



**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 *Common criteria and methodologies for SREP* (Ytri viðmið og aðferðafræði vegna könnunar- og matsferlis hjá fjármálafyrirtækjum) 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 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 the Regulation (EU) No 575/2013², cf. Regulation No 233/2017³ 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, risk for certain asset classes and high lending growth is not appropriately covered by the standardised approach. Therefore, it 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 flow. FME regards 150% risk weight to be appropriate for loans to holding companies irrelevant of securities pledged for the loans. If the

¹ Guidelines 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>

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

³ Reglugerð um varfærniskröfur vegna starfsemi fjármálafyrirtækja, nr. 233/2017:

<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 independent cash flow if it fulfills either of the following conditions:

- a) The holding company's regular cash flow⁴ is sufficient to pay its interest bearing debt in a regular amortized 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:

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

	X	Y
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 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 FME considers appropriate to hold own funds under Pillar 2 for loans categorized as non-performing according to LPAR or have had a performing status for less than a year, and are not already reported in COREP as defaulted. Benchmark calculations for additional capital needs (*K*) because of non-performing exposures are as follows:

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

	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%

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 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.

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 a obligor, irrespective of performing status, the FME deems appropriate that the pledged assets should be valued by using a best estimate of their value and prudent haircuts to meet liquidity risk, cost of collection, the periods until pledged assets are liquidated and maintenance costs for some type of assets. The FME regards the following haircuts for different assets classes as prudent:

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 1 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

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

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.kr.) would get 150% risk weight according to point 1.T

2.3.1 Prudent haircuts for fishing quotas⁸

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

Fair value of quota is estimated from total value of the fishing industry. Risk from possible changes in total allowable catch and price fluctuations are the predominant factors in the estimation of prudent haircuts. 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 they are attached to, cf. Paragraph 4 of Article 3 of Act No 75/1997.

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 July 13, 2015, and made public on FME's website. The letter stated that this criterion could be republished as a part of the general criteria and methodology for SREP. The letter, 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>.

⁹ Lög um sammingsveð, nr. 75/1997: <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 1:

Table 1 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						100%
Litli karfi						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%
Pykkvalúra / Lemon sole	1.080		865		30%	50%
Langlúra / Witch flounder	850		364		30%	50%
Sandkoli / Common dab	350		160		30%	50%
Skrápfjúra / 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 debt¹⁰ to income is in excess of certain benchmarks (150%; 200%; 250%; 300%), the ratio of net working capital from operations (*í. 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 their working capital to income ratio. Municipalities with working capital from operations higher than 15% of income are not considered heavily indebted, irrespective of their debt ratio.

Table 2 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 of individual columns in Table 2 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 High Volatility Commercial Real Estate (HVCRE)

HVCRE loans are all acquisition, development and construction (ADC) commercial real estate loans.¹¹ 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 of the following conditions are met:

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

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

- 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 complete” 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 (K) because of HVCRE loans:

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

	<u>X</u>	<u>Y</u>
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.¹⁴ 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

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.

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

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.

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 show that banks, which increase their lending most rapidly, are most prone to crisis.¹⁵

Although Pillar 1 requirements capture some of the risk related to strong lending growth through relevant risk weights, a period of strong lending growth might encourage lending institutions to incur credit risk not fully captured by Pillar 1. The elements of risk not covered by Pillar 1 are considered to have operational risk characteristics and are associated with credit administration, monitoring, reporting, etc.

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. All foreign borrowers¹⁶ 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.

Calculation of additional charges under Pillar 2 will be done 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. Risk parameters used to determine additional own funds requirements are based on default experience. The FME will make adjustments for changes in claim value of the aforementioned loan portfolios attributable to inflation and FX rate movements in the calculations of lending growth.

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

$$K_I = \text{Max}[L_I(1 - e^{2(0,08-G_I)})0,02 ; 0]$$

¹⁵ See Joseph Stiglitz, "Monetary and Exchange Rate Policy in Small Open Economies: The Case of Iceland", pages 27-28.

¹⁶ In this methodology, foreign borrowers are defined as borrowers both corporates and individuals, with residence in other countries.

$$K_C = \text{Max}[L_C(1 - e^{2(0,08-G_C)})0,05 ; 0]$$

$$K_F = \text{Max}[L_F(1 - e^{2(0,08-G_F)})0,05 ; 0]$$

L = Total loan portfolio (Claim value of loans)

G = 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, sector 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. Herfindahl-Hirschman Index (HHI) of exposure value is a good indicator of single name concentration within a portfolio and 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 in default.

EAD_i: Value of exposure i.¹⁷

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

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

$$K_{SN} = 1,96 \cdot HHI_{SN} \cdot EAD_{Net}^{18}$$

For larger institutions and institutions with material concentration, according to FME judgement, more advanced methods for the assessment of single name concentration risk is used that at least takes into account the quality of the largest exposures (30-100).¹⁹

3.2 Sector concentration risk

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

The method is based on Standard & Poor's method for the same risk factor²⁰.

Relative standard deviation of return on assets (v_i) for 16 sectors calculated ²¹ with published information from Statistic Iceland:

$$v_i = \frac{\sigma_i}{\frac{\sum_{i=1}^{16} \sigma_i}{16}}$$

¹⁷ According to Article 111 of Regulation (EU) No 575/2013, cf. Article 92 of Regulation No 233/2017.

¹⁸ 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.

¹⁹ For example, the method set forth by Gordy and Lütkebohmert (2007), ‘Granularity adjustment for Basel II’, Discussion Paper 01/2007, Deutsche Bank.

²⁰ Standard and Poor's, Bank Capital Methodology and Assumptions, 2010.

²¹ The 18 sectors reported in table 6 of FINREP where sectors O, P and Q have been united.

σ_i : Standard deviation of return on assets for sector i.

Correlation matrix of the return on assets for individual sectors (Ω) 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 exposure in sector i (s_i) calculated:

$$s_{i,j} = \frac{\text{EAD sector}_i}{\sum_{i=1}^{16} \text{EAD sector}_i}$$

EAD sector_i: Exposure in sector i.²²

Vector of weighted sector composition (\mathbf{a}) calculated where element i is equal to:

$$a_i = s_i \cdot v_i$$

Sector load (L) calculated:

$$L = \sqrt{\mathbf{a}^T \cdot \Omega \cdot \mathbf{a}}$$

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

Calculated capital requirement for sector concentration (K_{Sector}) becomes:

$$K_{\text{Sector}} = (L - L_{\text{Iceland}}) \cdot \sum_{i=1}^{16} \text{EAD sector}_i \cdot 8\%$$

Capital requirements for sector concentration is subsequently based on calculated capital requirement for sector concentration and expert judgement.

3.3 Geographical concentration risk

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

Table 3 Additional capital requirements of exposures in Iceland

Exposure class	Line	Risk-weight
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²² From table 6 of FINREP.

		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%