



**Annex 1: Supervisory Benchmarks
for the Setting of Pillar 2
Additional Own Funds
Requirements for Credit and
Concentration Risk**

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1. Introduction

This document is an Annex to the *Common criteria and methodologies for SREP (Almenn viðmið og aðferðafræði vegna könnunar- og matsferlis hjá fjármálafrirtækjum)* which describes the criteria, procedures and methodology applied in the FME's assessment of institutions' overall risk level and need for capital, i.e. SREP. The methodology of the FME is based on the European Banking Authority's [Guidelines on Common Procedures and Methodologies for SREP](#).¹

Building on Chapter 2.4.3 in the main text, this Annex further elaborates on specific supervisory benchmark calculations used by the FME to inform the setting of Pillar 2 capital for credit risk and concentration risk. Additional own-funds requirements are determined on a risk-by-risk basis, using supervisory judgement, supported by the ICAAP calculations of institutions, the outcome of supervisory benchmarks and other relevant inputs, including those arising from dialogue with the institutions.

Supervisory benchmarks and *benchmark calculations* refer to risk-specific quantitative tools developed by the FME to provide an estimation of additional own funds needed to cover risks or elements of risk not covered by [Regulation \(EU\) No 575/2013](#),² cf. [Regulation No 233/2017](#)³ or to further support the determination of risk-by-risk additional own funds requirements where ICAAP calculations for those material risks, or elements of such risk, are considered insufficient or are unavailable. The benchmark calculations generally apply to all institutions using the standardised approach. Given the variety of different business models, the outcome of the supervisory benchmarks may not be appropriate in every instance for every institution. The benchmark calculations have been constructed adequately to avoid double counting.

2. Credit risk

Institutions' capital requirements for credit risk are generally determined under Pillar 1 in accordance with Regulation (EU) No 575/2013, cf. Regulation No 233/2017. According to FME's assessment, the risk for certain asset classes and high lending growth is not appropriately covered by the standardised approach. Therefore, the Authority regularly assesses the need for additional own funds for credit risk, under Pillar 2, as a part of its SREP. This chapter sets out the methodology and the supervisory benchmarks the FME uses in its assessment.

2.1 Holding companies with limited debt repayment capacity

Loans to holding companies that do not have independent cash flow generally pose more risk than loans to operating companies with independent cash flows. The FME regards 150% risk weight to be appropriate for loans to holding companies, irrelevant of securities pledged for the loans. If the

¹Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP) and supervisory stress testing (EBA/GL/2014/13 as amended by EBA/GL/2018/03): <https://www.eba.europa.eu/documents/10180/2282666/Guidelines+on+common+procedures+and+methodologies+for+SREP+and+supervisory+stress+testing+-+Consolidated+version.pdf>.

²Regulation (EU) No 575/2013: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=en>.

³Regulation No 233/2017 on the Prudential Requirements Concerning the Activities of Financial Undertakings (in Icelandic): https://www.reglugerd.is/reglugerdir/eftir_raduneytum/fjarmala_og_efnahagsraduneyti/nr/0233-2017.

value of pledged shares, and the haircut applied, is too low in the opinion of the FME, further capital will be required to meet the supervisory benchmark (see Chapter 2.3 below). A holding company is considered to have an independent cash flow if it fulfils either of the following conditions:

- (a) The holding company’s regular cash flow⁴ is sufficient to pay its interest-bearing debt in a regular amortised schedule over its lifetime.
- (b) Operating companies that are subsidiaries of the holding company do not have any long-term debt and are prohibited from borrowing long-term.

Benchmark calculations for additional capital needs (K) because of holding companies with limited debt repayment capacity:

$$K = (X - Y) * \text{Book value of loans} * 8\%$$

	<u>X</u>	<u>Y</u>
Corporates	150%	100%
Retail	150%	75%

The benchmark calculations are not applied in cases where the holding company is in non-performing or forbearance status and its debt already has a higher risk weight because of that.

2.2 Non-performing exposures and forbearance

The FME has developed a methodology to classify assets according to quality, currently embedded in the Loan Portfolio Analysis Report (LPAR). The basis of the non-performing definition in LPAR is the cross-default methodology and a strict definition of loans in forbearance status.⁵ The FME considers it appropriate to hold own funds under Pillar 2 for loans categorised as non-performing according to LPAR or loans that have had a performing status for less than a year, and are not already reported in COREP as defaulted. The benchmark for additional capital needs (K) because of non-performing exposures is calculated as follows:

$$K = (X - Y) * \text{Book value of loans} * 8\%$$

	<u>X</u>	<u>Y</u>
Corporates	150%	100%
Retail	150%	75%
Regional Governments	150%	20%
Real estate: Loans fulfilling conditions for 35% risk weight	100%	35%

⁴ Dividends and sale of assets are not regarded as regular cash flow
⁵ The methodology for asset classification embedded in the LPAR generally provides more information for the FME of the inherent risk of loan portfolios and is less dependent on institutions’ own judgement than the methodology of the COREP or FINREP reports. The requirement to complete a monthly LPAR is currently under review and this supervisory benchmark calculation may be amended in the future.

Real estate: Loans fulfilling conditions for 50% risk weight	100%	50%
Real estate: Loans fulfilling conditions for 75% risk weight	150%	75%
Real estate: Loans fulfilling conditions for 100% risk weight	150%	100%

2.3 Cases where the book value of a loan is based on the value of pledged assets rather than cash flow from regular operations

In cases where the value of a loan is based on the value of pledged assets rather than regular cash flow from the operations of an obligor, irrespective of performing status, the FME deems appropriate that the pledged assets should be valued by using the best estimate of their value and prudent haircuts to meet liquidity risk, collection costs, the liquidation periods for the pledged assets and maintenance costs for some type of assets. The FME regards the following haircuts for different assets classes as prudent:

Table 1 Prudent haircuts for different asset classes

Asset classes	Haircut
Cash	0%
Residential housing	15%
Commercial real estate	20%
Land ready for development	25%
Fishing ships	25%
Vehicles	30%
Agriculture land	30%
Raw land	35%
Listed shares on the main index	50%
Other pledged assets	50%
Receivables	50%
Listed shares on the secondary index (First North)	60%
Unlisted shares	70%
Inventory	70%
Fishing quota (see Chapter 2.3.1 below)	Table 2 below

Benchmark calculations where the book value of the loan is based on the value of pledged assets rather than cash flow from regular operations:

$$K = M - (M * RW * 8\%)$$

$$M = B - E + (H * E)$$

RW: risk-weight of the loan

B: Book value of loan

E: Fair value estimate⁶

H: Haircut

M: Overvaluation of loan

K: Additional capital needs

Example: The overvaluation (M) of a holding company where the only asset is 1.200 m ISK worth of unlisted shares with a debt of 1.000 m ISK with no specific credit adjustment (Claim Value = Book Value) would be:

$$M = 640 \text{ m ISK} = 1.000 \text{ m ISK} - 1.200 \text{ m ISK} + (70\% * 1.200 \text{ m ISK})$$

The benchmark calculations for additional capital needs would be as follows:

$$K = 589 \text{ m ISK} = 640 \text{ m ISK} - (640 \text{ m ISK} * 100\% * 8\%)$$

The remaining book value of the loan (360 m ISK) would get a 150% risk weight according to point 1.1⁷

2.3.1 Prudent haircuts for fishing quotas⁸

In general, there is great uncertainty about the value of fishing quotas. Transactions in the market for fishing quotas in Iceland are usually low in volume (small individual transactions). Therefore, the current market price of the quota is not considered to reflect the fair value of fishing quotas in transactions of higher volume.

The fair value of quota is estimated from the total value of the fishing industry. The risk from possible changes in total allowable catch and price fluctuations are the predominant factors in the estimation of prudent haircuts. The probability of catch failure, specifically in pelagic species, is considered.

The value estimations presented below are only estimations of the quota value, excluding the vessels they are attached to, cf. Chapter III E. of [Act No 75/1997](#).⁹ However, it should be noted that quotas cannot be pledged individually and are only considered as collateral as a part of a pledged fishing vessel that they are attached to, cf. Paragraph 4 of Article 3 of Act No 75/1997.

⁶ Fair value is defined as a sale price agreed upon by a willing buyer and seller, assuming both parties enter the transaction freely.

⁷ Loans with insufficient haircuts can also get higher capital requirements because they are in other risk categories as in Chapters 1.1, 1.2, 1.4 and 1.5.

⁸ The criterion on the estimated value of fishing quota was first published in a Circular Letter dated 13 July 2015, and made public on FME's website. The Circular stated that this criterion could be republished as a part of the general criteria and methodology for SREP. The Circular, along with an explanatory report on the valuation of fishing quotas, is available [here](https://www.fme.is/log-og-tilmaeli/vidmid-fme/nr/2445) (in Icelandic): <https://www.fme.is/log-og-tilmaeli/vidmid-fme/nr/2445>.

⁹ Act on Contractual Liens, No 75/1997 (in Icelandic): <http://www.althingi.is/lagas/nuna/1997075.html>.

In view of the above, the FME has developed an estimate of the value of fishing quota presented in Table 2:

Table 2 Prudent haircuts for valuation of fishing quotas

Species	Fair Value of Fishing Quota in 2014 in the Common Quota System (ISK/Kg)	Fair Value of Fishing Quota in 2014 in the Longline Quota System (ISK/Kg)	Fair Value of Fishing Quota in 2017 in the Common Quota System (ISK/Kg)	Fair Value of Fishing Quota in 2017 in the Longline Quota System (ISK/Kg)	Haircut 2014	Haircut 2017
Porskur / Cod	1,600	1,200	1,377	964	30%	30%
Ýsa / Haddock	1,410		1,527		30%	30%
Ufsi / Saithe	930	470	836	251	30%	
Karfi / Redfish	820		539		30%	
Djúpkarfi / Deepwater redfish						100%
Litli karfi / Norway redfish						100%
Úthafskarfi / Deepwater redfish	850		443		70%	70%
Steinbítur / Atlantic wolffish	1,200		791		30%	30%
Langa / Ling	1,310		673		30%	30%
Blálanga / Blue ling	730		471		70%	70%
Keila / Cusk	660		583		30%	30%
Skötuselur / Monkfish	1,810		1,137		30%	30%
Gulllax / Atlantic argentine	440		267		70%	70%
Grálúða / Greenland halibut	1,690		2,199		30%	30%
Skarkoli / Plaice	1,010		484		30%	50%
Þykkvalúra / Lemon sole	1,080		865		30%	50%
Langlúra / Witch flounder	850		364		30%	50%
Sandkoli / Common dab	350		160		30%	50%
Skráplúra / American plaice	370		112		30%	100%
Síld / Herring	460		163		60%	60%
N.Í síld / N.I. herring	520		0		70%	70%
Loðna / Capelin	570		206		70%	70%
Kolmunni / Blue whiting	130		148		80%	90%
Makrill / Mackerel	250		326		100%	100%
Humar / Lobster	14,700		13,375		30%	30%
Rækja / Shrimp	1,380		1,858		100%	100%

2.4 Debt criteria for highly indebted municipalities

A municipality is considered highly indebted if, simultaneously, its debt-to-income ratio is above 150% and if it does not meet certain minimums of working capital from operations to income, expressed in Table 2. If the debt-to-income¹⁰ ratio is in excess of certain benchmarks (150%; 200%; 250%; 300%), the ratio of net working capital from operations (*I. veltufé frá rekstri*) to income has to be in excess of certain minimums (7.5%; 10%; 12.5%; 15%), attached to the debt benchmarks respectively in Table 2, to avoid the municipality from being considered highly indebted. As an example, if a municipality’s debt ratio is 150%-199% of annual income, its ratio of working capital is required to be above 7.5% to avoid the municipality from being considered highly indebted.

Generally, municipalities with debt-to-income ratios lower than 150% are not considered heavily indebted, irrespective of the ratio of working capital to income. Municipalities with working capital from operations higher than 15% of income are not considered heavily indebted, irrespective of their debt ratio.

Table 3 Municipalities – Debt criteria

Municipalities - Debt criteria				
Debt-to-income ratio	≥150%	≥200%	≥250%	≥300%
Working capital from operations to income ratio	<7.5%	<10%	<12.5%	<15%

Municipalities that meet both requirements in each individual column in Table 3 are generally considered highly indebted.

Benchmark calculations for additional capital needs (K) because of loans to heavily indebted municipalities:

$$K = (X - Y) * \text{Book value of loans} * 8\%$$

	X	Y
Corporates	150%	100%
Retail	150%	75%
Regional Governments	150%	20%
Real estate: Loans fulfilling conditions for 35% risk weight	100%	35%
Real estate: Loans fulfilling conditions for 50% risk weight	100%	50%
Real estate: Loans fulfilling conditions for 75% risk weight	150%	75%
Real estate: Loans fulfilling conditions for 100% risk weight	150%	100%

2.5 Land acquisition, development and construction (ADC) exposures

ADC exposures have increased credit risk characteristics relative to other credit risk exposures. The ADC exposures methodology employed by the FME is based on the Basel methodology which includes risk weight treatment for ADC exposures.

¹⁰ Consolidated balance sheet (A and B parts combined).

In FME’s assessment, ADC exposures refers to loans to companies or SPVs financing any of the land acquisition for development and construction purposes, or development and construction of any residential or commercial property.¹¹ ADC exposures will be subject to 150% risk weight. ADC exposures to residential real estate may be subject to 100% risk weight, provided that the following criteria are met:

- a) Loan to value (LTV¹²) is less than or equal to 80%;
- b) The borrower has contributed cash¹³ to the project of at least 15% of the real estate’s appraised as-completed value, prior to the advancement of funds by the bank; and
- c) The borrower’s contributed capital is contractually required to remain in the project until the credit facility is converted to permanent financing, sold or paid in full.

Benchmark calculations for additional capital needs because of ADC exposures:

$$K = (X - Y) * B * 8\%$$

K: Additional capital needs

X: 150% for ADC exposures (residential real estate exposures may be subject to 100% if FME’s criteria are met).

Y: Pillar 1 risk-weight of the loan

B: Book value of loan

2.5 High Volatility Commercial Real Estate (HVCRE)

HVCRE loans are all Acquisition, Development and Construction (ADC) commercial real estate loans.¹⁴ Loans for permanent financing, where the underlying project is complete and no future advances will be made, are not considered HVCRE loans. Loans falling under the HVCRE definition will be subject to a 150% risk weight, except when all the following conditions are met:

- (a) Loan to value (LTV¹⁵) is less than or equal to 80%;
- (b) The borrower has contributed cash¹⁶ to the project of at least 15% of the real estate’s appraised ‘as complete’ value, prior to the advancement of funds by the bank; and

¹¹ Loans to not for profit companies that are building family rental housing are not considered ADC.

¹² Value is the prospective stabilized market value “as completed” reflects the property’s market value as of the time that development is expected to be completed. The prospective market value “as stabilized” reflects the property’s market value as of the time the property is projected to achieve stabilized occupancy.

¹³ Cash that the borrower has used to buy land is then added into the project can be considered part of the 15% cash contribution.

¹⁴ Loans to not for profit companies that are building family rental housing are not considered HVCRE

¹⁵ Value is the prospective stabilised market value ‘as completed’ reflects the property’s market value as of the time that development is expected to be completed. The prospective market value ‘as stabilized’ reflects the property’s market value as of the time the property is projected to achieve stabilised occupancy.

¹⁶ Cash that the borrower has used to buy land that is subsequently added into the project can be considered part of the 15% cash contribution.

(c) The borrower's contributed capital is contractually required to remain in the project until the credit facility is converted to permanent financing, sold or paid in full.

Benchmark calculations for additional capital needs (K) because of HVCRE loans:

$$K = (X - Y) * \text{Book value of loans} * 8\%$$

	X	Y
Corporates	150%	100%
Retail	150%	75%
Real estate: Loans fulfilling conditions for 35% risk weight	100%	35%
Real estate: Loans fulfilling conditions for 50% risk weight	100%	50%
Real estate: Loans fulfilling conditions for 75% risk weight	150%	75%
Real estate: Loans fulfilling conditions for 100% risk weight	150%	100%

2.6 Undrawn credit lines with a conversion factor of 0%

The Basel Committee states that consumer legislation, administrative restrictions in institutions and reputational risk will make it difficult for institutions to cancel granted credit lines at the short notice required in order to use a [zero-conversion factor in practice](#).¹⁷ According to FME's assessment, granted credit lines where the institution has opted for a zero-conversion factor are generally not without risk. Thus, consideration should be given to setting a Pillar 2 capital add-on for these portfolios.

Benchmark calculations for additional capital needs (K) because of off-balance sheet exposures with a zero-conversion factor, in retail:

$$K = \text{Off balance-sheet exposure of 0\% conversion factor} * 10\% * 8\%$$

2.7 The conclusion of Asset Quality Review (AQR)

The FME regularly reviews the quality of loan portfolios of institutions. Based on AQR results, the FME may advise the concerned institution to review its valuation or instruct the institution to lower the amount of eligible own funds.

2.8 High lending growth

High lending growth is one of the key determinants of increased credit risk. Icelandic experience has shown that strong lending growth by credit institutions is frequently achieved at the expense of credit quality. As a result, lending growth should be monitored on an ongoing basis by supervisors.

¹⁷ See: <https://www.bis.org/bcbs/publ/d347.pdf>

The Icelandic banks' rapid lending growth prior to the last financial crisis is an example of how excessive risk can build up in institutions' loan portfolios over a relatively short period of time, resulting in significant loan losses.

Experience in other countries shows that banks, which increase their lending most rapidly, are most prone to crisis.¹⁸ Although Pillar 1 requirements capture some of the risk related to strong lending growth through relevant risk weights, a period of strong lending growth may encourage lending institutions to incur credit risk not fully captured by Pillar 1. The elements of credit risk not covered by Pillar 1 are considered to have operational risk characteristics and are, among other things, associated with credit administration, monitoring and reporting.

The methodology employed by the FME to capture institution-specific additional risk related to high lending growth is based on a methodology implemented in Norway. The method captures excess risk related to credit growth that can build up in institutions' loan portfolios that is not covered by general capital buffers. The method distinguishes between loans to individuals, corporates and foreign borrowers, regardless of the issuing currency of loans. All foreign borrowers¹⁹ are treated as corporates under this methodology. Loans to the public sector and financial institutions are not included in the portfolios. Large exposures outside of institutions' geographical market area have proven to be particularly risky for the institutions.

Additional charges under Pillar 2 are calculated on the basis of ad-hoc requested reports from the institutions. Risk increase is considered to be related to the length of the period of high lending growth, and the FME has opted to measure lending growth over a two-year period. Additional own funds requirements will be determined based on the claim value of loans, using supervisory judgement. The FME will take into account the nature of the lending growth, and assess the need for adjustments on the capital requirement, for example, when loan portfolios are acquired.

Risk parameters used to determine additional own funds requirements are based on default experience. Based on the abovementioned definitions of the loan portfolios, each loan portfolio can contain both loans in ISK and FX. In the calculations of lending growth, the FME will make adjustments for inflation for all ISK loans (real growth), but lending growth for FX loans will be calculated in nominal terms.

The capital requirement (K) is to be calculated for lending growth above 8 percent in the following formulas for, respectively, the individuals' (I) portfolios, corporate portfolios (C) portfolios and foreign borrowers' (F) portfolios:

$$K_I = \text{Max}[L_I(1 - e^{2(0.08-G_I)})0.02 ; 0]$$

$$K_C = \text{Max}[L_C(1 - e^{2(0.08-G_C)})0.05 ; 0]$$

$$K_F = \text{Max}[L_F(1 - e^{2(0.08-G_F)})0.05 ; 0]$$

¹⁸ See Joseph Stiglitz, *Monetary and Exchange Rate Policy in Small Open Economies: The Case of Iceland*, pages 27-28.

¹⁹ In this methodology, foreign borrowers are defined as borrowers both corporates and individuals, with residence in other countries.

$L = \text{Total loan portfolio (Claim value of loans)}$

$G = \text{Lending growth over two years – annualised (geometric average)}$

$$G = \left(\frac{L_t}{L_{t-2}} \right)^{0.5} - 1$$

3. Concentration risk

This chapter sets out the methodology the FME uses to inform the setting of Pillar 2 capital for single-name, sectoral and geographical credit concentration risk.

3.1 Single-name concentration risk

Single-name concentration risk captures risk from the granularity of the bank's exposures. The Herfindahl-Hirschman Index (HHI) of exposure value is a good indicator of single-name concentration within a portfolio and is used by the FME as a supervisory benchmark:

$$HHI_{SN} = \sum_{i=1}^n \left(\frac{EAD_i}{EAD_{Total\ net}} \right)^2$$

n: Total number of exposures, or 100 largest exposures for an approximation, excluding exposures with 0% risk weight and exposures with increased risk weight due to specific risk in default.²⁰

EAD_i: Value of exposure i.²¹

EAD_{Total net}: Total exposure value excluding exposures with 0% risk weight and exposures with increased risk weight due to specific risk in default.

Additional capital requirements due to single-name concentration risk thus becomes:

$$K_{SN} = 1.96 \cdot HHI_{SN} \cdot EAD_{Net}^{22}$$

For larger institutions and institutions with material concentration, as decided by the FME, more advanced methods are to be used for the assessment of single-name concentration risk, that at least take into account the quality of the largest exposures (30-100).²³

3.2 Sectoral concentration risk

Sectoral concentration risk captures risk due to excess concentration of exposures in one or few sectors, or a higher ratio of total exposures in more volatile sectors compared to the Icelandic market as a whole.

The method is based on Standard & Poor's method for the same risk factor²⁴ and the method of Harry Markowitz for the calculation of variance in asset portfolio returns.²⁵

²⁰ Including exposures in default and exposures receiving higher risk weight from other parts of these benchmarks (holding companies with limited debt repayment capacity, non-performing exposures and forbearance, cases where the book value of a loan is based on the value of pledged assets rather than cash flow from regular operations, highly indebted municipalities, high volatility commercial real estate)

²¹ According to Article 390 of Regulation (EU) No 575/2013, cf. Article 92 of Regulation No 233/2017.

²² Based on *Guidelines on the Internal Capital Adequacy Assessment Process (ICAAP)* at credit institutions from 2008 where 1.96 reflects their PD and LGD experience.

²³ For example, the method set forth by Gordy and Lütkebohmert (2007), 'Granularity adjustment for Basel II', Discussion Paper 01/2007, Deutsche Bank.

²⁴ Standard and Poor's, *Bank Capital Methodology and Assumptions*, 2010

²⁵ H. Markowitz (1952). Portfolio Selection. *The Journal of Finance*, (pp. 77-91).

Relative standard deviation of return on assets (v_i) in 16 sectors²⁶ calculated with information from Statistic Iceland:^{27,28}

$$v_i = \frac{\sigma_i}{\bar{\sigma}}$$

σ_i : Standard deviation of the return on asset in sector i .

$\bar{\sigma}$: Average standard deviation of the return on asset in all sectors.

Where the average standard deviation $\bar{\sigma}$ is:

$$\bar{\sigma} = \frac{\sum_{i=1}^n \sigma_i}{n}$$

Correlation matrix of the return on assets for individual sectors (R) calculated where element $\rho_{i,j}$ is equal to:

$$\rho_{i,j} = \frac{\text{cov}(i,j)}{\sigma_i \cdot \sigma_j}$$

$\text{cov}(i,j)$: Covariance of the return of assets of sectors i and j .

Ratio of total exposure in sector i (s_i) calculated:

$$s_i = \frac{\text{EAD}_i}{\sum_{i=1}^n \text{EAD}_i}$$

EAD_i : Total exposure value in sector i .²⁹

Vector of weighted sectoral composition (a) calculated where element i is equal to:

$$a_i = s_i \cdot v_i$$

Sector load (L) calculated:

$$L = \sqrt{a^T \cdot R \cdot a}$$

Base sector load for the Icelandic market (L_{Iceland}) calculated in the same manner.³⁰

Uncalibrated c Calculated capital requirement for sectoral concentration (K_{Sector}) becomes:

$$K_{\text{Sector},u} = 13.5\% \cdot \left(\frac{L - L_{\text{Iceland}}}{L_{\text{Iceland}}} \right) \cdot \sum_{i=1}^{16} \text{EAD}_i$$

²⁶ The 18 sectors reported in table 6 of FINREP where sectors O, P and Q have been united.

²⁷ See: https://px.hagstofa.is/pxen/pxweb/en/Atvinnuvegir/Atvinnuvegir_fyrirtaeki_afkoma_2_rekstrarogefnahags/FYR08010.px/

OR See: Hagstofa.is > English > Business Sectors > Enterprises > Financial Accounts > Financial statements > Income statement and balance sheet 2002-2017: (Assets = 2-3-1 Long-term liabilities + 2-3-2 Short-term liabilities +2-4-0 Equity, Return = 1-8-0 Net profit)

²⁸ Statistics Iceland uses a different sectoral breakdown. The mapping of the breakdown to the breakdown used is shown in the appendix.

²⁹ From Table 6 of FINREP: Gross carrying amount (column 010) – Accumulated impairment (column 020)

³⁰ The FME will either provide banks with the Icelandic base sector load or the banks can approximate it with information from the Central Bank of Iceland: cb.is > Statistics > Data > Monetary Statistics. As of 30.9.2018, $L_{\text{Iceland}}=1,13247$.

Calibrated calculated capital requirement is such that a portfolio with exposure only to the most volatile sector results in a 4% capital requirement. The formula for calibrated calculated capital requirement thus becomes:

$$K_{\text{Sector}} = 4\% \cdot \left(\frac{L - L_{\text{IS}}}{v_{\text{vol}} - L_{\text{IS}}} \right) \cdot \text{EAD}_{\text{Total}}$$

v_{vol} : Relative standard deviation of return on assets for the most volatile sector.

Capital requirements for sectoral concentration are subsequently based on the calibrated calculated capital requirement for sectoral concentration, conservative expert judgement and potentially more detailed analysis. Such analysis could entail more granular breakdown and the accuracy of categorisation of larger exposures.

3.3 Geographical concentration risk

Geographical concentration risk captures risk due to the concentration of exposures in one or few countries. Concentration in Iceland, where the default rate is higher than in the G10 nations, results in higher capital requirements for those institutions that do not use the internal ratings-based method.

Table 4 Additional capital requirements of exposures in Iceland

Exposure class	Line	Risk-weight		
		PI	PII	$\Delta_{x\%}$
Regional government & institutions	180	20%	24%	4%
Commercial real estate	200	50%	61%	11%
Retail	220	75%	80%	5%
Corporate & other	230	100%	109%	9%

Appendix: Mapping of Statistic Iceland sectoral breakdown and FINREP sectoral breakdown

Hagstofa Íslands	FINREP
1 Sjávarútvegur (ÍSAT nr. 031, 102)	A Agriculture, forestry and fishing
2 Fiskeldi (ÍSAT nr. 032)	
3 Námuþróftur og vinnsla hráefna úr jörðu (ÍSAT nr. 05-09)	B Mining and quarrying
4 Matvælaframleiðsla, önnur en fiskvinnsla (ÍSAT nr. 101, 103-108)	C Manufacturing
5 Föðurframleiðsla (ÍSAT nr. 109)	
6 Framleiðsla á drykkjarvörum (ÍSAT nr. 11)	
7 Framleiðsla á textílörum (ÍSAT nr. 13)	
8 Fatagerð og framleiðsla á leðri og leðurörum (ÍSAT nr. 14-15)	
9 Framleiðsla á við, viðarvörum og korki, önnur en húsgagnagerð; framleiðsla á vörum úr hálni og fléttuefnum (ÍSAT nr. 16)	
10 Prentun, fjölföldun og pappírframleiðsla (ÍSAT nr. 17-18)	
11 Framleiðsla á efnum, efnavörum, koxi og hreinsuðum oliuvörum (ÍSAT nr. 19-20)	
12 Framleiðsla á gúmmí- og plastvörum (ÍSAT nr. 22)	
13 Framleiðsla á vörum úr málmlausum steinefnum (ÍSAT nr. 23)	
14 Framleiðsla málna (ÍSAT nr. 24)	
15 Framleiðsla á málmvörum, að undanskildum vélum og búnaði (ÍSAT nr. 25)	
16 Framleiðsla á tölvu-, rafeinda- og optískum vörum ásamt rafbúnaði og heimilistækjum (ÍSAT nr. 26-27)	
17 Framleiðsla á öðrum ótöldum vélum og tækjum (ÍSAT nr. 28)	
18 Önnur framleiðsla (ÍSAT nr. 29-32)	
19 Viðgerðir og uppsetning vélbúnaðar og tækja (ÍSAT nr. 33)	
20 Rafmagns-, gas- og hitaveitur (ÍSAT nr. 35)	D Electricity, gas, steam and air conditioning supply
21 Vatnsveita, fráveita, meðhöndlun úrgangs og afmengun (ÍSAT nr. 36-39)	E Water supply
22 Sorphirða, meðhöndlun og förgun sorps; endurnýting efnis (ÍSAT nr. 38)	
23 Bygging húsnæðis; þróun byggingarverkefna (ÍSAT nr. 41)	F Construction
24 Mannvirkjagerð (ÍSAT nr. 42)	
25 Sérhæfð byggingarstarfsemi (ÍSAT nr. 43)	
26 Sala, viðgerðir og viðhald á vélknúnum ökutækjum og tengivögnum (ÍSAT nr. 45)	G Wholesale and retail trade
27 Heildverslun, að undanskildum vélknúnum ökutækjum (ÍSAT nr. 46)	
28 Smásöluverslun, að undanskildum vélknúnum ökutækjum (ÍSAT nr. 47)	
29 Flutningar á landi og eftir leiðslum (ÍSAT nr. 49)	H Transport and storage
30 Flutningar á sjó og vatnaleiðum (ÍSAT nr. 50)	
31 Flutningar með flugi (ÍSAT nr. 51)	
32 Vörugymsla og stöðstarfsemi fyrir flutninga (ÍSAT nr. 52)	
33 Þjónustustarfsemi tengd flutningum með flugi (ÍSAT nr. 5223)	
34 Póst- og boðberaþjónusta (ÍSAT nr. 53)	
35 Rekstur gististaða (ÍSAT nr. 55)	I Accommodation and food service activities
36 Veitingasala og -þjónusta (ÍSAT nr. 56)	
37 Útgáfustarfsemi (ÍSAT nr. 58)	J Information and communication
38 Framleiðsla á kvikmyndum, myndböndum og sjónvarpsefni; hljóðupptaka og tónlistarútgáfa (ÍSAT nr. 59)	
39 Útvarps- og sjónvarpsútsending; dagskrárgerð (ÍSAT nr. 60)	
40 Fjarskipti (ÍSAT nr. 61)	
41 Þjónustustarfsemi á sviði upplýsingatækni (ÍSAT nr. 62)	
42 Starfsemi á sviði upplýsingaþjónustu (ÍSAT nr. 63)	
43 Fasteignaviðskipti (ÍSAT nr. 68)	L Real estate activities
44 Lögfræðiþjónusta, endurskoðun/reikningshald, rekstrarráðgjöf og atvinnumiðlun (ÍSAT nr. 69, 702, 78)	M Professional, scientific and technical activities
45 Starfsemi arkitekta og verkfræðinga; tæknilegar prófanir og greining (ÍSAT nr. 71)	
46 Vísindarannsóknir og þróunarstarf (ÍSAT nr. 72)	
47 Auglýsingastarfsemi og markaðsrannsóknir (ÍSAT nr. 73)	
48 Önnur sérfræðileg, vísindaleg og tæknileg starfsemi ásamt dýralækningum (ÍSAT nr. 74-75, 80)	
49 Leigustarfsemi, þó ekki fasteignaleiga (ÍSAT nr. 77)	N Administrative and support service activities
50 Atvinnumiðlun (ÍSAT nr. 78)	
51 Ferðaskrifstofur, ferðaskipuleggjendur og önnur bókunarþjónusta (ÍSAT nr. 79)	
52 Fasteignarumsýsla, hreingerningarþjónusta og skrudgarðyrkja (ÍSAT nr. 81)	
53 Skrifstofuþjónusta og önnur þjónusta við atvinnurekstur (ÍSAT nr. 82)	
54 Skipulagning á ráðstefnum og vörusýningum (ÍSAT nr. 823)	
55 Heilbrigðis- og umönnunarþjónusta (ÍSAT nr. 86-88)	O Public administration and defence, compulsory social security P Education Q Human health services and social work activities
56 Menning, afþreying og íþróttir ásamt félagasamtökum (ÍSAT nr. 90-94)	R Arts, entertainment and recreation
57 Önnur þjónustustarfsemi (ÍSAT nr. 95-96)	S Other services