bankruptcy and various economic variables such as unemployment, GDP, and private consumption; therefore, there are strong indications that the same is true of the default that precedes bankruptcy. The homogeneity of the domestic economy is a factor in this.

Icelandic financial institutions' capital adequacy requirements are based on the standardised approach of the Basel Committee. The standards define minimum capital requirements for international banks, with respect to expected default and the correlation between default and GDP internationally.18 Countries where localised risk in the banking system is relatively high are advised to evaluate whether they should impose capital requirements in excess of the minimum.19

It follows from this that capital requirements should be higher than is required under the Basel Committee's standardised approach in order to achieve the same results in mitigating credit risk.

The impact of the business cycle on the status of the banking system

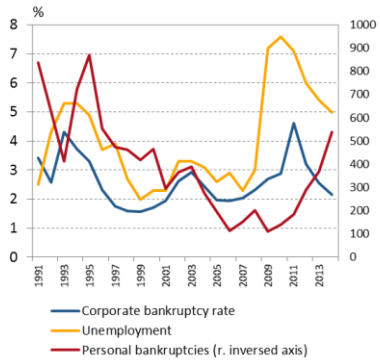
Business cycles have multiple effects on financial institutions. Developments in non-performing loans and loan losses can be explained in part with figures on corporate and personal insolvency and unemployment. Corporate insolvency and unemployment have more or less developed in tandem in recent years, as unemployment is a leading indicator of insolvency. Personal bankruptcy stands out more, and there is not as clear a connection with unemployment. On the other hand, the rise in unemployment was followed by an increase in bankruptcy in 1992-1995, and the

[17] Source: Financial Supervisory Authority.
[18] Basel Committee on Banking Supervision (2006). International Convergence of Capital Measurements and Capital Standards, Article 9.
[19] *ibid*, Article 10.

number of personal bankruptcies has risen rapidly in recent years, in the wake of the post-crisis spike in unemployment. Moreover, personal bankruptcy proceedings are a delicate and time-consuming process that can have a long prelude, often coupled with default and write-offs by credit institutions.

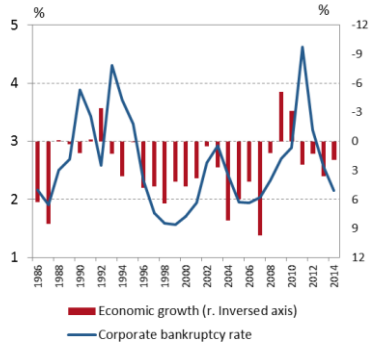
GDP growth and private consumption are leading indicators of the frequency of corporate insolvency, as a contraction in private consumption generally precedes a wave of company failures by 1-2 years.

Chart 13: Corporate and private bankruptcies and unemployment



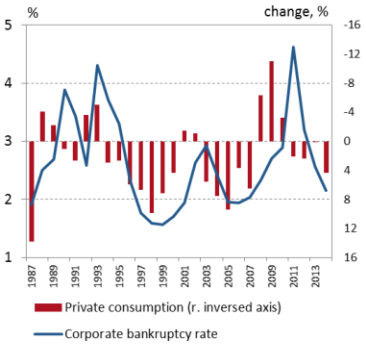
Corporate bankruptcy rate is the ratio of bankrupt firms each year to total registered corporations.
Sources: Icelandic Historical Statistics, Statistics Iceland, Central Bank of Iceland

Chart 14: Corporate bankruptcy rates and economic growth



Corporate bankruptcy rate is the ratio of bankrupt firms each year to total registered corporations.
Sources: Icelandic Historical Statistics, Statistics Iceland, Central Bank of Iceland

Mynd 15: Corporate bankruptcy rates and private consumption



Corporate bankruptcy rate is the ratio of bankrupt firms each year to total registered corporations.
Sources: Icelandic Historical Statistics, Statistics Iceland, Central Bank of Iceland

It is possible to use stress tests to assess the impact of systemic risks on banks' operations and balance sheet. The stress tests carried out by the Central Bank of Iceland and the Financial Supervisory Authority in 2014/15 give an indication of banks' sensitivity to adverse developments in the economy.20 The stress scenario entails several systemic risks, such as the depreciation of the currency, a downturn in fish catches, and falling bond prices, owing to the interactions between current market conditions and the shock.21 The stress test indicates, as do other stress tests conducted by the authorities and supervised entities, that there is significant systemic risk in the Icelandic economy.

Although the banking system has changed since the financial crisis of autumn 2008, similar systemic risks still exist, such as the small size of the economy, the small currency in particular; wide fluctuations in economic variables; and increased concentration in the banking sector with reduced numbers of savings banks.

Systemic risk buffer for deposit-taking institutions

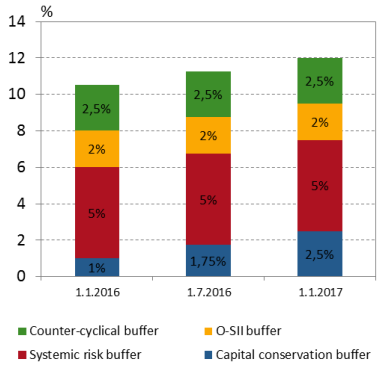
Capital buffers were incorporated into the law with Act no. 57/2015, and the Financial Supervisory Authority has recommended, ever since the 2014 supervisory review and evaluation process was carried out, that certain deposit-taking institutions assume that capital buffers would be imposed upon them. The capital buffers take legal effect on 1 January 2016. As Chart 16 shows, the authorisation to impose capital

[20] A more detailed discussion of the stress test and the results of it can be found in Central Bank of Iceland (2015), *Financial Stability* 2015/2.
[21] Non-residents own about 20% of Treasury bonds in the market; the stress scenario assumes that half of them will be sold. In addition, bond prices will fall due to increased interest rates.

buffers takes full effect on 1 January 2016, apart from the capital conservation buffer, which will be introduced in stages in 2016 and will take full effect on 1 January 2017.

The capital buffers will be additional to the Pillar I and II capital requirements. The reserve requirements due to the capital buffers must be met with Tier 1 capital (own funds Part A), according to Article 84, Paragraph 5 of the Act on Financial Undertakings, no. 161/2002, after deducting the additional capital items according to Article 1 of Financial Supervisory Authority Rules no. 1250/2012. It should also be noted that according to Article 84(b), Paragraph 4 of the Act on Financial Undertakings, the repercussions of not fulfilling the systemic risk buffer requirements could be more severe than for other capital buffers. For instance, the Financial Supervisory Authority could revoke a financial institution's operating licence, either entirely or partially, if the institution concerned does not maintain enough capital to cover the systemic risk buffer.

Chart 16: Capital buffers and their maximum value



The graph shows the maximum value allowed for each capital buffer except the systemic risk buffer, which has no upper limit.
Source: Central Bank of Iceland.

Conclusion

There is considerable systemic risk in Iceland, owing to the small size of the economy, sectoral concentration, fluctuations in capital flows, and exchange rate volatility. The economy is therefore vulnerable to shocks, which is reflected in greater variability of economic variables and default levels than in comparison countries. This systemic risk applies to all of deposit-taking institutions' domestic exposures; therefore, it is important that all of these institutions be resilient enough to withstand such risk.

As a result, it is clear that there is a need to activate the systemic risk buffer. The size of the buffer will always be somewhat subject to expert assessment of the underlying risk, and a number of factors must be considered in a decision to apply the systemic risk buffer.

With reference to the underlying risks and the impact on financial stability and the real economy, the Financial Stability Council recommends to the Financial Supervisory Authority that a systemic risk buffer be imposed on deposit-taking institutions, and that it be set at 3% of risk-weighted domestic assets from 1 April 2016 onwards. It is recommended that the capital buffer be maintained on a consolidated basis.

The Financial Supervisory Authority can be expected to review the results of its appraisal and assessment process in cases where capital has already been committed under Pillar II for the same risks as the systemic risk buffer is intended to address. In order to meet the needs of smaller deposit-taking institutions, it is recommended that the systemic risk buffer imposed on these smaller institutions – i.e., those not classified as systemically important – be introduced incrementally, as follows: from 1 April 2016, 1%; from 1 January 2017, 1.5%; from 1 January 2018, 2%; and from 1 January 2019, 3%.

Table 1: Introduction of systemic risk buffer

	1 Apr 2016	1 Jan 2017	1 Jan 2018	1 Jan 2019
Arion Bank hf.	3%	3%	3%	3%
Íslandsbanki hf.	3%	3%	3%	3%
Kvika banki hf.	1%	1,5%	2%	3%
Landsbankinn hf.	3%	3%	3%	3%
Sparisjóður Austurlands hf.	1%	1,5%	2%	3%
Sparisjóður Höfðhverfinga ses.	1%	1,5%	2%	3%
Sparisjóður Strandamanna ses.	1%	1,5%	2%	3%
Sparisjóður Suður-Þingeyinga ses.	1%	1,5%	2%	3%