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Basel 3 Reforms – The impact on Nordic Banks

Deloitte Risk Advisory Nordics

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Executive Summary

On 15th December 2020, the European Banking Authority (EBA) published its updated assessment of the impact of Basel 3 reforms[1] on European banks[2]. The analysis simulated a significant (18.5%) increase in minimum capital requirements and provided a qualitative analysis of COVID-19 impacts. The conclusion was to support the full implementation of the final Basel 3 standards in the EU.

To remain competitive, Nordic banks need to manage the strategic impacts of capital requirement changes. Stakeholders need to understand how Basel 3 reforms combined with COVID-19 could impact credit quality, pricing and the cost of capital. The new requirements are complex and with the COVID-19 impacts still playing out, further detailed analysis is needed in each bank to assess and manage, the systemic and idiosyncratic impacts.

This paper analyses the impact of the Basel 3 reforms on typical credit portfolios in Nordic banks. Our analysis is structured to help internal and external stakeholders understand the drivers, and the potential magnitude, of the increase in capital requirements, shedding light on areas where impacts are likely to be greatest. The paper also summarises some of the data requirements, process and modelling changes plus required governance, for banks to consider as they start to assess and implement these reforms.

This paper focuses on changes in credit risk requirements, from both a Standardised and Advanced Internal Ratings Based (A-IRB) perspective. The results reinforce the expected overall increase in capital requirements. In the Nordic context, this increase is driven by the new Standardised Approach for residential mortgage exposures combined with the introduction of a capital floor for risk-weighted assets (RWA) in the A-IRB portfolio. Our analysis leads to three main conclusions:

1. Banks need to complete in-depth analysis of the composition of real estate portfolios, based on the regulatory Loan-to-Value (LTV) metric, to enable future capital allocation in Standardised and A-IRB banks to be understood, based on high quality data and documentation.
2. A-IRB banks need to develop and maintain a deep understanding of capital requirements under the Standardised Approach, given the new capital floor pre-transition. Analysing both A-IRB and Standardised Approach changes and associated interactions will help management to understand capital requirement drivers especially for Nordic banks with significant residential mortgage and un-rated corporate portfolios, aiming to allocate capital requirements appropriately.
3. Banks need to monitor local and European regulatory discussions closely. Whilst credit portfolios across Nordic banks are broadly comparable, local Nordic regulators are taking different approaches (e.g. country specific RWA floors), reflecting prudential priorities and expectations per country. Local regulatory interpretation will evolve as the level of IRB risk parameters becomes more certain as new IRB model applications are submitted in 2021 and 2022.

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[1] The reforms titled 'Basel 3: Finalising post-crisis reforms' are also widely referred to in the industry as 'Basel 4' due to the scope and impact of the changes on, amongst others, internal credit risk processes, reporting, data and capital requirements.
[2] The EBA published an ad-hoc impact study on the Basel 3 implementation based on a sample of 99 banks (at December 2019): https://eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2020/961423/Basel%20III%20reforms%20-%202019Q4%20update%20and%20Covid%20impact.pdf

Banks will need to adapt agile capital management strategies as the impacts of COVID-19 play out over the medium term as it is difficult to predict the economic recovery, evolution of bank's balance sheets and the uncertainty of the effects of mitigating government support.

An introduction to the reforms

The Basel 3 reforms finalised by the Basel Committee on Banking Supervision (BCBS) in December 2017, aimed to further strengthen the regulation, supervision and practices of banks worldwide, with the purpose of enhancing financial stability.

From a credit risk perspective, the regulation is complex as it introduces new risk drivers, new (sub) categories of portfolios and new processes to banks. Understanding the impact these changes have on various portfolios is fundamental to the appropriate allocation of capital requirements. The most important credit risk changes from the Basel 3 reforms are summarised below.

Changes to the Credit Risk Standardised Approach (SA)	**Fewer number of portfolios eligible to use the IRB approach**	**Introduction of new capital floors and model output floors limit benefits**	**More restrictions on model approaches for IRB portfolios**
• Risk weights of exposures secured by real estate based on loan-to-value diversification • Separate risk weights for investment property • Corporate external ratings required, with appropriate due diligence process, to determine risk weight • Minimum Credit Conversion Factor (CCF) of 10% for all exposures	• A-IRB is withdrawn for exposures to banks, financial institutions, large corporates and equities • In specialised lending and high-volatility commercial real estate, only slotting can be used (in other portfolios, slotting, F-IRB and A-IRB can still be used) • Internal Model Approach (IMA) for CVA is withdrawn	• **Capital requirement output floor based on 72.5% of standardised risk weights** • Probability of default (PD) floor increases to 5bps (from 3bps) • Unsecured loss given default (LGD) floor of 25% for corporates and 50% for qualifying revolving retail exposures (QRRE) • Secured LGD floors imposed, varying by collateral type	• Double default approach is withdrawn • More granular information required to support the calculation of the risk-weighted assets under standardised and IRB approaches

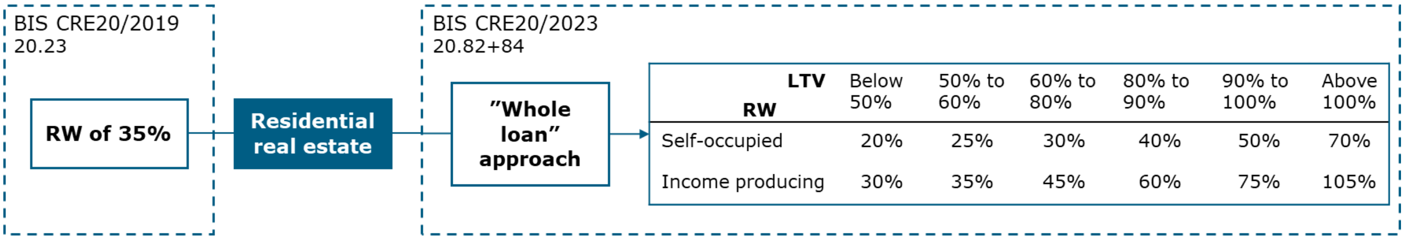
Focus on residential and commercial real estate

Under the current Standardised Approach, claims secured by residential or commercial real estate are assigned risk weights of 35% and 100% respectively. In the Basel 3 reforms, the introduction of an output floor based on the Standardised Approach requires every bank to calculate standardised risk weights using the revised method which is designed to increase the level of granularity.

The new Standardised Approach treats claims secured by real estate differently depending on:

- whether the real estate is residential or commercial, and
- whether or not the exposure is dependent on the cash flow generated by the property.

For each of the four property groups, each bank will have to apply a so-called "whole loan" approach, to calculate risk weights based on different LTV buckets (see table below). If permitted by the local supervisor, an alternative "loan splitting" approach can be applied for exposures secured by real estate that are not materially dependent on cash flow generation.



LTV / RW	Below 50%	50% to 60%	60% to 80%	80% to 90%	90% to 100%	Above 100%
Self-occupied	20%	25%	30%	40%	50%	70%
Income producing	30%	35%	45%	60%	75%	105%

Figure 1 Example of the revision of standardised risk weights for residential real estate going into post Basel 3 reforms.

The calculation of LTV at origination accurately based on high quality data and supported by clear technical, functional and non-functional documentation will be critical for banks as they implement the new rules, including how the "whole loan" approach is applied.

Focus on unrated corporates

Under the Standardised Approach, a distinction is made between lending to rated corporates (i.e. companies that have obtained an external assessment by a credit-rating agency) and lending to unrated corporates, which have not obtained such a rating.

The new approach introduces a more granular approach, splitting the risk weights for credit ratings BBB+ to BB- (currently 100%) to 75% (for BBB+ to BBB-) and 100% (for BB+ to BB-), with unrated corporate exposures assigned risk weights 100%. This is a higher risk weight than the 85% available to SMEs (which are also unrated) and is higher than most corporates receive if treated under the IRB approach.

For both corporates and SMEs, there will be an incentive for banks to lend to clients which are externally rated. This incentive will be increased as the application of the Standardised Approach floor, means that the scope of application of unrated corporates will broaden under the new regime.

Analysis of typical Nordic banks

Risk-weighted assets are anticipated to increase, primarily driven by the newly introduced Loan-to-Value (LTV) diversification for exposures secured by real estate and the introduction of the capital floor. Assigning the exposures to risk weights will require banks to introduce new procedures which will need new data on exposures to be collected.

This analysis explores the impact of two key changes under the Basel 3 reforms which are i) the revised standardised risk weights and ii) the introduction of the capital floor, with the results based on the full implementation of the 72.5% capital floor[3]. Using a typical banking book portfolio mix (i.e. real estate and corporate lending), our analysis quantifies the impacts per country. The portfolio mix was constructed based on the average balance sheet of Nordic banks participating in the EBA Transparency Exercise 2020, enriched with further details from annual reports of multiple Nordic banks[4].

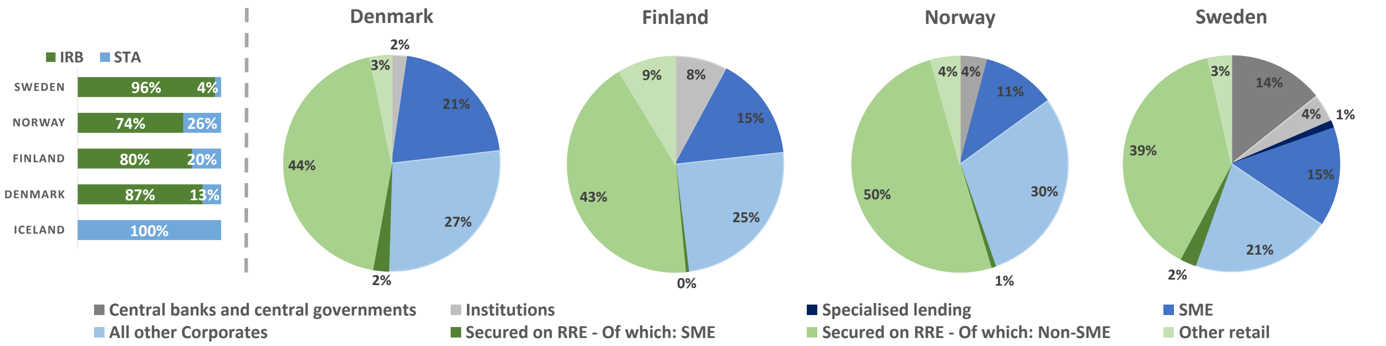


Figure 2 Percentage of average banking book credit portfolio under Standardised or IRB approach (left) and average banking book credit portfolios under the IRB approach in the Nordics (right).

As shown in Figure 2, the typical Nordic bank is a blend of primarily IRB and standardised exposures in each of the Nordic countries. While there are similarities, country-specific characteristics include:

- In Iceland, RWA for all exposures is calculated under the Standardised Approach.
- The Swedish portfolio mix includes exposures to central banks, governments and institutions under the IRB approach (which is not the case in the other countries).

Overall, our analysis illustrates the comparable composition of the typical portfolio per country across the Nordics with substantial residential mortgage and real estate focus.

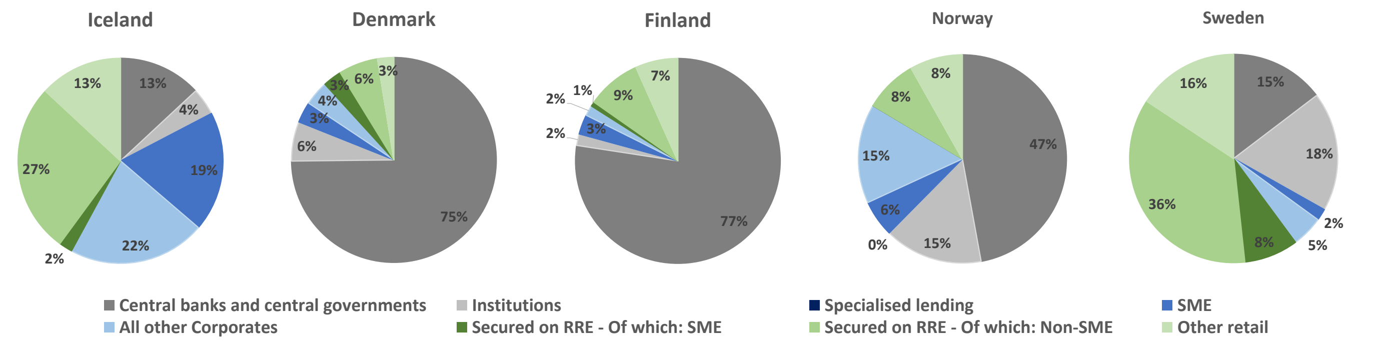


Figure 3 Average banking book credit portfolios under the Standardised Approach in the Nordics.

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[3] Gradually phased in, starting from 50% on January 1 2023 until 72.5% on January 1 2028.
[4] The average banking book credit portfolios are normalized to a total of 100.000 EUR.

Increased capital requirements under Basel 3 reforms

Note that in our analysis, the output floor is applied directly to the credit risk RWAs and hence does not take into account any potential offsets from other risk types (e.g. market risk or operational risk). The "cross-subsidisation" of RWAs across the different risk types is likely to reduce the overall impact of the output floor. Assessing the impact on the credit risk portfolio only, still provides valuable insights regarding future capital management considerations under the new regime as the introduction of risk parameter floors will contribute to an increase of the IRB risk weights.

Table 1 below illustrates that the reforms will increase capital requirements for the average Nordic bank credit portfolio by 9%-63%[5], with the exception of Iceland, where there is the potential for an 11% reduction given the current absence of IRB approvals. For banks with a combination of standardised and IRB portfolios, the overall changes are primarily driven by the introduction of the output floor which affects all Retail and Corporate IRB exposures.

The results per country are detailed in the Appendix. Risk weights for exposures treated under the Standardised Approach are currently expected to reduce in all countries. The decrease for real estate portfolios is driven by low LTVs in residential mortgages. In the Nordic countries, regulatory requirements[6] to cap LTVs combined with strong underwriting standards lead to high quality lending with lower LTVs for large proportions of lending portfolio.

The application of the SA floor means the Standardised Approach for unrated corporates will broaden. This will drive an increase in capital requirements for unrated corporates, more than for rated corporates. For Swedish banks including Nordea, this effect, when investigated by Copenhagen Economics[7], leads to an average increase in risk weights of 30bps for unrated corporates, an increase which was markedly higher than rated corporates (21bps) and corporate SMEs (8bps) and retail SMEs (8bps). The result will be an additional incentive for corporates to become externally rated (to reduce borrowing costs), encouraged by banks.

Under the new IRB approach, risk weights are expected to increase, due to the model output and capital floor changes. Our analysis found increased IRB capital requirements of 70% and 64% in Denmark and Sweden respectively, starting at relatively low current risk weights. In Norway, the increase (15%) was significantly lower due to comparably higher current risk weights due to regulatory floors already in place[8].

As the EBA impact study highlights, mortgage banks are expected to experience the highest impact from the Basel 3 reforms, with a 23.3% average increase in Tier 1 capital, with this impact seen in the Nordics. Our results are consistent with the EBA analysis which anticipates additional total cumulative Tier 1 capital requirements of 20% and 28% in Denmark and Sweden respectively, driven by the output floor.

[5] Based on our calculations and excluding potential cross-effects from components not discussed in this paper
[6] The mortgage LTV cap is 80% in Denmark and 85% in all other Nordic countries except for first-buyers in Finland and Iceland where the cap is 95% and 90% respectively.
[7] https://www.swedishbankers.se/media/4504/impact-of-final-basel-iii-in-sweden.pdf
[8] For residential real estate, the Norwegian Finanstilsynet requires a floor of 0.2% for PD and 20% for LGD in addition to a portfolio floor based on a benchmark loss model.

The application of local regulatory floors in the Nordics is subject to debate between the national and European regulators, as illustrated by the EBA's recent comment on Swedish regulatory floors (see section below). The evolution of local country requirements across the Nordics will influence the final results for management, with some level of convergence expected in the medium term, informed by the broader European regulatory debate.

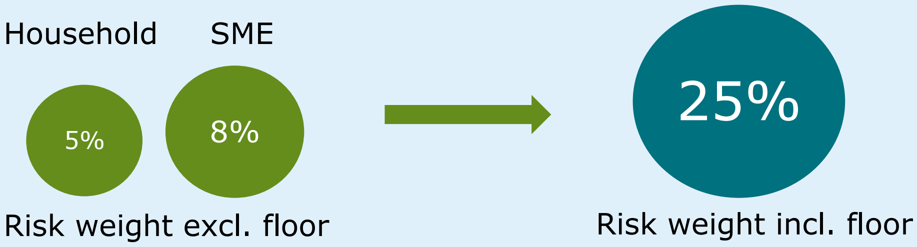
		Denmark	Finland	Norway	Sweden	Iceland
		Effect on Risk weights (in %)				
Standard	Central banks & central governments	0%	0%	0%	0%	0%
	Institutions	-6%	0%	-16%	0%	-11%
	Corporate	-11%	-13%	-11%	-10%	-12%
	Retail	-15%	-6%	-9%	-11%	-10%
	Total	-12%	-8%	-11%	-10%	-11%
IRB	Central banks & central governments	-	-	-	0%	-
	Institutions	12%	0%	-	0%	-
	Corporate	81%	18%	18%	114%	-
	Retail	51%	75%	10%	(*)8%	-
	Total	70%	33%	15%	64%	-
Overall	Central banks & central governments	0%	0%	0%	0%	0%
	Institutions	5%	0%	-16%	0%	-11%
	Corporate	75%	17%	12%	111%	-12%
	Retail	45%	58%	6%	6%	-10%
	Total	**63%**	**28%**	**9%**	**50%**	**-11%**

Table 1 The effect of revised standardised risk weights and the introduction of capital floor on the banking book credit portfolios in the Nordics. (*) Adjusted for the Swedish 25% risk weight floor for residential real estate.

EBA opinion on Swedish risk weight floor for residential mortgages

The European Banking Authority (EBA) recently issued an opinion on the Swedish risk weight floor of 25% for mortgage exposures. The Swedish FSA introduced the risk weight floor in 2018 to mitigate prudential risks associated with low risk weighted for mortgage lending, using Article 458 of the CRR which allows EU member states to introduce more prudent measures than those defined in the CRR when facing macroprudential or systemic risk that might have a serious negative impact on the financial system.

The use of the risk weight floor was initially effective until 31 Dec 2020 and the Swedish FSA has requested the Commission to not reject the proposed extension of the application for 1 year. The impact of the floor on Mortgage risk weights is significant. IRB risk weights for non-SME lending is 5% and for SME lending is 8%, compared to the 25% after applying the risk weight floor.



The EBA did not object to the extension of the risk floor until the end of 2021. However, the EBA noted in their opinion that the Swedish FSA should find a long-term solution to the underlying issue, the low risk weights for mortgage lending, which have resulted from a historic low default period in growing mortgage market in Sweden. The EBA highlights that if the low risk weights (implied to be 4,5% for mortgage exposures) calculated by the Swedish banks' internal models do not adequately capture the credit loss risk, other methods (such as the use of Margin of Conservatism) should be applied to analysis and mitigate the systemic risk posed by the Swedish mortgage sector. The EBA notes that SME exposures are not treated separately and highlights the importance that any impact on SME lending stemming from the floor should be assessed.

The EBA welcomed the ongoing process to complete a bottom up review and repair of IRB models in Sweden. Improvements to the existing IRB models in Swedish banks is identified as part of the long term solution indicated as being needed. The EBA also suggested that the Swedish FSA reviews the risk floor in light of the changes to the applicable regulatory framework (i.e. the sectoral SyRB and the output floor discussed in this paper).

Key considerations for banks implementing the new Basel regime

As banks fast approach the implementation deadline, management decision will need to increasingly be informed by a strong understanding of the sensitivity of the portfolios to key drivers. The reforms require clear, consistent and comprehensive documentation on each exposure type, risk categorisation and the supporting data, in order to allow for management of risk weights.

Given the impact of the reforms on real estate secured portfolios drives much of the overall increase in capital requirements, understanding and managing the regulatory LTV metric over time will be key. Banks will need high quality collateral and exposure data to perform the required in-depth analysis. This will require data to be collected and recorded on the property value at origination, so the various LTV buckets, the type of exposure (income driven or rental/sales driven) and LTV movements over time can be analysed and reported.

In-depth analysis of the banking book credit portfolios and the drivers of capital requirements are also necessary to make long term management decisions regarding the focus of investments in A-IRB modelling and enhancing the credit risk mitigation techniques. Furthermore, A-IRB banks should assess scenarios to analyse how the output floor could affect the capital requirements allocation to the various components of the bank, under different assumptions relating to the new IRB models and the application of the Standardised Approach. Management teams will need strong understanding of the new rules and what options (data, process, systems and model) are available to manage the impacts over time.

In addition to the output floor, the new Basel rules restrict banks from applying the A-IRB approach to certain portfolios such as institutions and large corporates. For these portfolios, it is still possible to use the Foundation IRB approach (F-IRB). When utilising this method, only the probability of default (PD) is calculated by the bank itself; the parameters for other components in the risk weight calculation are based on the supervisory estimates. Banks need to investigate whether investing in IRB remains the best solution, given the sensitivity of capital requirements offered by the Standardised Approach and associated diversion of resources from other core portfolios. However, any change in the portfolios subject to the Standardised Approach will need to be agreed with local supervisors (when agreeing the Permanent Partial Use) who will be keen to ensure that banks are not “cherry picking” and will retain strong credit risk management capabilities, if they revert from IRB to Standardised Approach.

Potential impacts from COVID-19[9]

COVID-19 poses a major challenge to European bank solvency, liquidity and viability which could be more severe and have more profound long-term consequences than the 2008 Global Financial Crisis (GFC). Although supporting customers and society through the pandemic is the first priority for banks, for this to be sustained they must themselves remain solvent and viable. Capital is central to this challenge.

Capital impact on banks

Banks' capital positions will deteriorate sharply

- The economic downturn will be substantially more severe than recent (pre-pandemic) central bank stress test scenarios
- Some banks' CET1 capital ratios could drop to below 10% with the EBA stress tests in 2021 a critical regulatory tool to assess the potential downside
- Firms using the new Definition of default will see default stock increasing, reducing capital supply at the same time as IFRS 9 impairment levels for defaulted and non-defaulted exposures remains high

For many banks, organic capital regeneration on its own will not be sufficient to restore ratios

- Even with a cessation of dividend payments, it could take 5+ years for retained profits to restore capital ratios back to target levels
- Banks will need to consider methods to supplement profit retention with other capital raising measures
- Banks will need to use their stress testing assessments to establish the potential range of capital supply needs post COVID-19

Now is the time to re-set the dialogue with investors, supervisors and policymakers about how the industry must reform in the longer term

- Some Nordic segments and regions are operationally 'overbanked', but prudential and competition concerns as well as national political considerations have hampered consolidation
- The Nordics is heavily reliant on bank credit to finance corporate and small business investment, with a lack of depth in securitisation markets contributing to a build-up of capital-consuming

Impact on credit portfolio and capital requirements

- Downgrades to internal and external ratings will impact capital requirements and floors for corporates measured per the Standardised Approach
- LTV at origination could reduce if bank risk appetite falls, reducing capital requirements and increasing the relative impact of the Basel 3 reforms (as low LTV portfolios have higher variance between the IRB and SA capital requirements)
- Higher use of forbearance and increasing arrears could lead to increased default risk and higher PDs which increase IRB capital requirements
- Performance of new IRB models will be tested in a downturn, with outcome data being available as Basel 3 reforms go live
- Greater complexity introduced to capital requirements could make it difficult to understand the overall impacts of C-19 in combination with the regulatory changes
- If COVID-19 leads to a long downturn, policy makers may seek to adapt and delay the implementation of new rules plus approval of new applications

In summary, Nordic banks, supervisors and policy makers need to act decisively to respond to the immediate disruption caused by COVID-19, to ensure the industry is in a strong position to recover and thrive in the post-pandemic world. For banks, this means preparing and planning for change, so they are ready to deliver and execute credible strategies to restore capital and viability post pandemic.

[9] https://www2.deloitte.com/uk/en/pages/financial-services/articles/a-stress-event-like-no-other.html

What can Nordic banks do?

Focus on implementation challenges

Implementing the new requirements will be a challenge. Understanding both the financial and operational impacts of the reforms on the bank, and how these vary across portfolios and business units, is key to ensuring future allocation of capital requirements and resources aligns with management expectations and strategy.

- New definitions of metrics (e.g. LTV) need to be defined so data required to calculate metrics consistently and accurately can be mapped and collected.
- Processes and controls need to be established where metrics, like external credit risk ratings, require supporting due diligence and governance.
- Portfolios definitions need to be reviewed to ensure they align with newly introduced subcategories of exposures, with changes to regulatory parameters (e.g. conversion factor) implemented.
- The standardized floor needs to be designed and implemented, with data collected early to allow analysis to be performed which allows management to understand and assess capital requirements resulting from the reforms.

Actively manage Loan-to-Value (LTV) for residential mortgages

Since the impact of the reforms for a typical Nordic bank is mainly driven by residential mortgage exposures, management teams will need to identify, assess and deliver mitigating strategies for these portfolios. Some strategies will rely on implementing new property valuation policies (consistent with the Credit Risk Mitigation regulatory guidelines), data processes and controls, to improve the quality and consistency of LTV-dependent calculations, both at origination and over the lifetime of each mortgage loan. Business focused strategies to stimulate early repayments from clients with high capital requirements (e.g. interest-only mortgages) might also be a valid risk-mitigating strategy to adopt.

Balance sheet and portfolio management

In order to mitigate the effects of the reforms, banks will need to enhance their ability to complete active balance sheet management or portfolio management. Options for Treasury and Capital Management teams to consider will include diversifying from residential mortgage portfolios by growing portfolios that attract better capital returns, plus using capital-reducing techniques (e.g. securitization of certain portfolios can reduce the impact of the increased capital requirements).

Evaluate IRB strategy

Banks need to critically evaluate IRB scope, considering the reduced scope of A-IRB under the Basel 3 reforms (e.g. for institutions and large corporate portfolios) and the output floor impacts. Moving to the F-IRB approach or Standardised Approach for some portfolios, may require regulatory approval (e.g. via a Permanent Partial Use application) and careful consideration to ensure risk management processes using internal models (e.g. decision making, impairment and stress testing) remain strong.

Consider impact on pricing

Since the reforms will increase capital requirements for banks, this will come at a cost which will impact the relative profitability of portfolios. Banks need to adjust their pricing models and portfolio profitability assessments to ensure the increase in cost is included.

[10] The risk weight and IRB risk parameter floors in the Swedish and Norwegian regulation diminish the impacts on residential real estate portfolios with respect to the Basel 3 reforms to credit risk capital requirements.

Appendix - Country results

Our deep-dive analysis for each country reveals additional insights regarding how the Nordic banks may be impacted by the new reforms, including areas where an increased risk weight is likely. Note, all average portfolios have been normalized to 100.000 EUR.

Iceland

Three banks participated in the EBA transparency exercise in Iceland: Arion Bank, Islandsbanki and Landsbankinn. The table below shows that the reforms could decrease capital requirements for the average of the standardised part of these banks' portfolio by approximately 11%.

STD portfolio		Current		Post reforms		
	EAD	**Risk weight**	**Risk weighted assets**	**Risk weight**	**Risk weighted assets**	**Effect**
Central banks and central governments	13.078	0%	40	0%	40	0%
Institutions	4.272	24%	1.030	21%	913	-11%
Corporates	40.595	100%	40.595	88%	35.754	-12%
- Of Which: Specialised Lending	0	-	-	-	-	-
- Of Which: SME	18.917	100%	18.917	86%	16.207	-14%
- All other	21.678	100%	21.678	90%	19.547	-10%
Retail	42.055	56%	23.572	51%	21.244	-10%
- Secured on real estate property - Of Which: SME	2.120	51%	1.087	39%	832	-23%
- Secured on real estate property - Of Which: non-SME (Residential RE)	26.845	35%	9.396	27%	7.322	-22%
- Qualifying Revolving	0	-	-	-	-	-
- Other retail	13.090	100%	13.090	100%	13.090	0%
Total	**100.000**	**65%**	**65.237**	**58%**	**57.951**	**-11%**

Table 2: The effect of the revised risk weights on the SA banking book credit portfolio of an average Icelandic bank

Denmark

Four banks participated in the EBA transparency exercise in Denmark: Danske Bank, Nykredit, Jyske Bank and Sydbank.

The table below shows that the reforms will decrease capital requirements for the standardised part of these banks' portfolio by approximately 12%. In particular, the residential and commercial real estate portfolios, with low loan-to-values, could benefit from the new regulations.

STD portfolio		Current		Post reforms		
	EAD	**Risk weight**	**Risk weighted assets**	**Risk weight**	**Risk weighted assets**	**Effect**
Central banks and central governments	9.589	0%	5	0%	5	0%
Institutions	797	22%	175	21%	164	-6%
Corporates	921	86%	796	77%	709	-11%
- Of Which: Specialised Lending	0	-	-	-	-	-
- Of Which: SME	424	88%	371	76%	323	-13%
- All other	497	85%	425	78%	386	-9%
Retail	1.510	43%	648	37%	552	-15%
- Secured on real estate property - Of Which: SME	383	38%	146	24%	93	-37%
- Secured on real estate property - Of Which: non-SME (Residential RE)	800	35%	280	30%	238	-15%
- Qualifying Revolving	0	-	-	-	-	-
- Other retail	327	68%	222	68%	222	0%
Total	**12.817**	**13%**	**1.623**	**11%**	**1.430**	**-12%**

Table 3: The effect of the revised risk weights on the SA banking book credit portfolio of an average Danish bank

The table below shows that the reforms will increase capital requirements for the IRB part of these banks' portfolio by approximately 70%, primarily driven by non-SME residential real estate exposures and corporate exposures. For large corporates, the high percentage of unrated companies will get a standardised risk weight of 100% which increases the difference between the current IRB risk weight (of 30%) and the capital floor for these exposures. The same difference is seen for residential real estate (non-SME) where the average current IRB risk weight of 15% is significantly lower than the minimum revised standardised risk weight of 20%.

IRB portfolio		Current		Post reforms	
	EAD	**Risk weight**	**Risk weighted assets (pre floor)**	**Output floor**	**Effect**
Central banks and central governments	0	-	-	-	-
Institutions	2.014	13%	269	301	12%
Corporates	41.990	30%	12.480	22.559	81%
- Of Which: Specialised Lending	16	50%	8	11	45%
- Of Which: SME	18.140	30%	5.372	9.426	75%
- All other	23.835	30%	7.101	13.122	85%
Retail	43.179	16%	6.775	10.238	51%
- Secured on real estate property - Of Which: SME	2.055	19%	392	435	11%
- Secured on real estate property - Of Which: non-SME (Residential RE)	38.305	15%	5.714	8.270	45%
- Qualifying Revolving	0	-	-	-	-
- Other retail	2.818	24%	670	1.533	129%
Total	**87.183**	**22%**	**19.524**	**33.098**	**70%**

Table 4: The effect of the output floor on the IRB banking book credit portfolio of an average Danish bank

Finland

Three banks participated in the EBA transparency exercise in Finland: Nordea, OP and Savings bank. Municipality Finance is excluded from this analysis since this bank is not considered representative of a typical Finnish bank.

The table below shows that the reforms will decrease capital requirements for the standardised part of these banks' portfolio by approximately 8%.

STD portfolio		Current		Post reforms		
	EAD	**Risk weight**	**Risk weighted assets**	**Risk weight**	**Risk weighted assets**	**Effect**
Central banks and central governments	15.680	1%	222	1%	222	0%
Institutions	368	20%	74	20%	74	0%
Corporates	965	96%	929	84%	810	-13%
- Of Which: Specialised Lending	0	-	-	-	-	-
- Of Which: SME	631	99%	624	83%	524	-16%
- All other	334	91%	306	86%	286	-6%
Retail	3.242	51%	1.656	48%	1.549	-6%
- Secured on real estate property - Of Which: SME	145	35%	51	23%	34	-33%
- Secured on real estate property - Of Which: non-SME (Residential RE)	1.740	35%	610	30%	520	-15%
- Qualifying Revolving	0	-	-	-	-	-
- Other retail	1.358	73%	995	73%	995	0%
Total	**20.255**	**14%**	**2.836**	**13%**	**2.610**	**-8%**

Table 5: The effect of the revised risk weights on the SA banking book credit portfolio of an average Finnish bank

The table below shows that the reforms will increase capital requirements for the IRB part of these banks' portfolio by approximately 33%, driven by the introduction of the capital floor.

IRB portfolio		Current		Post reforms	
	EAD	**Risk weight**	**Risk weighted assets (pre floor)**	**Output floor**	**Effect**
Central banks and central governments	0	-	-	-	-
Institutions	6.228	18%	1.090	1.090	0%
Corporates	32.106	51%	16.226	19.196	18%
- Of Which: Specialised Lending	28	54%	15	20	35%
- Of Which: SME	12.305	45%	5.586	7.189	29%
- All other	19.774	54%	10.625	11.987	13%
Retail	41.410	16%	6.441	11.264	75%
- Secured on real estate property - Of Which: SME	385	29%	112	112	0%
- Secured on real estate property - Of Which: non-SME (Residential RE)	34.098	13%	4.342	7.384	70%
- Qualifying Revolving	0	-	-	-	-
- Other retail	6.929	29%	1.987	3.768	90%
Total	**79.745**	**30%**	**23.757**	**31.551**	**33%**

Table 6: The effect of the output floor on the IRB banking book credit portfolio of an average Finnish bank

Norway

Three banks participated in the EBA transparency exercise in Iceland: DNB, Sparebank 1 SMN and Sparebank 1 SR.

The table below shows that the reforms will decrease capital requirements for the standardised part of these banks' portfolio by approximately 11%.

STD portfolio		Current		Post reforms		
	EAD	**Risk weight**	**Risk weighted assets**	**Risk weight**	**Risk weighted assets**	**Effect**
Central banks and central governments	12.365	0%	5	0%	5	0%
Institutions	4.016	26%	1.064	22%	890	-16%
Corporates	5.543	86%	4.793	77%	4.277	-11%
- Of Which: Specialised Lending	0	-	-	-	-	-
- Of Which: SME	1.498	66%	989	70%	1.048	6%
- All other	4.045	94%	3.804	80%	3.228	-15%
Retail	4.320	62%	2.671	56%	2.417	-9%
- Secured on real estate property - Of Which: SME	4	74%	3	33%	1	-56%
- Secured on real estate property - Of Which: non-SME (Residential RE)	2.168	51%	1.111	40%	859	-23%
- Qualifying Revolving	0	-	-	-	-	-
- Other retail	2.148	72%	1.557	72%	1.557	0%
Total	**26.244**	**33%**	**8.532**	**29%**	**7.589**	**-11%**

Table 7: The effect of the revised risk weights on the SA banking book credit portfolio of an average Norwegian bank

The table below shows that the reforms will increase capital requirements for the IRB part of these banks' portfolio by approximately 15%. The risk parameter floors in Norwegian regulation lead to the average IRB risk weights already being relatively high for residential real estate. Therefore, the effect of the capital floor is estimated to be close to zero for these portfolios.

IRB portfolio	Current		Post reforms		
	EAD	**Risk weight**	**Risk weighted assets (pre floor)**	**Output floor**	**Effect**
Central banks and central governments	0	-	-	-	-
Institutions	0	-	-	-	-
Corporates	32.969	49%	16.303	19.298	18%
- Of Which: Specialised Lending	3.028	52%	1.581	2.195	39%
- Of Which: SME	8.049	50%	4.063	4.253	5%
- All other	21.891	49%	10.658	12.849	21%
Retail	40.787	22%	9.059	9.965	10%
- Secured on real estate property - Of Which: SME	499	25%	123	123	0%
- Secured on real estate property - Of Which: non-SME (Residential RE)	37.063	22%	8.088	8.088	0%
- Qualifying Revolving	0	-	-	-	-
- Other retail	3.225	26%	848	1.754	107%
Total	**73.756**	**34%**	**25.362**	**29.262**	**15%**

Table 8: The effect of the output floor on the IRB banking book credit portfolio of an average Norwegian bank

Sweden

Five banks participated in the EBA transparency exercise in Sweden: Handelbanken, Länsforsäkringar Bank, SBAB, SEB and Swedbank.

The table below shows that the reforms will decrease capital requirements for the standardised part of these portfolios, by approximately 10%.

STD portfolio	Current			Post reforms		
	EAD	**Risk weight**	**Risk weighted assets**	**Risk weight**	**Risk weighted assets**	**Effect**
Central banks and central governments	606	3%	16	3%	16	0%
Institutions	764	13%	99	13%	99	0%
Corporates	278	91%	253	82%	229	-10%
- Of Which: Specialised Lending	0	-	-	-	-	-
- Of Which: SME	76	90%	68	79%	60	-12%
- All other	202	92%	185	84%	169	-9%
Retail	2.485	45%	1.113	40%	991	-11%
- Secured on real estate property - Of Which: SME	347	35%	122	23%	80	-34%
- Secured on real estate property - Of Which: non-SME (Residential RE)	1.487	35%	521	30%	441	-15%
- Qualifying Revolving	0	-	-	-	-	-
- Other retail	650	72%	470	72%	470	0%
Total	**4.132**	**36%**	**1.482**	**32%**	**1.336**	**-10%**

Table 9: The effect of the revised risk weights on the SA banking book credit portfolio of an average Swedish bank

The table below shows that the reforms will increase capital requirements for the IRB part of these banks' portfolio by approximately 55%, driven by the introduction of the capital floor. If the 25% risk weight floor for residential real estate is removed, the overall impact would be an increase of 138% highlighting the sensitivity of the impact to the regulatory policy choice relating to the RWA floor.

IRB portfolio	Current			Post reforms	
	EAD	**Risk weight**	**Risk weighted assets (pre output floor)**	**Output floor**	**Effect**
Central banks and central governments	13.692	2%	289	289	0%
Institutions	4.060	23%	934	934	0%
Corporates	35.384	27%	9.680	20.701	114%
- Of Which: Specialised Lending	1.056	47%	493	765	55%
- Of Which: SME	14.222	21%	3.054	8.018	163%
- All other	20.106	31%	6.133	11.917	94%
Retail	42.732	25%	10.815	11.667	8%
- Secured on real estate property - Of Which: SME	2.323	25% *(8%)*	581 *(194)*	581 *(491)*	0% *(152%)*
- Secured on real estate property - Of Which: non-SME (Residential RE)	37.058	25% *(5%)*	9.265 *(2.024)*	9.265 *(7.963)*	0% *(293%)*
- Qualifying Revolving	0	-	-	-	-
- Other retail	3.351	29%	970	1.822	88%
Total	**95.868**	**21%**	**20.495**	**33.592**	**55%** *(138%)*

Table 10: The effect of the output floor on the IRB banking book credit portfolio of an average Swedish bank (results in parentheses show the risk weight before the 25% risk weight floor for residential real estate).

Deloitte Risk Advisory Nordics
Financial Industry Risk & Regulatory

Thomas Clifford
T: +45 30934031
E: thclifford@deloitte.dk

Lasse Vangstein
T: +47 975 84 086
E: lvangstein@deloitte.no

Gareth Greenwood
T: +46 70 080 23 15
E: ggreenwood@deloitte.se

Frederik Secher
T: +45 28907525
E: fsecher@deloitte.dk

Dominik Kristufek
T: +45 30934674
E: dkristufek@deloitte.dk

René Andersson
T: +46 70 080 28 43
E: reandersson@deloitte.se

Maria Englund
T: +358 50 347 3456
E: maria.englund@deloitte.fi

Henrik Tran-Thoresen
T: +47 97700729
E: htran-thoresen@deloitte.no

Deloitte Basel Centre of Excellence

Tom Spellman
T: +44 20 7303 0019
E: thspellman@deloitte.co.uk

James Robertshaw
T: +44 7920 547 861
E: jamesrobertshaw@deloitte.co.uk

Deloitte Centre of Excellence for Regulatory Reporting
Deloitte Risk Advisory B.V.

Ronald Koppen
T: +31 6 12345126
E: rokoppen@deloitte.nl

Eelco Schnezler
T: +31 6 12345158
E: eschnezler@deloitte.nl

Anne-Claire van den Wall Bake
T: +31 6 1258 0003
E: acvandenwallbake@deloitte.nl

Pascal van der Loo
T: +31 6 5359 8409
E: pvanderloo@deloitte.nl

Michiel Mulder
T: +31 6 3085 9067
E: mimulder@deloitte.nl

Stijn Roersch
T: +31 6 8201 9475
E: sroersch@deloitte.nl