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STAFF MEMO

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NORGES BANK

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Effects of the new standardised approach and the new output floor for IRB banks

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The EU plans to revise the capital adequacy rules for banks in 2025. Regulatory amendments will be introduced in Norway through the EEA Agreement. Our results show that the regulatory amendments can significantly reduce the capital requirement for small and medium-sized banks (SA banks). This may enable SA banks to offer cheaper loans. The new rules will have limited implications for the largest Norwegian banks (IRB banks), but they may contribute to more equal and comparable capital requirements for Norwegian and foreign banks. Overall, the regulatory amendments may therefore level the playing field for banks in Norway.

Key words: Banks, the standardised approach (SA), the IRB approach, lending and lending margins.

1. Introduction

Sufficient capital buffers enable banks to weather periods of higher losses without the use of public funds. The authorities therefore set capital adequacy requirements for banks, ie how much capital banks are required to hold in relation to risk-weighted assets. Risk-weighted assets are calculated by risk-weighting loans and other exposures. Risk weights are to reflect the risk of losses, so that banks with high-risk exposures must hold more capital than banks with low-risk exposures.

Several of the largest Norwegian banks have been granted permission by Finanstilsynet (Financial Supervisory Authority of Norway) to calculate risk weights[2] using their own (IRB approach[3]), while the smaller banks use standardised risk weights set out in regulation (SA). SA is less sensitive to risk than the IRB approach. SA banks with low risk may therefore be subject to high capital requirements compared with IRB banks that have a similar loan portfolio. IRB banks' average risk weight on corporate loans has been approximately halved since the IRB approach was introduced in 2007, and risk weights on residential mortgage loans have fallen even further.

[1] The views and conclusions expressed in this publication are the authors' own and are not necessarily shared by Norges Bank. They must therefore not be reported as Norges Bank's views. We thank Kristian Andersen (DNB), Eivind Bernhardsen (Ernst & Young), Bjørn Friestad (Sparebanken Sør), Jan Erik Hedemark (DNB), Vegard Aalrust Hegsethtrø (DNB), Torbjørn Hægeland, Henrik Lidman (DNB), Øystein Levorstad Myhrer (DNB), Kjell Bjørn Nordal, Roar Snippen (SpareBank 1 Sørøst-Norge), Ylva Sovik, Norman Spencer and Sindre Weme for useful comments and input. Any errors and omissions are solely the responsibility of the authors.
[2] DNB, SpareBank 1 SR-Bank, SpareBank 1 Østlandet, Sparebanken Vest, SpareBank 1 SMN, SpareBank 1 Nord-Norge, Sparebanken Møre and BN Bank
[3] Internal Ratings-Based (IRB) approach.

Changes to the risk weights may have reduced funding costs more for IRB banks than for SA banks.[4] This may have enabled IRB banks to reduce lending margins and increase lending more than SA banks. An analysis by Andersen et al. (2020) shows that IRB banks in Norway reduced lending margins and grew more in the corporate market than SA banks directly following their introduction in 2007. However, the analysis does not document any strong and persistent effects of the IRB approach on the Norwegian banking market.

A transitional rule (Basel I floor) may have limited the effect of the IRB approach in Norway. Until 2019, the Basel I floor ensured that IRB banks' risk-weighted assets were not more than 20 percent lower than under the under the former rules (Basel I).[5] The Basel I floor was binding on most Norwegian IRB banks. This narrowed the actual differences in capital requirements between IRB banks and SA banks. In 2019, the Ministry of Finance removed the Basel I floor from the Norwegian rules.

The European Commission and the European Council have published proposals for a more risk-sensitive standardised approach, changes to the IRB approach and a new output floor for IRB banks' risk-weighted assets that are scheduled to be implemented in the EU from 2025 (see European Commission (2021) and the European Council (2022)) supported the main features of the European Commission's proposal in November 2022. The European Parliament will consider the European Commission and the European Council's proposals before the three parties formulate a final regulation. The rules will be introduced in Norway through the EEA Agreement. The timing of implementation in Norway depends on how rapidly the new legal acts are incorporated into the EEA Agreement.

The proposed output floor would require IRB banks' risk-weighted assets to account for at least 72.5 percent of risk-weighted assets calculated using the standardised approach. The European Commission and the European Council propose that the floor be phased in from the start of 2025 (50 percent) to the start of 2030 (72.5 percent).[6]

The regulatory amendments will make the standardised approach more risk-sensitive, so that low-risk SA banks can qualify for lower capital requirements. In addition, the new floor may limit differences between IRB banks and SA banks. The regulatory amendments may also contribute to Norwegian and foreign banks benefiting from more equal and comparable capital

[4] However, it is not obvious that lower equity financing makes it cheaper to provide credit. Investors can, for example, consider it risky to invest in banks with little equity capital. In such a situation, a reduction in equity may both increase the price of market funding and the required return on equity. The overall effect is thus ambiguous. International studies nevertheless indicate that banks' total funding costs may fall slightly when the equity ratio falls (see ECB (2011).

[5] In 2007, IRB banks' risk-weighted assets could not be lower than 95 percent of risk-weighted assets under the Basel I rules. In 2008, the Basel I floor was reduced to 90 percent, and from 2009, the floor was 80 percent.

[6] By 2025, the IRB banks' risk-weighted assets will be at least 50 percent of risk-weighted assets using the new standardised approach. The floor increases annually by 5 percentage points in the four following years.

requirements. Overall, the regulatory changes may help level the playing field for banks in Norway.

The European Banking Authority (EBA) has published a number of studies on how the new rules will affect banks' capital adequacy. The latest impact study used data from the end of 2021 for 160 European banks (see European Banking Authority (2022)). Three Norwegian IRB banks (DNB, SpareBank 1 SR-Bank and Sparebanken Vest) and a Norwegian mortgage company (KBN[7]) participated in the study. DNB was classified with large international banks into Group 1, while the other three Norwegian institutions were classified into Group 2. According to the study, the new standardised approach (SA), changes in the IRB approach and the new floor for IRB banks will increase the average risk-weighted assets for Group 1 and Group 2 banks (Table 1).[8] However, the new rules will affect individual banks in diverse ways.[9]

Table 1 Effect of regulatory amendments on European banks' risk-weighted assets. Percent of risk-weighted assets without regulatory amendments

	New standardised approach	Changes in the IRB approach	The new floor for IRB banks
Group 1	1.8%	1.7%	7.1%
Group 2	6.8%	2.0%	1.8%

Source: European Banking Authority (2022)

Two Norwegian banks estimate that the new standardised approach will result in capital reductions. Sparebanken Sør estimates that the new approach can increase the CET1 ratio by 3.5 percentage points (see Sparebanken Sør (2022)). SpareBank 1 Sørøst-Norge estimates that the new standardised approach can reduce the average risk weight for residential mortgages from 35 to about 26 percent and commercial property loans' average risk weight from 100 to about 70 percent (see SpareBank 1 Sørøst-Norge (2022)).[10]

Changes to the IRB approach will probably produce limited effects on Norwegian banks. The right to use the advanced IRB approach is withdrawn for exposures to companies with annual turnover of more than EUR 500 million and all financial institutions.[11] In isolation, this may increase risk weights of Norwegian IRB banks somewhat[12], but Norwegian IRB banks do not use an advanced IRB approach for financial institutions and have limited exposures to the largest corporates. In addition, the new minimum requirement for risk parameters used by IRB banks to calculate risk weights is

[7] KBN uses the standardised approach.
[8] The Basel Committee finds similar effects for European banks in its study of both the new standardised approach, changes in the IRB approach and the new floor for IRB banks (see Basel Committee (2022)).
[9] For example, the effects of the new standardised approach vary from a reduction in the risk-weighted assets of 13 percent to an increase of 39 percent.
[10] SpareBank 1 Sørøst-Norge calculations assume that banks can use current updates of market values from Eiendomsverdi in the calculation of loan-to-value ratios. The calculations are based on publicly available information from Pillar III reports and do not reflect SpareBank 1 Sørøst-Norge in particular.
[11] The right to use an advanced IRB approach is not withdrawn for specialised lending.
[12] Norwegian IRB banks use lower loss ratios (loss given default - LGD) and maturities for such exposures under the advanced IRB approach than they can use under basic IRB approach.

introduced.[13] This may also push IRB banks' risk weights up. However, effects will probably be very limited for Norwegian IRB banks, because Finanstilsynet already sets requirements for IRB models that contribute to risk parameters being higher than the new minimum requirements.[14] In addition, a multiplier, which increases risk weights by 6 percent, is removed from the formula for calculating risk weights. In isolation, this pulls IRB banks' risk weights down.

In this paper, we analyse how the introduction of the new standardised approach and the new floor for IRB banks could affect 21 Norwegian banks' capital adequacy and lending margins. Section 2 provides an overview of the data set, while Sections 3, 4, 5 and 6 describe the parts of the capital adequacy rules relevant to the analysis. Section 7 describes our calculation methods and analytical assumptions. Section 8 analyses the effect of the new rules on banks' risk weights. Section 9 assesses the effect of the new rules on banks' capital adequacy, and Section 10 assesses the effect of the new rules on competition and interest rates in the Norwegian lending market. Part 11 concludes.

2. Data

We use several data sources to analyse the effects of the new standardised approach and new floor for IRB banks. We calculate the CET1 ratio using data from the CRD reporting to Finanstilsynet. In addition, we use CRD data for banks' exposures and risk-weighted assets across different segments to calculate associated average risk weights.

We complement CRD reporting with the reporting of financial information to the authorities (FINREP), banks' exposure reporting to the Financial Supervisory Authority of Norway (ENGA), IRB banks' reporting of average risk weights for residential and commercial property loans (floor reporting)[15] to Finanstilsynet, banks' internal reports, data from Bisnode on parent company organisation number and credit rating data from Nordic Trustee and DNB Markets.

ENGA reporting contains data for 375 000 exposures with information on, among other things, allocated funds, loans taken out, company number, industry and consolidation level, as well as bank account details.

[13] Under the current rules, estimated probability of default (PD) shall not be below 0.03 percent for firms, retail exposures, banks and other institutions. Under the new rules, the minimum requirement increases to 0.05 percent. In addition, the new rules include several new minimum requirements for LGD, including a minimum LGD requirement of 25 percent for unsecured corporate exposures.
[14] Norwegian banks must use data from the Norwegian banking crisis in 1988-1993 to estimate PD and LGD, and the estimates must be added to safety margins to take account of data deficiencies and estimate uncertainty. In addition, PD for residential mortgage loans will be least 0.2 percent. Norwegian authorities have also introduced a minimum requirement of 20 percent for the average LGD for residential mortgages.
[15] The reporting applies to all loans secured on residential and commercial property. Banks also report the size of the share of these loans with an SME discount.

FINREP reporting includes data on LTV ratios for residential mortgage loans and commercial property loans for seven IRB banks and 14 SA banks distributed on four intervals: below 60 percent, 60-80 percent, 80-100 percent and above 100 percent. These 21 banks account for almost two-thirds of total assets of all banks and mortgage companies in Norway.

We apply data on income, costs and interest-bearing assets from banks' internal reports to calculate capital requirements for operational risk.

3. Capital adequacy rules

Banks' risk-weighted capital adequacy is calculated as banks' capital in percentage of risk-weighted assets:

$$Capital\ adequacy = \frac{Capital}{Risk - weighted\ assets}$$

The numerator in the capital adequacy ratio, that is, the capital, may consist of different capital quality. Authorities set capital adequacy requirements measured by CET1 capital, Tier 1 capital and subordinated capital. Even if all requirements must be met, it is most common to calculate and report capital adequacy using CET 1 capital, which is equity with some deductions[16].

The denominator in the capital adequacy ratio, risk-weighted assets, is computed by assigning risk weights to banks' exposures. The higher the risk of losses on an exposure, the higher its risk weight should be and the more capital the bank must hold behind the exposure.

Credit risk, ie risk of loan losses, accounts for the majority of risk-weighted assets. In addition, banks must calculate capital requirements for market risk and operational risk. These requirements account for a small share of banks' capital requirements. Our focus is therefore on credit risk.

In the 1990s and early 2000s, banks used fixed and standardised risk weights (Basel I) to calculate capital adequacy. The Basel I rules were eventually criticised for not taking sufficient account of differences in risk. High-risk banks could be subject to the same capital requirements as low-risk banks.

From 2007, Basel I was replaced by the Basel II framework in Norway. Basel II was intended to help ensure that risk weights more accurately matched actual risk, resulting in improved risk management and more efficient use of

[16] Among other things, assets that will not necessarily have value in a loss situation, such as goodwill and deferred tax assets.

capital. With the introduction of Basel II, capital adequacy rules allowed banks to use either the IRB approach or the standardised approach.

The IRB approach was adapted to offer banks lower capital requirements than both the standardised approach and Basel I did. This was intended to give banks an incentive to adopt the IRB approach. At the same time, the Basel I floor was intended to ensure that the IRB banks' capital requirements were not too low compared with Basel I. Most Norwegian IRB banks were bound by the Basel I floor until it was removed from the Norwegian capital adequacy rules towards the end of 2019. The floor dampened capital requirement differences between Norwegian IRB banks and SA banks and may have resulted in an adjustment in the Norwegian IRB banks that were wholly or partly aligned with the old Basel I rules. In reality, banks that were bound by the floor used risk weights for new loans corresponding to about 80 percent of risk weights under Basel I.[17]

The financial crisis in 2008 revealed a number of regulatory shortcomings, including the need for requirements that would increase banks' resilience to losses. The Basel Committee therefore presented a new standard for capital and liquidity rules in 2010 (Basel III) (see Basel Committee (2010)). In 2017, the Basel Committee further revised the capital adequacy standards (see Basel Committee (2017)). The revision formed the basis for the proposals of the European Commission and the European Council concerning a more risk-sensitive standardised approach for credit risk, changes in the IRB approach and a new floor for IRB banks' risk-weighted assets.

The new standardised approach is more detailed and risk-sensitive than the current standardised approach. This is intended to reflect more accurately the link between capital requirements and risk in SA banks. In addition, the regulatory changes are intended to enhance capital requirement comparability between banks, thereby promoting a more level playing field.

The new standardised approach will require more detailed assessments of credit risk than the current approach. Under the new approach, banks are to assess credit risk themselves (Standardised Credit Risk Assessment Approach – SCRA) when weighting exposures to financial institutions and other institutions without a credit rating. In addition, the new standardised approach requires banks to review corporate customers' debt-servicing (due diligence) at least once a year, so that they can form an adequate understanding of their customers' risk profile and assess whether risk weights are at a reasonable level. If the review reveals higher credit risk than indicated by external credit ratings, the bank will downgrade exposures at least one grade in relation to the credit rating. Banks cannot use a lower risk weight than fixed by an external credit rating, even though a banks' review indicates a

[17] Since banks were not required to calculate capital requirements for operational risk under Basel I, the effective risk weights are in practice somewhat lower than 80 percent of the Basel I weights.

lower credit risk. Banks will also have effective internal guidelines, routines, systems and controls to ensure that they apply appropriate risk weights.

The new standardised approach results in lower risk weights than the former approach for multiple exposures. The risk weight is reduced, among other things, for exposures to:

- Companies with credit rating BBB (from 100 to 75 percent)
- High-quality project and object finance (from 100 to 80 percent)
- Dwellings with an LTV ratio below 55 percent (from 35 to 20 percent)
- Commercial property loans with an LTV ratio below 55 percent (from 100 to 60 percent)
- Credit card users who have repaid all outstanding balances by the due date and unused overdrafts without withdrawals in the past year (from 75 to 45 percent)

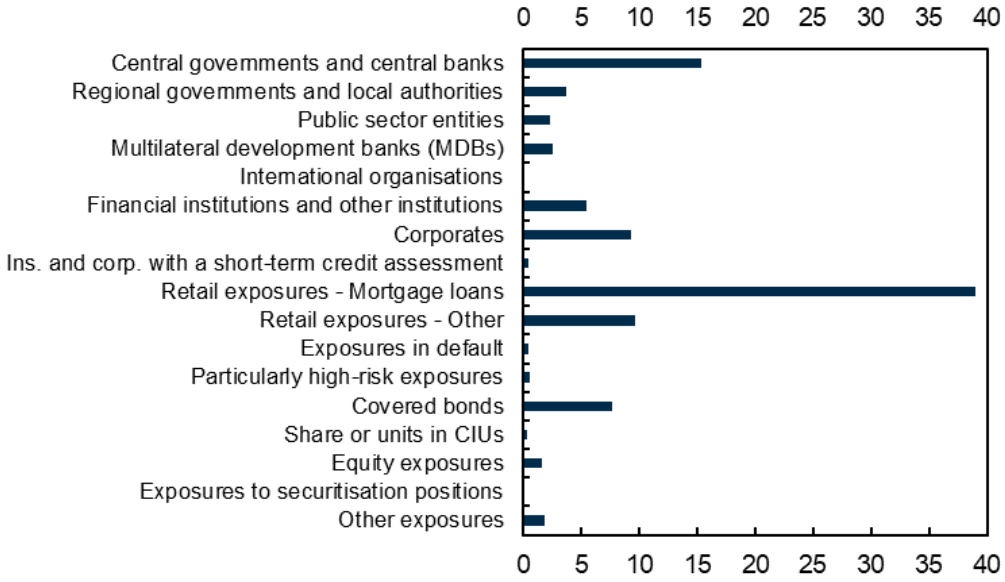
The old and new standardised approaches provide the same risk weighting of exposures to central governments and central banks, public sector entities, international organisations, high risk exposures, shares or units in Collective Investment Undertakings (CIUs) and other exposures.

Under the current standardised approach, exposures in the bank portfolio are to be distributed among 17 classes:

1. Corporates
2. Retail exposures
3. Exposures secured by mortgages on immovable property
4. Financial institutions and other institutions
5. Institutions and corporates with a short-term credit assessment
6. Central governments and central banks
7. Regional governments and local authorities
8. International organisations
9. Multilateral development banks (MDBs)
10. Public sector entities
11. Covered bonds
12. Exposures to securitisation positions
13. Share or units in CIUs
14. Equity exposures
15. Particularly high-risk exposures
16. Exposures in default
17. Other exposures

Norwegian banks are most exposed to central governments, central banks, corporates and the retail market (Chart 1). Changes in risk weights for these segments will therefore have the greatest impact on Norwegian banks. Norwegian banks do not have any securitisation exposures, and they have limited exposures to international organisations, institutions and corporates with a short-term credit rating and share or units in CIUs. These exposures are therefore not focused on in this paper.

Chart 1 Banks[1)] exposures under the standardised approach by segment. Share of total exposure. At 2022 Q4



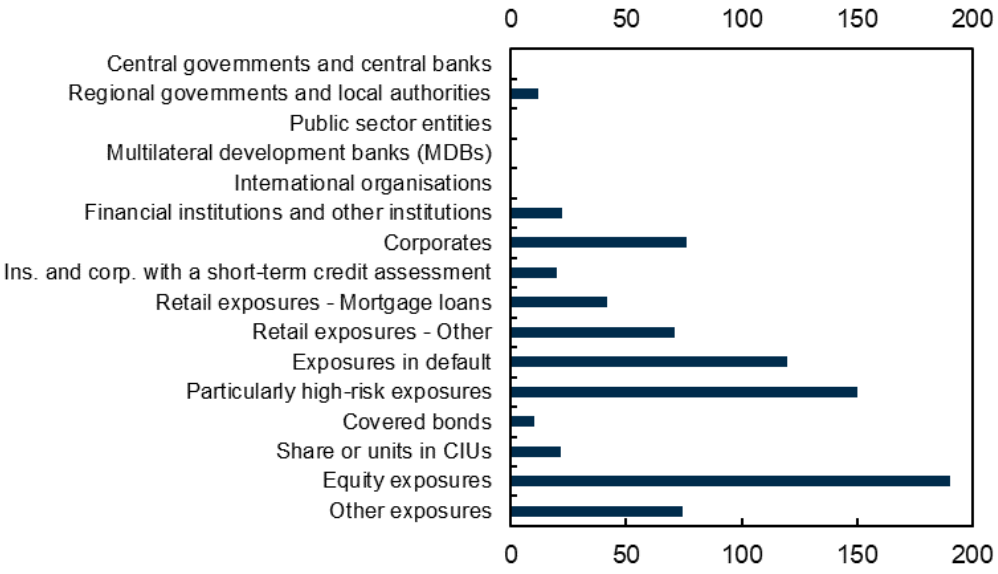
1) All banks in Norway except branches of foreign banks.

Source: Norges Bank

3.1 Corporates

Norwegian banks' average risk weight for corporate exposures were 76 percent below the standardised approach's average risk weight in 2022 (Chart 2). IRB banks disclose corporate exposures for the subgroups "Specialised lending", "SMEs" and "Other corporates". SMEs are small and medium-sized firms with an annual turnover not exceeding EUR 50 million and employing less than 250 people. Specialised lending includes the financing of infrastructure projects, commodities and objects, but not property. The current standardised approach does not contain any separate treatment of specialised lending, ie these exposures lie below SME or other corporates.

Chart 2 Banks[1)] average risk weight under the standardised approach for different segments. Percent. At 2022 Q4



1) All banks in Norway except branches of foreign banks.

Source: Norges Bank

3.1.1 SMEs and other corporates

Under both the new and old standardised approach, exposures to corporates *with* a credit rating must be risk-weighted according to the credit rating and a table from the Capital Requirements Regulation[18] (CRR), in which, for example, exposures to corporates with a credit rating of AA or higher apply a risk-weight of 20 percent (Table 2).

Table 2 Risk weights for loans with credit rating

	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	Below BB-	No rating - SME	No rating - other
Current approach	20%	50%	100%	100%	150%	100%	100%[1]
New approach	20%	50%	75%	100%	150%	100%	100%

1) Norwegian exposures.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

Under *the current approach*, exposures to Norwegian corporates *without* a credit rating are risk-weighted at 100 percent. Banks can also apply a 100 percent risk-weight to most exposures to foreign corporates *without* a credit rating, but banks must apply the risk weight of their home state if it is higher than 100 percent. A large share of Norwegian SA banks' corporate exposures is risk-weighted at 100 percent. Only the largest corporates in Norway have a

[18] Commission Implementing Regulation (EU) 2021/2005 specifies further rules on assignment to grades for exposures that are not securitisation positions (see Finanstilsynet's circular "External credit ratings and Grades"). Commission Implementing Regulation (EU) 2022/2365 indicates corresponding rules for securitisation positions.

credit rating, and these corporates mainly borrow from IRB banks. Moreover, Norwegian SA banks do not lend much to foreign corporates.

The *new standardised approach* reduces the risk weight for loans to corporates with a credit rating BBB+ to BBB from 100 percent under the current approach to 75 percent (Table 2). Other risk-weights for corporates remain unchanged.

When calculating the new output floor for IRB banks, loans to corporates *without* a credit rating in a transition period up to 2032 are to be risk-weighted at 65 percent instead of 100 percent if the estimated probability of default (PD) is less than 0.5 percent.[19] Other corporate exposures will be risk-weighted at 100 percent under the new approach.

3.1.2 Specialised lending

Today's standardised approach does not provide for separate treatment of specialised lending. Specialised lending is risk-weighted in the same way as other corporate exposures. This means that most specialised lending in Norway has a risk weight of 100 percent (Table 3).

Table 3 Risk weights for specialised lending

	Project financing	Object financing	Commodity financing
Current approach	100%[1]	100%[1]	100%[1]
New approach - credit rating available	Same as for Corporates[2]	Same as for Corporates[2]	Same as for Corporates[2]
New approach - other	Preoperative phase: 130% Operative phase high quality: 80% Operative phase other: 100%	High quality: 80% Other: 100%	100%

(1) Financing of speculative investment in immovable property is considered high risk and shall be risk-weighted at 150 percent.

2) See Table 2.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

The debt-servicing capacity of specialised corporates depends primarily on the income from the assets financed, because specialised corporates typically have few or no other assets or activities. The debt-servicing capacity of infrastructure projects largely depends on income from individual projects, such as the construction of health institutions, schools, power plants or mines. Commodity financing is short-term lending that finances reserves, inventories or receivables on exchange-traded commodities (ETCs), such as crude oil or metals, where debt-servicing capacity depends on income from the sale of goods. The debt-servicing capacity of object finance depends on income from physical assets such as planes, trains and ships.

Under the new standardised approach, specialised lending *with* an external credit rating will be risk-weighted in the same way as lending to corporates

[19] See page 14 of European Commission (2021) and Article 465 of the European Council (2022).

with an external credit rating (Table 2). However, the new standardised approach includes separate treatment of specialised lending to corporates *without* a credit rating (Table 3). Project financing without a credit rating shall be risk-weighted at 130 percent before operations have started. Once operations are underway and cash flow is sufficient to service the debt (operational phase), an 80 percent risk weight will apply to the exposure if the project qualifies as high-quality[20] and is not approved for infrastructure discount in the capital adequacy calculation. Other project financing will be risk-weighted at 100 percent in the operational phase. Object financing and commodity financing will in principle be risk-weighted at 100 percent. The European Commission has proposed that object financing qualifying as a high-quality project should be risk-weighted at 80 percent. The European Council has asked the EBA to consider this proposal by 2026 (see European Council (2022)).

3.2 Retail exposures

Banks report retail exposures for the subgroups "Retail mortgage loans", "Retail SMEs" and "Other retail". Retail mortgage loans are covered by the section "Exposures secured on immovable property" in the CRR (see Section 3.3).

Retail SMEs are small exposures to SMEs, where total exposure to each individual counterparty is less than EUR 1 million.[21] Under the current approach, these exposures are risk-weighted at 75 percent.

Other retail includes revolving credits, lines of credit (LOCs) that are usually drawn on, other retail loans and leasing agreements. Under the current approach, these exposures will be risk-weighted at 75 percent. Revolving credits and lines of credit cover, among other things, exposures from credit cards, payment cards and overdrafts. Other retail loans and leasing agreements include consumer loans, student loans, car loans and car leasing, among others.

Under the *new* standardised approach, risk weights for retail exposures are more risk-sensitive than under the current approach. The new approach distinguishes between "Regulatory retail" and "Other retail". Other mass market will be risk-weighted at 100 percent (Table 4).

[20] The project must meet the regulatory criteria for high-quality projects, including requirements for the project's liquidity, capital, income and counterparty, as well as the drafting of contracts and the bank's collateral rights.
[21] The limit of EUR 1 million applies for the highest level of consolidation.

Table 4 Retail risk weights

	Regulated mass market		Other mass market
	Transactors	Other regulated mass market	
Current approach	75%	75%	75%
New approach	45%	75%	100%

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

Regulatory retail comprises revolving credits, lines of credit, other retail market loans, leasing agreements as well as loans and facilities for SMEs, where total exposure to a counterparty does not amount to more than EUR 1 million. Regulatory retail exposures are risk-weighted at 45 percent if they are classified as "Transactors". Transactors include credit card users who in the last year have repaid all outstanding balances by the due date and unused overdraft in the last year. Other regulatory retail exposures are risk-weighted at 75 percent.

3.3 Exposures secured by mortgages on residential property

The section “Exposures secured by mortgages on immovable property” includes both loans to private individuals and commercial property loans. Norwegian banks also include other types of loans secured by mortgages on property in this section, including lending to agriculture secured by mortgages on residential property and loans to housing cooperatives, residential mortgage companies, condominiums, and other types of residential partnership companies.

Under the *new standardised approach*, risk weights for both residential mortgage loans and commercial property loans depend more on LTV ratios than under the current method. However, the following requirements shall be met in order for risk weights to depend on LTV ratios:

- The borrower must have sufficient debt-servicing capacity.
- The leveraged property must be completed, be forest or agricultural land, under development or be planned with a building permit.
- The bank shall have first priority claim on the collateral.
- The property will be valued conservatively[22], and the collateral value cannot be adjusted upwards beyond the average value over the past six years. In addition, the valuation will not depend significantly on the borrower’s behaviour.
- The loan contract and legislation allow the bank to determine the mortgage’s collateral value within a reasonable period of time.

[22] Finanstilsynet’s Circular 2/21 and EBA Guidelines impose additional requirements on the valuation of property.

- All necessary information when granting and following up the loan must be well documented.

If the above requirements are not met and the borrower's debt-servicing capacity depends significantly on cash flow from the property, the loan under the new standardised approach will be risk-weighted at 150 percent. Other loans that do not meet the above requirements will be weighted using the counterparty's risk weight.

3.3.1 Residential mortgage loans

Norwegian banks have an average risk weight for residential mortgage loans under the standardised approach of around 40 percent (Chart 2). Under the current standardised approach, loans with an LTV ratio below 80 percent must be risk-weighted at 35 percent provided that the regulatory retail market requirements are satisfied.[23] This applies to most residential mortgage loans in Norway, partly because credit standard requirements limit the LTV ratio to 85 percent on most residential mortgages. Residential mortgage loans with an LTV ratio above 80 percent are weighted at 75 percent if retail market requirements are met. If the retail market requirements are not met, residential mortgage loans will be weighted at 100 percent.

Under the *new* standardised approach, banks will in principle use a loan-splitting approach for residential mortgage loans, in which the risk weight is 20 percent for the portion of the loan that is within an LTV ratio of 55 percent (Table 5).[24] The remainder of the loan is weighted using the counterparty's risk weight, ie 75 percent for private individuals and 100 percent for corporates. When calculating LTV ratios, banks cannot use property values higher than the average value over the past six years.

Table 5 Risk weights for residential mortgage loans

	Loan-to-value ratios						Requirements not met
	Below 50%	50-60%	60-80%	80-90%	90-100%	Above 100%	
Current approach	35%	35%	35%	75%	75%	75%	100%
New approach - Loan-splitting approach	20%	Counterparty's risk weight[1]					Counterparty's risk weight[1]
New approach - Cash flow from property crucial	30%	35%	45%	60%	75%	105%	150%

1) 75 percent for private individuals and 100 percent for firms.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

If the borrower's debt-servicing capacity depends significantly on cash flow from the property, ie leasing or selling property, banks must in principle use

[23] Loans secured on holiday homes can be risk-weighted at 35 percent if the LTV ratio is below 60 percent (see Section 5-9 of the Norwegian Capital Requirements Regulation).
[24] If another institution has first priority claim on the collateral, the bank will downgrade the exposure amount that is risk-weighted at 20 percent by the value of the other institution's lien. If both institutions have first priority (pari passu) the exposure amount that is risk-weighted at 20 percent will be adjusted downwards by the other institution's share of total liens.

higher risk weights in most cases (Table 5). However, banks may use the loan-splitting approach for such loans if the market for the property is well developed and the preceding year's loan losses as a share of exposure (loss ratio) are below 0.3 (0.5) percent for the portion of the loan that is within an LTV ratio of 55 (100 percent). This also applies if:

- The property is the borrower's primary residence
- The borrower has leveraged less than five properties or
- The loan is secured by property for regulated housing cooperatives, associations or public housing companies that offer primary or long-term housing for social purposes.

When calculating the new floor for IRB banks, the European Commission and European Council have allowed the portion of residential mortgage loans that is within the 55 percent LTV ratio to be risk-weighted at 10 percent in a transition period up to 2032, under certain conditions. A 45 percent risk weight can be assigned to the portion of the residential mortgage loan that has an LTV ratio between 55 and 80 percent up until the end of 2029.

3.3.2 Commercial property loans

The Norwegian authorities have set a risk weight of 100 percent for Norwegian commercial property loans under the current standardised approach.[25] However, if commercial property loans and commercial property portfolios meet retail market requirements, banks can apply a risk weight of 75 percent.

Under the *new* approach, risk weights depend on the commercial property's LTV ratio (Table 6). Banks can use the loan-splitting approach for commercial property loans that corporates use solely for their internal operations. The loan-splitting approach may also be employed for commercial property loans if the borrower's debt-servicing capacity does not depend significantly on cash flow from the property, for example if the borrower only rents out a small portion of the commercial property. Under the loan-splitting approach for commercial property, the risk weight is at 60 percent for the part of the loan that is within a LTV ratio of 55 percent. The remaining part of the loan is weighted based on the counterparty's risk weight, ie 75 percent for private individuals and 100 percent for corporates without a credit rating.[26] For other counterparties, the risk weight for unsecured exposures will be used.

[25] The CRR allows commercial property loans to be risk-weighted at 50 percent below the current standardised approach.
[26] If another institution has first priority in the collateral, the bank will downgrade the exposure amount that is risk-weighted at 60 percent with the value of the other institution's lien. If both institutions have first priority (pari passu) the exposure amount will be risk-weighted at 60 percent adjusted downwards with the other institution's share of total lien rights.

Table 6 Risk weights for commercial property loans.

	Loan-to-value ratios				Requirements not met
	Below 55%	55-60%	60-80%	Above 80%	
Current approach	100%[1]				Counterparty's risk weight
New approach - Loan-splitting approach	60%	Counterparty's risk weight			Counterparty's risk weight
New approach - Cash flow from property crucial for the debt-servicing capacity	70%		90%	110%	150%
New approach - Land acquisition and development of commercial property	150%				
New approach - Land acquisition for residential purposes and development and construction of housing	100%				

1) 75 percent if retail market requirements are met.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

Banks must apply higher risk weights to loans for commercial property rentals because the borrower's debt-servicing capacity depends primarily on the cash flows generated by the property (Table 6). However, bankers may use the loan-splitting approach for such loans if the previous year's loss ratio is below 0.3 (0.5) percent for the portion of the loan that is within a LTV ratio of 55 (100) percent.

Under the new standardised approach, a risk weight of 150 percent shall be applied to financing of land acquisition and development of *commercial property* (Table 6). Financing of the development and construction of residential properties can receive a 100 percent risk weight if the requirements in Section 3.3 are met, pre-sales requirements are legally binding and the buyer/tenant has made a substantial deposit available should contract termination occur.

Banks will take into account the foreign exchange risk associated with commercial property loans by applying a higher risk weight for property exposures to private individuals with income in a currency other than the one used in the loan. If financial hedging or income in the same currency as the loan (natural hedging) covers less than 90 percent of the loan instalments, the risk weight shall be multiplied by a factor of 1.5, but the risk weight shall not exceed 150 percent.

3.4 Financial institutions and other institutions

Under the current standardised approach, exposures to financial institutions and other institutions must be risk-weighted based on a credit assessment if either the institution or the institution's home state has a credit rating, where the lowest grade results in a risk weight of 20 percent (Table 7). A lower risk weight shall be assigned to exposures with a credit rating of A+ to B if they are classified as "short-term", ie loans that are either granted with an effective maturity of maximum three months or exposures from goods transport that have been granted with an effective maturity of maximum six months.

Under the current standardised approach financial institutions and other institutions shall generally receive a 100 percent risk weight when neither the

institution nor the institution's home state have a credit rating, but some exceptions exist (Table 7). Exposures to institutions due to central bank reserve requirements may, under some conditions, carry the same risk weight as exposures to the central bank.

Norwegian banks' average risk weight on exposures to financial institutions and other institutions is 2 percent (Chart 2). This may indicate that Norwegian banks primarily have exposures to other banks with a credit rating of AA- or better.

Table 7 Risk weights for loans to other banks if the use of credit rating is permitted

	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	No rating
Current approach - long-term	20%	50%	50%	100%[1]	150%	0% - 150%[2]
Current approach - short-term	20%	20%	20%	50%[1]	150%	20%
New approach - long-term	20%	30%	50%	100%	150%	SCRA-approach[3]
New approach - short-term	20%	20%	20%	50%	150%	SCRA-approach[3]

1) Risk weight for Grades 4 and 5 under the current approach.

2) As a general rule, the risk weight shall be at 100 percent, but if the credit rating is available for the institution's home state, the risk weight shall vary between 20 percent and 150 percent. Exposures to institutions due to central bank reserve requirements may, under some conditions, carry the same risk weight as exposures to the central bank.

3) See Table 8.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

Table 8 Risk weights for lending to other banks if the use of credit rating is not permitted (SCRA)

	Standardised Credit Risk Assessment Approach (SCRA)		
	A	B	C
Current approach	0% - 150%[1]		
New approach - long-term	20%	50%	75%
New approach - short-term	40%[2]	75%	150%

1) See Table 7.

2) Exposures to another bank can receive a 30 percent risk weight if all criteria for the SCRA rating A are met and the other bank has a CET1 ratio of at least 14 percent and leverage ratio of at least 5 percent.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

Under the *new* standardised approach, the risk weight for exposures to other banks with a credit rating of A+ to A- has been adjusted downwards (Table 7). The new approach will also make banks less intertwined with government finances. First, the new approach disallows the use of credit ratings that based on implicit government guarantees. Second, the new approach disallows the use of home states' credit ratings for exposures to banks without a credit rating. The new approach therefore includes a new strategy (SCRA) for exposures without a credit rating (Table 8).[27]

[27] The SCRA approach can only be applied to exposures without a credit rating in countries that allow the use of external credit ratings.

Under the SCRA approach, banks will classify exposures to other banks without a credit rating into Groups of Grade A, B and C risk classes. Banks with the Grade A will have sufficient capacity to service their financial obligations regardless of economic conditions and business cycles, as well as meet official minimum requirements and buffer requirements. Banks with a Grade B must meet official minimum requirements[28], but these banks' debt-servicing capacity is vulnerable to weakened economic conditions and business cycles. Other bank exposures are classified in Grade C, including banks with a significant default risk and banks with an auditor's statement expressing material uncertainty about the bank's ability to continue as a going concern. Exposures to foreign banks in foreign currency cannot be risk-weighted lower than exposures to their home state.

Under the new approach, exposures to investment firms and other financial institutions will be risk-weighted in the same manner as bank exposures if they are subject to the same supervisory standards and supervisory level as banks, including capital and liquidity requirements. Exposures to other securities firms and financial institutions shall be risk-weighted as corporate exposures (see Section 3.1).

3.5 Institutions and corporates with a short-term credit assessment

Under the current approach, credit rating agencies may be used to risk weight short-term exposures to institutions and corporates (Table 9).

Table 9 Risk weights for exposures to institutions and corporates with a short-term credit assessment

	A-1+ (S&P)	A-1 (S&P)	A-2 (S&P)	A-3 (S&P)	Other
Current approach	20%	50%	100%	100%	150%
New approach	20%	20%	50%	100%	150%

	P-1 (Moody's)	P-2 (Moody's)	P-3 (Moody's)	Other
Current approach	20%	50%	100%	150%
New approach	20%	20%	100%	150%

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

The *new* standardised approach reduces the risk weight for exposures with short-term credit ratings A-1 and A-2 from the credit rating agency Standard & Poor's (S&P).

If the use of short-term credit rating results in a lower risk weight for a bank exposure than the general treatment for short-term bank exposures (Tables 7 and 8), the risk weight with a short-term credit rating shall only be applied to the specific bank exposure. If the use of a short-term credit rating results in a higher risk weight than the general treatment for short-term bank exposures,

[28] Except for bank-level requirements that are not public, such as Pillar 2 requirements.

all the bank's short-term exposures will receive the risk weight from the short-term credit rating.

3.6 Central governments or central banks

The new standardised approach does not change the risk weighting of exposures to central governments or central banks. Norwegian banks generally apply a risk weight of 0 percent to such exposures (Chart 2). This is probably because most exposures have a credit rating corresponding to a zero weight (AAA to AA-) (Table 10). In addition, national authorities may allow lower risk weighting of exposures in the country's currency. In Norway, a risk weight of 0 percent is to be assigned to such exposures.

Table 10 Risk weights for exposures to governments and central banks

	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	No rating
Current approach	0%	20%	50%	100%[1]	150%	100%
New approach	0%	20%	50%	100%	150%	100%

1) Risk weight for Grades 4 and 5 under the current approach.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

3.7 Regional governments and local authorities

Exposures to regional governments and local authorities will carry the same risk weight as the home state if credit risk is the same. If credit risk is different, but the exposure to regional governments and local authorities is in the same currency as the home state, the risk weight will be 20 percent. In other cases, exposures to regional governments and local authorities shall be risk-weighted as exposures to financial institutions and other institutions (see Section 3.4). Norwegian banks' average risk weights for exposures to regional governments and local authorities are 1-2 percent below the standardised approach (Chart 2). This may indicate that banks apply their home state's risk weight to parts of their exposures.

The *new standardised approach* does not change risk weighting of exposures to regional governments and local authorities. However, the new approach changes the rules for risk weights assigned to bank exposures (Section 3.4), and these rules, in some cases, determine risk weighting of exposures to regional governments and local authorities.

3.8 International organisations

Risk weighting of exposures to international organisations remains unchanged under the new standardised approach.[29] Norwegian banks' average risk

[29] See Section 10 of Basel Committee on Banking Supervision (2017).

weight for such exposures is 0 percent in accordance with regulation (Chart 2).[30]

3.9 Multilateral development banks (MDBs)

The CRR enumerates development banks that receive zero weight. An average risk weight of 0 percent indicates that Norwegian banks are exposed to these banks. A 20 percent risk weight applies to capital in the European Investment Fund (EIF) that has not been paid in. Other exposures to MDBs are risk-weighted based on the credit rating for the institution or institution's home state (Table 11).

Table 11 Risk weights for exposures to multilateral development banks

	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	No rating
Current approach	20%	50%	50%	100%[1]	150%	20-150%[2]
New approach	20%	30%	50%	100%	150%	50%

1) Risk weight for Grades 4 and 5 under the current approach.

2) Risk weight is determined by home state's credit rating and related table in the CRR.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

The *new* standardised approach does not name which MDBs will carry zero weight. Instead, the new approach states several criteria that must be met in order for such exposures to carry zero weight, including that most of MDB credit ratings must be AAA, the MDB must have a highly solid ownership structure, low liquidity risk and strict lending requirements and guidelines. Other MDB exposures will be risk-weighted on the basis of the MDB's credit rating (Table 11).

3.10 Public sector entities

The risk weighting of exposures to public sector entities remains unchanged under the new standardised approach. The risk weight of these exposures is determined by the credit rating of the enterprise's home state (choice 1) or the public sector entity (choice 2) (Table 12). Public sector entities without a credit rating may, under certain conditions, receive the same risk weight as the weight of their home state.[31]

Norwegian banks generally apply a risk weight of 0 percent for exposures to public sector entities (Chart 2). This indicates that Norwegian banks largely use the risk weight of public sector entity's home state.

[30] The European Union (EU), the Bank for International Settlements (BIS), the European Stability Mechanism (ESM), the European Financial Stability Facility (EFSF) and the International Monetary Fund (IMF) are classified as international organisations.
[31] Provided that that the home country's authorities assess that government guarantees do not entail differences in risk.

Table 12 Risk weights for exposures to public sector entities by credit rating

	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	No rating
Current approach - choice 1	20%	50%	100%	100%[1]	150%	100%
New approach - choice 1	20%	50%	100%	100%	150%	100%
Current approach - choice 2	20%	50%	50%	100%[1]	150%	50%
New approach - choice 2	20%	50%	50%	100%	150%	50%

1) Risk weight for Grades 4 and 5 under the current approach.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

3.11 Covered bonds

Norwegian banks' average risk weight on covered bonds is 10 percent below the standardised approach (Chart 2). Covered bonds are weighted on the basis of the credit rating, and a credit rating of AAA to AA corresponds to a risk weight of 10 percent (Table 13).

Table 13 Risk weights for covered bonds with credit rating

	AAA to AA-	A+ to BBB-	BB+ to B-	Below B-
Current approach	10%	20%[1]	50%[2]	100%
New approach	10%	20%	50%	100%

1) Corresponds to Grades 2 and 3 under the current approach.

2) Corresponds to Grades 4 and 5 under the current approach.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

The weight for unsecured exposures will be applied to other covered bonds without a credit rating, with the best priority for the issuing bank (Table 14).

Table 14 Risk weights for covered bonds without a credit rating by risk weight of the issuing bank

	20%	30%	40%	50%	75%	100%	150%
Current approach	10%	-		20%	-	50%	100%
New approach	10%	15%	20%	25%	35%	50%	100%

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

The *new* standardised approach does not change the risk weighting of covered bonds with a credit rating (Table 13). However, the risk weight for covered bonds without a credit rating depends more on the risk weight of the issuing bank[32] under the new approach than under the former approach (Table 14).

[32] Risk weight for exposure to the bank determined by external credit rating or SCRA approach.

3.12 Shares or units in a Collective Investment Undertaking (CIU)

The new standardised approach does not modify the risk weighting of share or units in CIUs. Norwegian banks' average risk weight for such exposures is at 21 percent (Chart 2). Shares and units in CIUs can be risk-weighted on the basis of a credit rating, where the lowest grade corresponds to a risk weight of 20 percent. The risk weight can also be calculated based on knowledge of the CIU's underlying exposures or assumptions about its investments. A 100 percent risk weight shall be applied to other shares and units in CIUs.

3.13 Equity exposures

Equity exposures include both direct and indirect ownership in firms and other financial institutions. Norwegian banks apply an average risk weight of 191 percent for equity exposures (Chart 2).

Under the current approach a 1250 risk weight shall be applied to equity exposures if they are considered high-risk or are assets in non-financial corporations that exceed 15 percent of the bank's capital. Specified exposures that are not deducted from the bank's CET1 capital are risk-weighted at 250 percent. Investments in other financial institutions' subordinated capital are risk-weighted by 250 percent if the exposure is not included as a deduction from the bank's own funds or is treated as high-risk exposure. Other equity exposures are weighted at 100 percent.

Under the *new* standardised approach, risk weights for equity and subordinated debt exposures are more risk sensitive than under the current approach (Table 15). At the same time, the right to employ internal methods for equity exposures is removed. Speculative shares of unlisted companies are to be risk-weighted at 400 percent. A risk weight of 100 percent shall be assigned to intra-group equity exposures. The same applies to equity shares in companies participating in public programmes that reduce banks' risk.

Table 15 Risk weights for subordinated debt and equity exposures.

	Subordinated capital other capital that is not shares	Intra-group equity exposures	Equity exposures towards statutory programs	Speculative shares[1] of unlisted companies	Other equity exposures
Current approach	100%-1250%				
New approach	150%	100%	100%	400%	250%

1) Short-term equity investments in unlisted companies, venture capital or similar investments with price volatility and expectations of substantial gains.

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

The European Commission and European Council offer banks a transition period to adapt to new risk weights for equity exposures, as new risk weights shall be phased in until the end of March 2029.[33]

3.14 High-risk exposures

Risk weighting of high-risk exposures remains unchanged under the new standardised approach. A 150 percent risk weight are to apply to these exposures. High risk investments include funding of speculative investment in real estate, high risk equities and shares or units in CIUs and other Collective Investment Facilities (ETFs, REITs, Investment Trusts), as well as high risk investments in venture capital firms, Alternative Investment Funds (AIFs) and private equity.

3.15 Exposures in default

Under the current standardised approach, exposures in default will be reduced by accounting write-downs. The remaining exposure is risk-weighted by either 100 or 150 percent. The unsecured portion of the exposure will be weighted at 150 percent if total write-downs amount to less than 20 percent of the unsecured part (before write-downs). Otherwise, the risk-weight will be at 100 percent on exposures in default.

The *new* standardised approach only changes risk weighting of exposures in default in one area. Under the new approach, a 100 percent risk weight shall be assigned to both the secured and unsecured portion of non-performing *residential mortgage loans* unless the borrower's debt-servicing capacity depends significantly on the dwelling's cash flow.[34]

3.16 Other exposures

The new standardised approach does not entail a change in the risk weighting of other exposures. Norwegian banks' average risk weights for these exposures are at 74 percent (Chart 2). Under the current standardised approach, material assets, including buildings and property used for internal banking operations, are weighted at 100 percent. A 100 percent risk weight will be applied to advance payments and accrued income from unidentified counterparties. Cash items that are in the process of being recovered will be assigned a risk weight of 20 percent. Cash in hand and equivalent cash items as well as gold bullion will carry zero weight.

[33] See section 199 in the European Commission (2021).
[34] This also applies if total write-downs on the exposure account for less than 20 percent of the unsecured portion.

4. Conversion factors

Under the current standardised approach, exposures to off-balance sheet items will be calculated as the product of the items' nominal value and regulatory conversion factors. Conversion factors depend on whether exposures are classified as low risk[35] (0 percent), medium/low risk[36] (20 percent), medium risk[37] (50 percent) or full risk[38] (100 percent). Untapped credit facilities that can be unconditionally cancelled at any time are considered low risk and are converted by a factor of 0 percent. Unused facilities with over one year's original maturity are considered medium risk and are converted by a factor of 50 percent.

Under the *new* standardised approach, conversion factors are more risk sensitive. The credit conversion factor for obligations that can be unconditionally cancelled is increased from 0 percent to 10 percent (Table16). The European Commission and the European Council have decided that the conversion factor will be phased in up to the end of 2032.[39]

Table 16 Credit conversion factors for off-balance sheet items

	Cancellable commitments	Self-liquidating trade credits from transport of goods	Other commitments	Note issuance facilities (NIFs), revolving facilities for underwriting and transactional items	Direct credit substitutes and other off-balance sheet exposures
Current approach	0%	20%	20-100%[1]		100%
New approach	10%	20%	40%	50%	100%

1) Conversion factor depends on whether exposures are classified as low risk (20 percent), medium risk (50 percent) or full risk (100 percent).

Sources: Basel Committee (2017), CRR, European Commission (2021) and European Council (2022)

Short-term, self-liquidating trade credits from transport of goods are still to be converted by 20 percent. Note issuance facilities (NIFs), revolving facilities for underwriting and certain transactional items are to be converted by 50 percent. Several items are to be converted by 100 percent: direct credit substitutes, sales and repurchase agreements, sale of assets with guarantee liability, lending of securities, collateralisation of securities, forward purchase of assets, forward deposits and partially paid shares and securities

[35] Low-risk items include, among others, unused credit facilities, such as lending commitments, purchases of securities or guarantee provisions, which may be instantly and unconditionally terminated at any time and without notice, or which effectively permits automatic cancellation due to impairment of the borrower's creditworthiness.
[36] Medium to low-risk items include, among other items, unused credit facilities with an original maturity of less than one year and which cannot be instantly and unconditionally terminated. Trade finance positions that are off-balance sheet and guarantees in the form of warranties are also classified as medium/low-risk positions.
[37] Medium risk positions include, but are not limited to, unused credit facilities with an original maturity of more than one year, certificate programmes and revolving credit programmes, trade financing positions that are off-balance sheet, as well as guarantees for shipping, customs duty, taxes and fees.
[38] Full-risk positions include, among others, guarantees in the form of credit substitutes, credit derivatives (CDs), transactions with recourse, assets purchased pursuant to pure forward purchase contracts, agreements on future deposits, as well as unpaid portions of partially paid shares and securities.
[39] See Section 199 European Commission (2021).

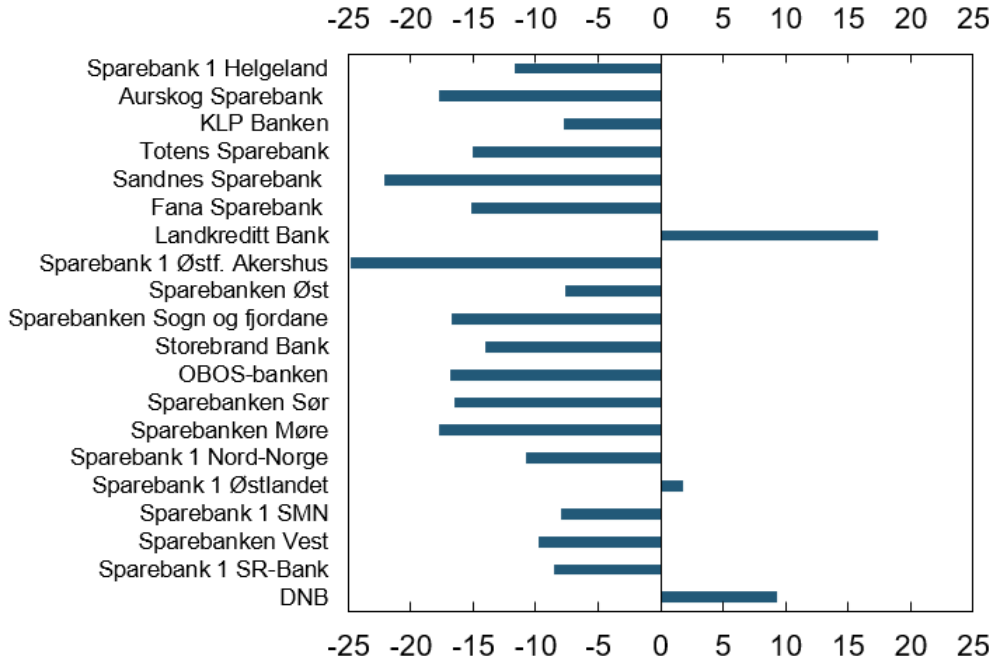
representing an obligation. Other off-balance sheet liabilities that do not qualify for conversion factors of 10 and 20 percent will be converted by 40 percent.[40]

5. Operational risk

Basel III replaces all current approaches for calculating capital requirements for operational risk with a new approach. The new approach is not based on models as the Basel Committee finds that operational risk is difficult to model. Under the new approach, the capital requirement for operational risk depends on different business sectors' size, measured by income, expenses and interest-bearing assets (see Appendix 1).

Our calculations suggest that the new approach will reduce most Norwegian banks' capital requirement for operational risk (Chart 3). This contrasts with the results of the European Banking Authority (EBA)'s surveys of large European banks. According to the EBA's latest impact study, the new approach will increase the average capital requirement for operational risk by 45.1 percent for Group 1 banks and 18.2 percent for Group 2 banks (see European Banking Authority (2022)).

Table 3 Estimated change in capital requirements for operational risk using the new standardised approach compared with capital requirements for operational risk At 2022 Q4. Percent



Source: Banks' annual reports

[40] Risk weighting for counterparty credit risk is assigned in addition to risk weighting of securities themselves or provision of collateral, as the credit risk associated with lending or pledging securities remains with the bank. Derivative transactions will be treated in accordance with the counterparty credit risk standard.

6. Market risk

The European Union is making a number of adjustments to the capital adequacy rules for market risk. Adjustments are based on a new standard from the Basel Committee (Fundamental Review of the Trading Book – FRTB). Among other things, the new rules set stricter requirements for the use of internal models and for banks to capture tail risk. In addition, the new rules draw a clear boundary between the non-trading book and trading book.[41]

Under the *current* standardised approach, capital requirement for market risk shall cover position risk in the trading book, foreign exchange risk and commodities risk. Capital requirements for financial and commodities risk will include both the non-trading book and the trading book. Position risk in the trading book corresponds to the risk of exchange rate fluctuations generated by conditions linked to the issuer (instrument specific risk) as well as factors that also affect similar instruments (including general risk), such as the interest rate level.

Under the *new standardised approach*, the capital requirement for market risk is the sum of three components:

1. Capital requirements calculated using the Sensitivity Approach
2. Capital requirements for default risk
3. Supplementary requirement residual risk

Capital requirements calculated using the Sensitivity Approach are the main component of the new approach. Under the Sensitivity Approach banks will first calculate how sensitive the trading book's value is to:

1. Change in a given risk factor (Delta), such as a change in interest rates, credit spreads or share prices
2. Change in the volatility of the risk factor (Vega)
3. Additional risk for price changes not captured by the risk factor (Delta) (Curvature).

Thereafter, sensitivities are weighted with risk weights calibrated for turbulent market conditions.

Data for calculating capital requirements regarding market risk under the FRTB is unavailable to us. According to the EBA's latest impact study, the FRTB will on average increase capital requirement for market risk by 44 percent for the banks in the study (see European Banking Authority (2022)). Under the current approach, market risk accounts for just over 1 percent of Norwegian banks' total risk-weighted assets. The introduction of the FRTB will therefore probably have limited impact on Norwegian banks' overall capital requirements and capital adequacy.

[41] The trading book comprises all positions in financial instruments and commodities held by banks for the purpose of re-sale or to secure other positions held for trading purposes (see Article 4.1 CRR).

7. Calculation method and analytical assumptions

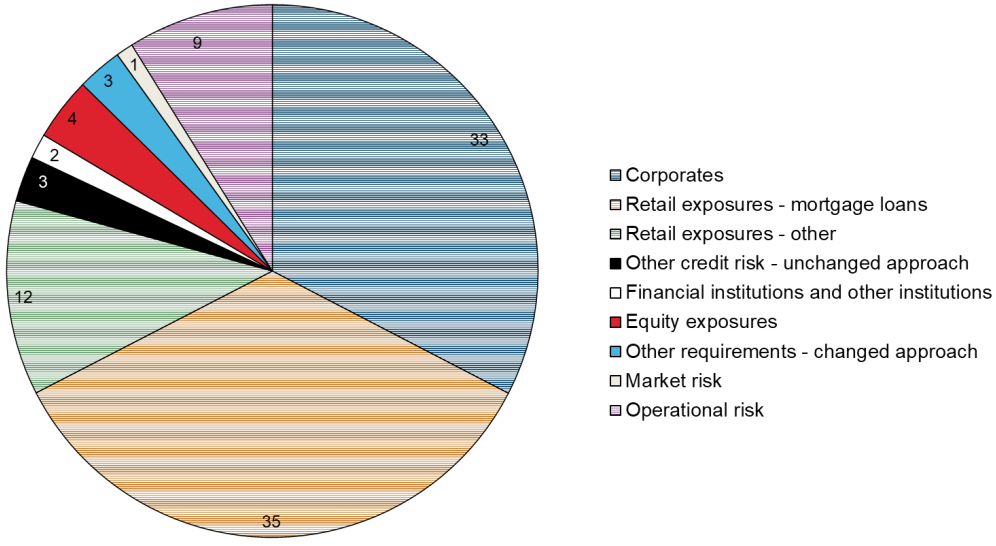
We calculate the CET1 ratio in accordance with the new rules for all banks reporting FINREP data, ie 7 IRB banks and 14 SA banks. Other banks are excluded from the analysis. The analysis is based on banks' CET1 capital, exposures and risk-weighted assets in the fourth quarter of 2022. Average risk weights are then estimated by virtue of a new standardised approach, which we use together with reported exposure to calculate risk-weighted assets with a new standardised approach. First, the effects of full implementation of the new standardised approach and new output floor for IRB banks are calculated. Finally, the effect of transitional arrangements for floors for IRB banks is assessed.

For IRB banks we use the estimated risk-weighted assets using a new standardised approach to calculate IRB banks' CET1 ratios with and without the new output floor. If the IRB banks' risk-weighted assets account for less than 72.5 percent of the risk-weighted assets under the new standardised approach, IRB banks will be assigned an increase in risk-weighted assets and a reduction in capital adequacy.

Our calculations do not take into account the changes in the IRB approach resulting from the new rules. Changes in the IRB approach will probably have limited effects on Norwegian IRB banks' risk weights (see Section 1).

We calculate capital requirements using a new standardised approach for corporates, retail residential mortgage loans, other retail and operational risk. This implies that our calculations cover 88 percent of banks' total risk-weighted assets in 2022 (see striped sections in Chart 4).

Chart 4 Banks[1)] risk-weighted assets by different segments. Share of total risk-weighted assets. Percent. At 2022 Q4



1) All banks in Norway except branches of foreign banks.

Source: Norges Bank

We do not calculate average risk weights for exposures that are treated equally under the old and new standardised approach. We assume that these exposures will carry the same risk-weighted assets with the new and old standardised approach. These exposures accounted for 3 percent of banks' total risk-weighted assets in 2022 (see black segment in Chart 4).

We assume that residual exposures carry the same risk-weighted assets under the new and old standardised approach. These exposures accounted for 9 percent of banks' total risk-weighted assets in 2022. Modifications to the rules for these exposures will therefore have limited impact on Norwegian banks' capital adequacy.

Exposures to unused credit limits are estimated as the product of the nominal amount of unused credit limits and average conversion factor. We do not possess data on banks' use of financial instruments and techniques to reduce credit risk, for example that third parties guarantee loans and that loans are netted against deposits from the same customer. However, our calculations include effects of these forms of adjustments that reduce exposure under the current approach.

As a robustness test, we assess the accuracy of our calculation method by calculating average risk weights using the current standardised approach. We then compare calculated risk-weights with banks' reported risk weights in 2022. Small discrepancies between calculated and reported risk weights indicate that the method and data sets produce robust results.

8. Effects of the new standardised approach on Norwegian banks' risk weights

In this section, the new standardised approach's effect on banks' risk weights is analysed.

8.1 Corporate loans with credit rating

Average risk weights for corporate loans with a credit rating are calculated in 4 steps:

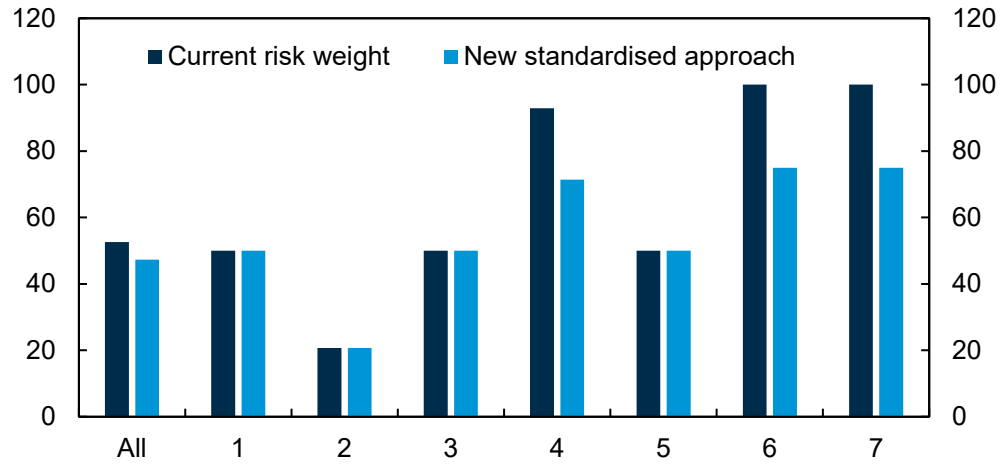
- In step 1, the company number is used to connect the ENGA dataset with the Bisnode data. This offers an expanded data set with company numbers for different companies within the same group.

- In step 2, company numbers are used to link the expanded data set with credit rating data.[42] This yields 1 121 exposures with external credit ratings.
- In step 3, we aggregate each bank's total exposures to the different credit rating classes. In this step both exposures on and off the balance sheet are summed up. We assume that companies with a credit rating have the same conversion factor as the average conversion factor in the associated segment of the CRD reporting.[43]
- In step 4, risk weights are assigned to the exposures according to a credit rating.

IRB banks account for 99.5 percent of total rated corporate exposures in our data set. This demonstrates that rated firms mainly borrow from IRB banks, ie the largest banks.

7 of the 14 *SA banks* in our data set have loans to rated firms. Under the new standardised approach, firms with a credit rating BBB will carry a lower risk weight. This reduces SA banks' average risk weight for corporate loans with a credit rating from 53 to 47 percent (Chart 5). As expected, banks with the largest share of BBB loans also obtain the highest reduction in average risk weights.

Chart 5 Average risk weights for banks'\ corporate loans[1] with external credit rating. Percent. At 2021 Q4

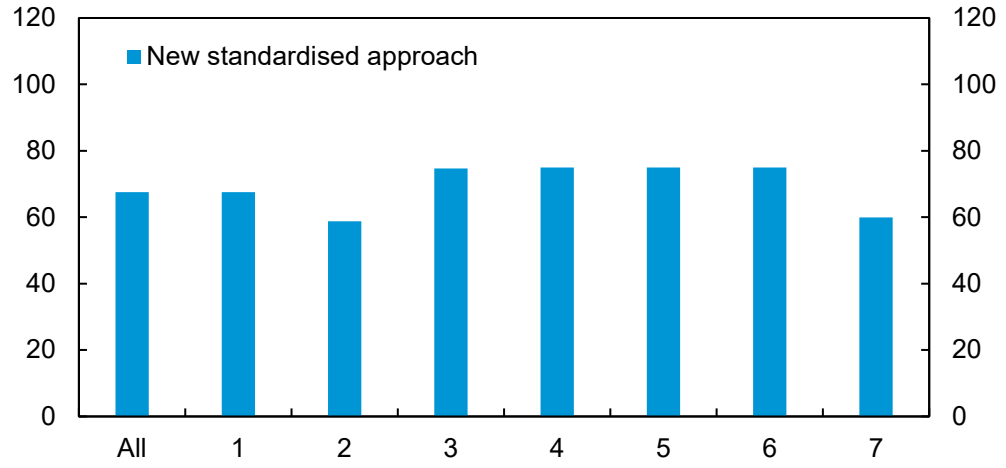


1) Including commercial property.

Source: Norges Bank

[42] Using this method, an entity owned by the City of Oslo will, for example, be assigned the same credit rating as the City of Oslo.
[43] Average conversion factors are estimated using CRD data on individual banks' overall off-balance sheet exposure before and after conversion factor use.

Chart 6 Average risk weights for SA banks' corporate loans[1] with external credit rating. Percent. At 2021 Q4



1) Including commercial property.

Source: Norges Bank

In order to calculate the effect of the new output floor for IRB banks, IRB banks' risk weights must first be estimated by fully employing the new standardised approach. According to our calculations, full use of the new standardised approach results in an average risk weight of 68 percent for corporate loans with a credit rating (Chart 6).

8.2 Corporate loans without credit rating

We use CRD data mainly to calculate risk weights for banks' corporate exposures without a credit rating. Under the standardised approach, banks disclose total corporate loans, as well as the proportion of these that are to SMEs. IRB banks disclose corporate exposures for the subgroups specialised lending, SMEs and other corporates. IRB banks also apply the standardised approach to some of their corporate exposures.

We calculate average risk weights for corporate loans without a credit rating for two subgroups; SMEs and large corporates. The total SME exposures of IRB banks is summed by adding up reported SME exposures under the standardised approach and the IRB approach. All remaining corporate loans under the IRB and standardised approach, including specialised lending,[44] are classified as large corporates.

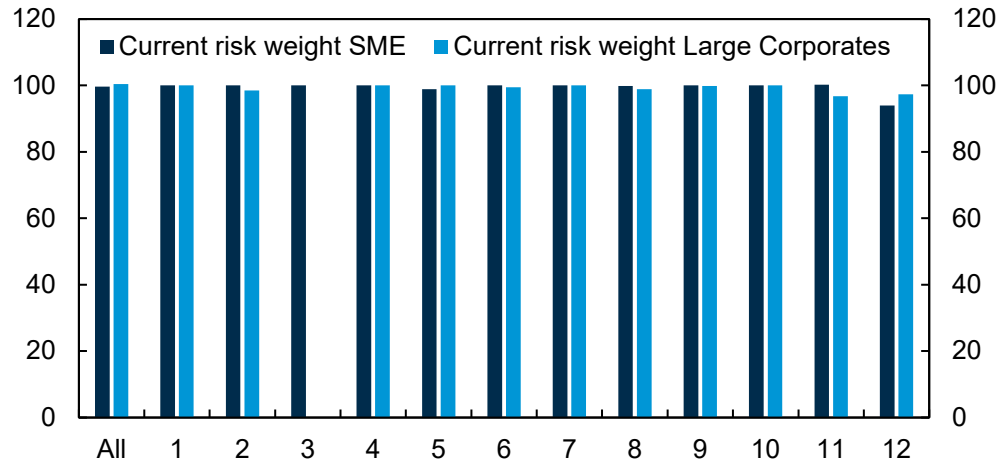
Total exposure to non-rated large corporates is estimated as a residual item. This is done by using total exposures to large corporates as a starting point, and then deducting net commercial property exposures and other corporates'

[44] Under the new standardised approach, risk weights depend on the operational phase of projects financed by specialised lending and the quality of the projects. Our data set does not contain information to assess the operational phase or quality of the projects. We therefore risk weight specialised lending with the same risk weight as corporate exposures.

[45] with a credit rating. All rated exposures are assumed to be to large corporates.[46]

Under the new standardised approach, lending to SMEs and large corporates without a credit rating will be risk-weighted at 100 percent. Our calculations therefore result in an average risk weight of 100 percent for both lending to SMEs and large corporates. This is at the same level as the SA banks' average risk weights for large corporates (100 percent[47]) and SMEs (100 percent) in 2022 (Chart 7).

Chart 7 Average risk weights for SA banks' corporate loans without external credit rating. SMEs and large corporates. Percent. At 2022 Q4

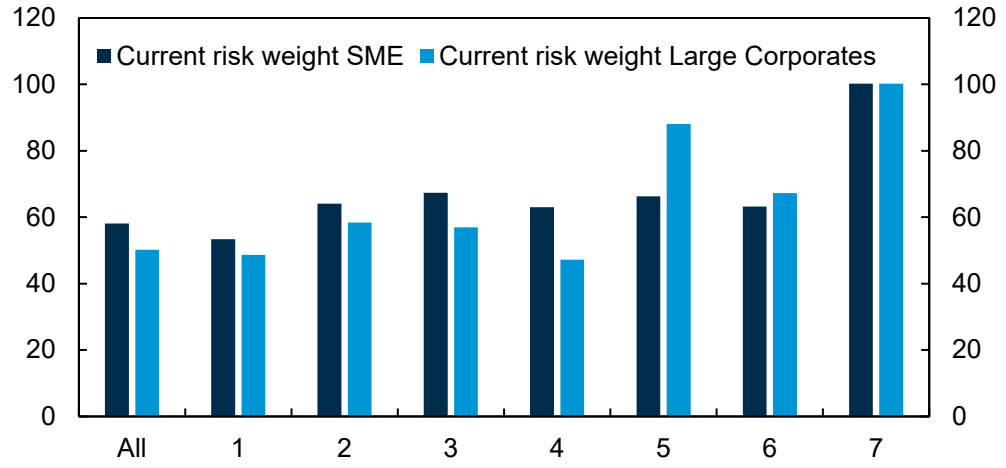


Source: Norges Bank

IRB banks must calculate the output new floor with risk weights from the new standardised approach. At present, IRB banks primarily use the IRB approach to calculate risk weights for corporate loans, but they also use the standardised approach for parts of their corporate exposures. In 2022, the two approaches applied an average risk weight of 57 percent to SME exposures and 50 percent for exposures to large corporates (Chart 8).

[45] See 8.2.2. for a more detailed description of how we define commercial property.
[46] Data on whether firms with a credit rating are classified as SMEs is not in our possession. In two cases, banks' total rated commercial property exposures are greater than their total exposure to large firms. For these four banks, it is assumed that rated commercial property exposures are classified as SMEs.
[47] A bank pulls up average risk weight, where a considerable part of the exposure to large firms related to project financing of property development carrying a high risk weight.

Chart 8 Average risk weights for IRB banks'' exposures to SMEs and large corporates. Percent. At 2022 Q4



Source: Norges Bank

8.3 Exposures secured by mortgages on immovable property

The LTV ratio data from FINREP with CRD data are used to calculate average risk weights for residential mortgage loans and commercial property loans under the new standardised approach. Since the LTV ratio distribution in FINREP lacks the new standardised approach's precision, it is assumed that the loans are evenly distributed within the LTV ratio intervals in FINREP, ie there are as many loans with an LTV ratio of 60-70 (80-90) percent as there are loans with an LTV ratio of 70-80 (90-100 percent). Similarly, it is assumed that loans with LTV ratios below 60 percent are evenly distributed across different LTV ratios. In our data set, few loans have LTV ratios above 100 percent. The assumption is that these loans are evenly distributed across LTV ratios up to 120 percent and that no loan has an LTV ratio above 120 percent.[48]

FINREP reporting only shows on-balance-sheet property loans broken down by LTV ratio. Off-balance-sheet items are excluded from the reporting. The assumption is therefore that off-balance-sheet items have the same LTV ratios and risk weights as on-balance-sheet items.

It is assumed that the loan-splitting approach may be used for all lending secured by mortgages on property. There are several reasons for this. First, we consider Norwegian property markets to be well-developed. Second, the loss share has been close to zero for both retail loans and commercial

[48] By the end of 2022 the average share of loans with an LTV ratio was above 100 percent, at 1.1 percent for SA banks and at 1.5 percent for IRB banks.

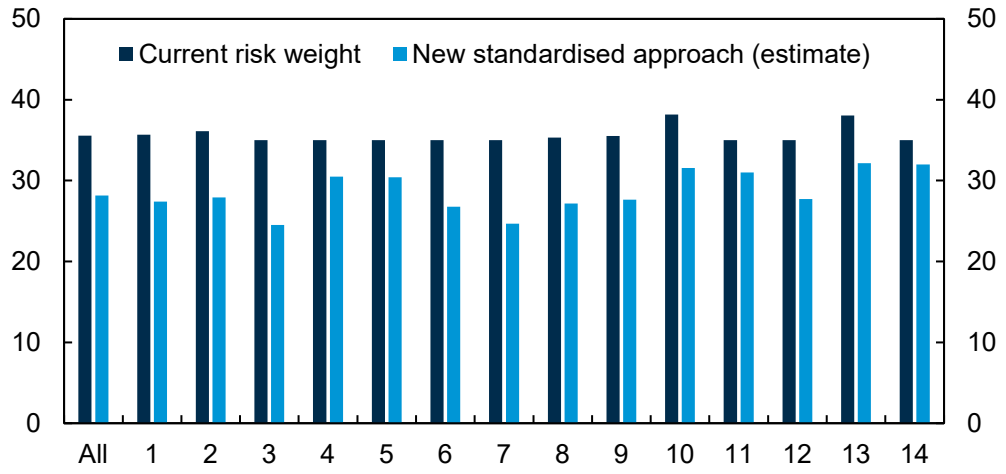
property loans over the past year.[49] Third, given the current tax rules, a significant proportion of Norwegian landlords are owner-occupied landlords.

The new standardised approach restricts banks from increasing collateral values beyond the average value over the past six years for both residential and commercial property. However, the LTV ratio data from FINREP reporting is calculated using updated property values for 2022. Property prices have increased over the past six years. The market value of residential and commercial property in 2022 is therefore higher than average values in the period 2017-2022.[50] LTV ratios in FINREP will therefore be lower than the LTV ratios banks must apply in the capital adequacy calculation [51] We correct for this in our calculations by estimating how much higher the LTV ratio on property loans will be with average values, and subsequently the risk weight is adjusted upwards for loans that should not include the lowest risk weight under the loan-splitting approach.[52]

8.3.1 Residential mortgage loans

Calculations using the loan-splitting approach indicate that the new standardised approach may reduce the average residential mortgage loan weight of SA banks by 7 percentage points (Chart 9).

Chart 9 Average risk weights for SA banks' residential mortgage loans. Percent. At 2022 Q4



Source: Norges Bank

[49] See table for banks and covered bond mortgage companies' losses on loans in Norges Bank's bank statistics.
[50] According to house price data from Real Estate Norway, Eiendomsverdi and Finn.no, the average market value for Norwegian homes was 13.5 percent higher in 2022 than the average value in the period 2017-2022. Data from JLL for prestigious premises in Oslo indicate a corresponding difference of 12.2 percent between market value in 2022 and average value.
[51] For example, a residential mortgage loan of NOK 5 million secured on a dwelling that had a market value of NOK 10 million in 2022, will have an LTV ratio of 50 percent (5/10) in FINREP. The LTV ratio of this loan increases to 56.8 percent if we correct for the market value in 2022 being 13.5 percent higher than the average value in the period 2017-2022: 5/(10/(1.135)) = 56.8 percent.
[52] We correct for this in our calculations by increasing the risk weight for residential mortgage loans with an LTV ratio of 49-55 percent from 20 percent to the counterparty's risk weight. Correspondingly, we increase the risk weight for commercial property loans with a 50-55 percent LTV ratio from 60 percent to the counterparty's risk weight.

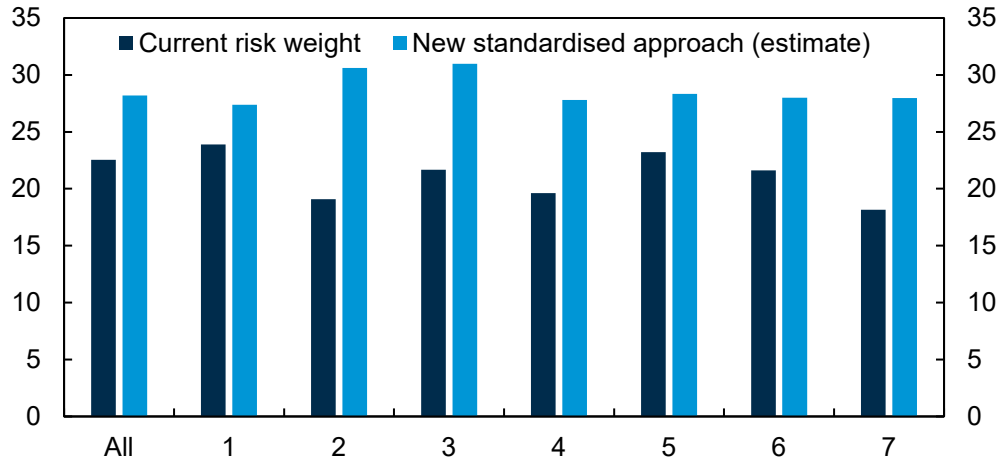
Comparisons between actual risk weights and our estimated risk weights indicate that our calculations are robust. Overall, *SA banks* carried an average risk weight for residential mortgage loans of 36 percent in 2022, while we estimate an average risk weight below the current standardised approach of 38 percent. The discrepancy between actual and projected risk weights is slightly larger for some of the SA banks. This is because some of the banks' risk-weight a larger share of residential mortgage loans at 35 percent above the risk weight indicated in FINREP data and current regulation. Moreover, a number of SA banks have transferred mortgages to SpareBank 1 Boligkreditt, that calculate risk weights using the IRB approach.

Our calculations show that the new standardised approach assigns higher risk weights to *IRB banks* for residential mortgage loans than the IRB weights they currently use (Chart 10). The new standardised approach applies an average residential mortgage loan weight of 28 percent to IRB banks, above the current IRB level of 22.5 percent. However, the difference in average risk weights between the two approaches varies from one bank to another.

IRB banks that are bound at the margin by the new floor for risk-weighted assets will in reality apply risk weights for new loans corresponding to approximately 72.5 percent of risk weights under the new standardised approach.[53] Until the end of 2024, Norwegian IRB banks must meet a temporary minimum requirement for average risk weights for residential mortgage loans of 20 percent. If this minimum requirement is retained after 2025 and the new floor for IRB banks' risk-weighted assets becomes binding, the average risk weight for residential mortgages loans under the new standardised approach must be at least 27.6 percent in order for the new floor for risk-weighted assets to increase real capital requirements for residential mortgage loans.[54] The estimated residential mortgage loan weight is above 27.6 percent for all IRB banks, with the exception of one.

[53] Since capital requirements for market risk using the new standardised approach will be different from capital requirements for market risk under the IRB approach, in practice effective risk weights will be somewhat different from risk weights under the new standardised approach multiplied by 0.725.
[54] 20/0,725 = 27,6.

Chart 10 Average risk weights for IRB banks' residential mortgage loans. Percent. At 2022 Q4



Source: Norges Bank

8.3.2 Commercial property loans without credit rating

The CRD reporting does not provide a comprehensive overview of banks' commercial property exposures. We must therefore make assumptions about where commercial property exposures are classified in CRD. This has implications for estimated risk weights for other corporate loans, where exposures and risk-weighted assets are estimated as a residual item.

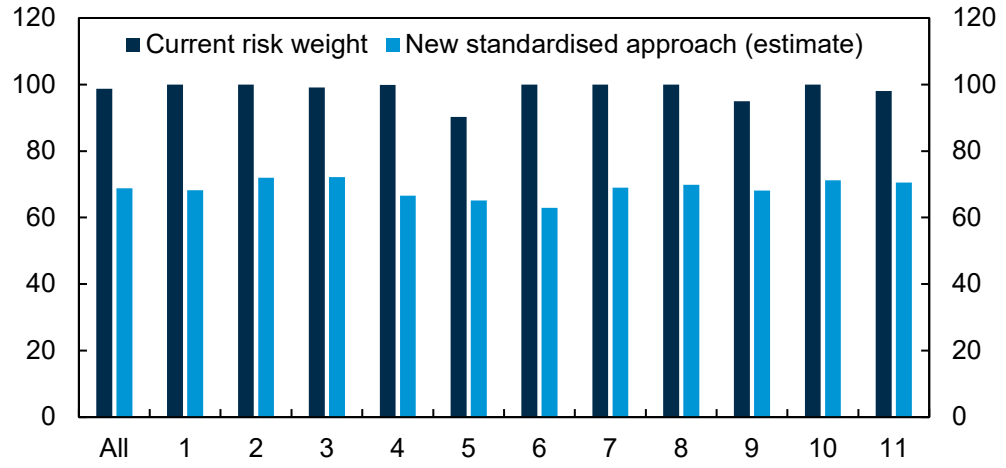
The CRD reporting contains additional information on banks' exposures secured by mortgages on property under the standardised approach. This information is used together with FINREP and ENGA data to identify commercial property exposures. Reported commercial property exposures in FINREP differ from reported exposures secured by mortgages on property in the CRD reporting for all banks in our analysis, and which of the two data sources produce the largest commercial property exposure varies.

The assumption is that banks' commercial property exposures are the largest amount of their exposure in FINREP and CRD reporting. Subsequently, these commercial property exposures are broken down into 3 steps:

- In step 1, the assumption is that retail exposures secured on property with a risk weight of 100 percent are commercial property exposures.
- In step 2, the remaining commercial property exposures are classified as *large corporates and SMEs in the corporate segment*.
- In step 3, any remaining commercial property exposures are classified as *SME exposures in the retail segment*.

This method results in an average risk weight close to 100 percent for SA banks' commercial property exposures under the *current* approach (Chart 11). This is in accordance with current Norwegian regulation. The estimated risk weight will be lower for banks that have classified a large share of commercial property loans in the retail segment, because a risk weight of 75 percent is applied to these commercial property loans under the current regulation.

Chart 11 SA banks' average risk weights for commercial property without credit rating. Percent. At 2022 Q4



Source: Norges Bank

Under the *new* standardised approach, risk weights for non-credit commercial property loans depend on the LTV ratio, the risk weight of the counterparty and the purpose of the loan (see Section 3.3.2). Commercial property loans *with* a credit rating are risk-weighted according to the credit rating, ie regardless of the LTV ratio. We calculate the average risk weight for these commercial property loans using credit rating data, associated risk weights (Table 2) and ENGA data[55] on banks' exposures (see Section 8.1).

Average risk weights under the new standardised approach for commercial property loans *without* credit rating with FINREP data on lending volumes within different LTV ratios and associated risk weights are estimated in Table 6. In accordance with the loan-splitting approach, the portion of the loan with an LTV ratio within 55 percent is risk weighted at 60 percent and the remaining portion of the loan with the risk weight of the counterparty, ie 100 percent for SMEs and other corporates without credit rating.

According to calculations, the new standardised approach would have reduced SA banks' risk weight for commercial property loans without a credit rating by 30 percentage points in 2022 (Chart 11).

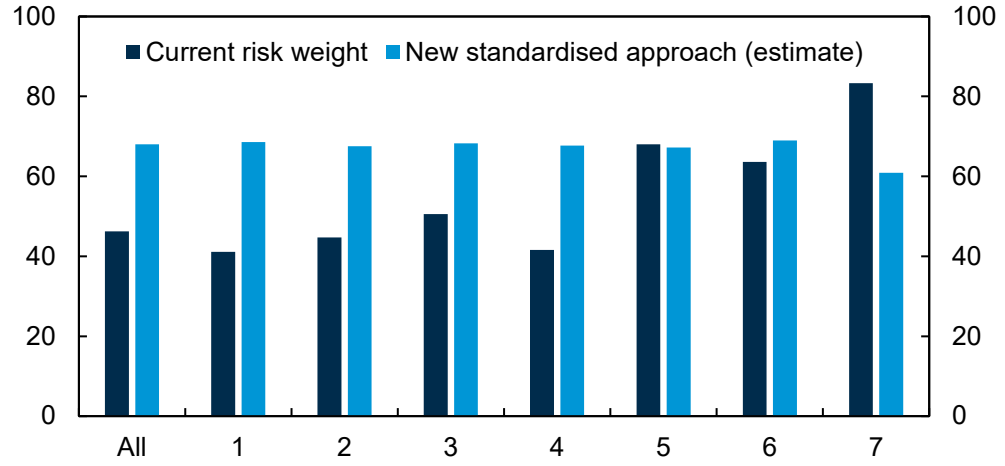
IRB banks primarily use the IRB approach to calculate risk weights for commercial property loans, but they must calculate the output new floor for risk-weighted assets using risk weights from the new standardised approach. We therefore calculate risk weights for *IRB banks'* commercial real property loans under the new standardised approach in the same way as for the SA

[55] We classify all firms in the ENGA data set belonging to industry group 41.1 (construction of buildings), 68.1 (acquisition and sale of personal property), 68.2 (rental of personal or rented property) and 68.3 (Sale and operation of property on assignment) in Statistics Norway's standard industry classification as commercial property loans. With this classification, total commercial property exposure in the ENGA data is at the same level as total commercial property exposure in the FINREP reporting.

banks, but we take advantage of the fact that the data set is more detailed for IRB banks.[56]

Calculations show that the new standardised approach generally results in higher risk weights for IRB banks' commercial property loans than the risk weights they employ today. In 2022, IRB banks' average risk weight for commercial property loans was at 46 percent, while our calculations fully using the new standardised approach assign an average risk weight of 68 percent (Chart 12). According to the calculations, only two IRB banks will carry lower risk weights for commercial property loans with the new standardised approach. These two banks use higher risk weights under the current approach than the other IRB banks.

Chart 12 Average risk weights for IRB banks' commercial property loans without credit rating. Percent. At 2022 Q4



Sources: Finanstilsynet and Norges Bank

8.4 Other retail exposures

We do not have data on transactors and other retail exposures. We therefore assume an average risk weight of 75 percent for all loans to the retail market, ie the same risk weight as under the current standardised approach. This is consistent with the fact that lending to transactors (45 percent risk weight) and other retail (100 percent risk weight) are about the same size, bringing the average weight to 75 percent.

[56] The floor reporting specifies IRB banks' risk weights and the SME share for commercial property loans.

9. Effects of new rules on Norwegian banks' capital adequacy

The CET1 capital ratio is calculated using the risk-weighted assets' operational risk from Section 5, risk weights and exposures from Section 8, and CET1 capital from the CRD reporting. Risk-weighted assets are estimated under the new standardised approach by multiplying exposures by calculated risk weights from Section 8. Other segments that are not discussed in Section 8 are risk-weighted with the same weight as under the current approach. Finally, The CET1 capital ratio is calculated by dividing CET1 capital from the CRD reporting by estimated risk-weighted assets. CET1 capital adequacy for *IRB banks* is calculated using the largest of the current risk-weighted assets and 72.5 percent of risk-weighted assets using the new standardised approach.

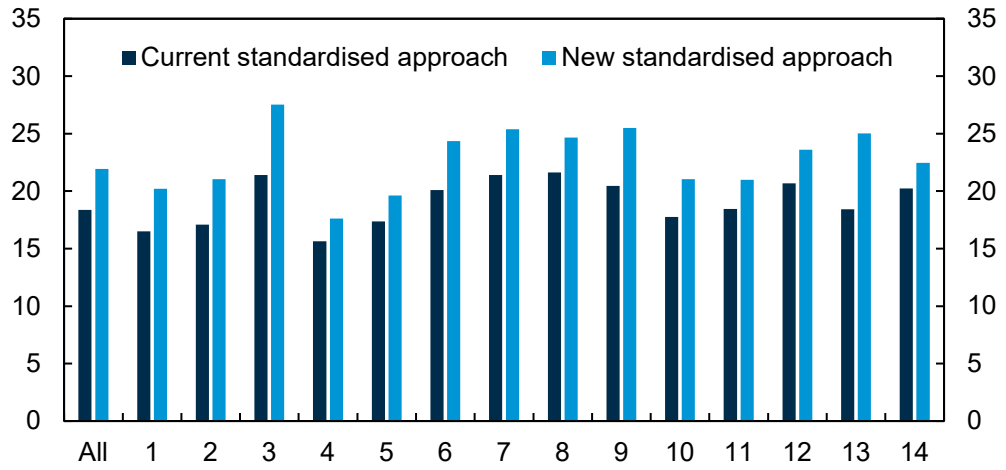
IRB banks' exposures are consistently classified in the same way as for the SA banks in section 8.[57] A conversion factor of 10 percent is used for off-balance-sheet exposures that banks convert by 0 percent under the current standardised approach. This is in accordance with the new SA (Table 16). Residual exposures are converted using the same average factor as under current regulation.

We use figures on banks' reported risk-weighted assets before and after SME support factor to estimate the current SME discount. This implies that banks achieve an equivalent percentage discount under the new standardised approach.

Our analysis indicates that the new standardised approach could have increased *SA banks'* CET1 ratio by 3.6 percentage points in 2022 (Chart 13). This is in line with the estimates from Sparebanken Sør and SpareBank 1 Sørøst-Norge. Lower risk weights for residential mortgage loans and commercial property loans contribute 2.2 and 0.8 percentage points respectively to the increase in CET1 capital adequacy. A higher conversion factor for exposures that can be unconditionally cancelled pulls down capital adequacy marginally.

[57] However, we assume that IRB banks' commercial property exposures are only classified as corporate exposures.

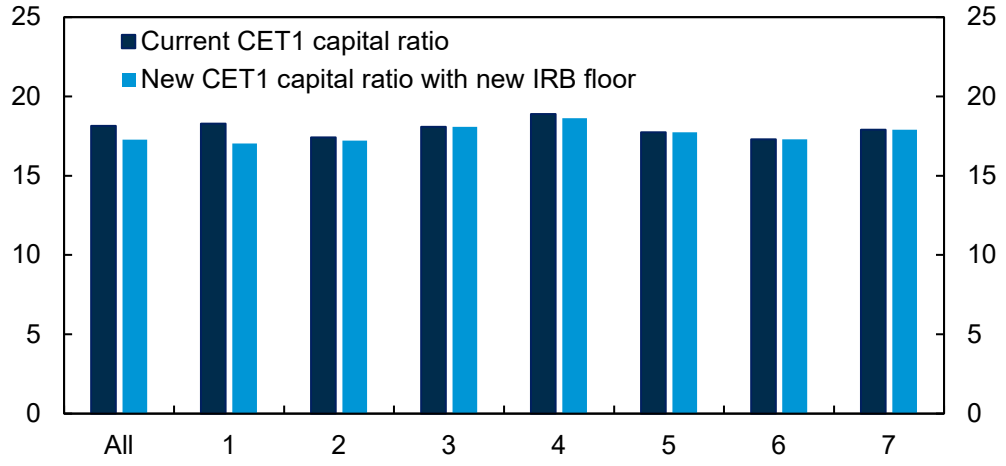
Chart 13 CET1 capital adequacy of SA banks. Percent. At 2022 Q4



Sources: Finanstilsynet and Norges Bank

Our calculations show that the new output floor will reduce CET1 capital adequacy for three of the seven Norwegian IRB banks (Chart 14). However, calculations show that transitional arrangements for non-rated residential mortgage loans and corporate loans alone may mean that none of the banks will be bound by the floor before 2032. If these transitional arrangements are disregarded, the floor will not be binding for any of the banks before it reaches 70 percent in 2029. In addition, changes in the IRB approach may increase the IRB banks' risk-weighted assets, as EBA studies indicate. This may make the floor less binding than our calculations indicate. On the other hand, changes in the IRB approach will probably have limited effects on Norwegian IRB banks' risk weights (see Section 1).

Chart 14 IRB banks' CET1 capital adequacy according to the floor. Percent. At 2022 Q4



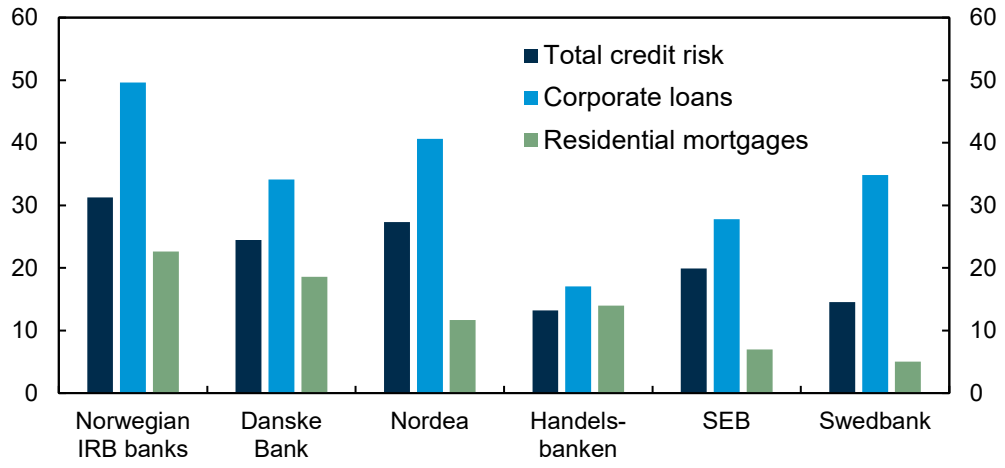
Sources: Finanstilsynet and Norges Bank

Even though the output floor has limited effects on Norwegian IRB banks, it may contribute to more equal and comparable capital requirements between banks in the Nordic region. Branches of foreign-owned banks are of great importance for competition in Norway. This applies in particular to the

Norwegian corporate loan market, in which foreign banks account for one-third of the loans. According to EBA studies, the floor can on average increase capital requirements for Group 1 banks by more than 7 percent. Group 1 includes five foreign IRB banks that account for most of the lending to foreign branches in Norway: Danske Bank, Handelsbanken, Nordea, SEB and Swedbank.

Norwegian IRB banks use higher risk weights than the five foreign IRB banks (Chart 15). The floor may therefore lead to a greater increase in the capital requirement for foreign banks than for Norwegian IRB banks. This is consistent with the results of a study by Deloitte, which concludes that the floor will increase the capital requirement substantially more for Danish, Finnish and Swedish IRB banks than for Norwegian IRB banks (see Deloitte - Basel 3 Reforms – The impact on Norwegian Banks). In that case, foreign IRB banks may adjust more according to the new standardised approach than the Norwegian IRB banks. On the other hand, minimum risk weighting requirements for residential mortgage loans (20 percent) and commercial loans (35 percent) have increased capital requirements for property loans from foreign banks in Norway since the end of 2020. This has probably influenced adjustments and dampened competition from foreign banks.

Chart 15 Average risk weights.[1)] Percent. At 2022 Q4



1) Calculated for exposures and risk-weighted assets under the advanced IRB approach (A-IRB), the basic IRB approach and standardised approach combined.

Sources: Banks' Pillar 3 disclosures and Norges Bank

The calculations are uncertain. Data set limitations compel us to make a range of assumptions, for example about conversion factors, specialised lending and where banks have classified commercial property. In addition, LTV ratios used to estimate risk weights are adjusted so that LTV ratios reflect the average value of properties over the past six years instead of the market value in 2022. Average prices for Norwegian dwellings and commercial property, ie prestigious premises in Oslo, do not necessarily provide an accurate picture of collateral value developments for regional banks. Our calculations may therefore underestimate capital relief for banks with property loans in regions with low property growth over the past six years and vice versa. On the other

hand, our estimates for banks as a whole will be less prone to such a measurement error.

10. Effects on competition and interest rates in the Norwegian lending market

Changes in capital requirements may affect banks' lending rates and lending volumes. Banks' lending rates are to cover, inter alia, banks' expected loan losses as well as operating costs and bank funding costs associated with the provision of loans. In isolation, equity financing is more expensive than other financing. A reduction in equity capital requirements may therefore reduce banks' funding costs. This may enable banks to offer cheaper loans, which may contribute to higher lending growth.

It is not obvious that changes in capital requirements affect banks' funding costs. According to the Modigliani-Miller theorem, funding costs under certain assumptions will not depend on the structure of financing (see Modigliani and Miller (1958)). More equity reduces both the required rate of return on equity and the interest rate on debt, so that the weighted sum of funding costs is in theory unaffected.

However, international studies find that the Modigliani-Miller theorem is not valid in practice, so that banks' total funding costs rise when capital adequacy increases (see, eg, European Central Bank (2011)). According to the analyses, lower equity return requirements and debt interest rates will offset about half of the direct cost increase resulting from increased equity. The Basel Committee (2021) used Norges Bank's macro model NEMO[58] to assess effects of changing capital adequacy in the banking sector. In the calculations, lending margins drop by 8–12 basis points if the capital adequacy requirement is reduced by 1 percentage point. This is consistent with results from studies that assume or find a weak Modigliani-Miller effect (see Vale (2011) and Getz Wold and Juelsrud (2020)). This is also consistent with the experience with recapitalising Norwegian banks following the financial crisis (see Andersen and Juelsrud (2022)).

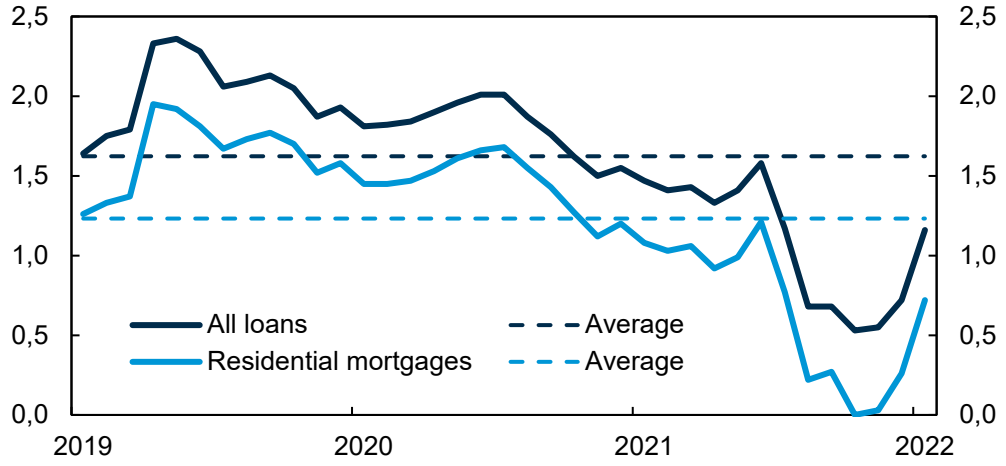
We use the estimates from the Basel Committee (2021) to quantify the effect of the new standardised approach on SA banks' lending rates. As with most studies, we assume that effects are proportional to changes in CET1 capital adequacy. According to our calculations, the new standardised approach may increase SA banks' CET1 ratio by 3.6 percentage points, while the new floor for IRB banks' risk-weighted assets will reduce IRB banks' ratio somewhat. The estimated capital reduction for SA banks corresponds to a reduction in the CET1 capital requirement of just under 3 percentage points. According to

[58] NEMO is Norges Bank's model for monetary policy analyses and forecasts.

calculations by the Basel Committee (2021), this may result in SA banks seeing a fall in average lending rates of 0.2 - 0.3 percentage point.

The effect on lending rates may be stronger for the segments most affected by the new standardised approach. In particular, the new standardised approach will increase SA banks' competitiveness in the market for residential mortgage loans with an LTV ratio below 55 percent, when the risk weight for the SA banks will be at the same level as the floor for IRB banks' average risk weight of 20 percent. This corresponds to a reduction in the CET1 capital requirement of 7-8 percentage points for this portfolio. Based on the calculations of the Basel Committee (2021), it may reduce SA banks' average interest rate on mortgage loans by more than half a percentage point. However, since 2019 the average residential mortgage lending margin has been about three-quarters of the average lending margin for all lending combined (Chart 16). In isolation, this suggests that the effect on the interest rate on residential mortgage loans will be somewhat smaller.

Chart 16 Interest rate margin on lending for a sample of banks and mortgage companies in Norway. Percent. December 2019 – December 2022



Source: Statistics Norway

Although the new standardised approach may provide substantial capital relief for small, low-risk banks, IRB banks will probably still have lower capital requirements for loans with equal risk. From the end of 2023, the systemic risk buffer requirement for IRB banks will increase from 3 to 4.5 percent, while the systemic risk buffer requirement for IRB banks will remain unchanged at 4.5 percent. According to SpareBank 1 Sørøst-Norge calculations, the IRB approach will still result in lower risk weights for residential mortgage loans and commercial property loans than with the new standardised approach (see SpareBank 1 Sørøst-Norge (2022)). In addition, IRB banks can update collateral values continuously, in step with market value developments. This may give IRB banks lower risk weights in periods of rising market values (see SpareBank 1 Sørøst-Norge (2022)). Alternatively, it may push IRB banks' risk weights up in periods of falling property prices.

The new standardised approach can also contribute to improved risk management, more granular loan pricing and more efficient use of capital. Loans with low credit risk will carry a lower risk weight under the new standardised approach, while riskier loans will carry a higher risk weight. This offers banks incentives to charge a higher interest rate for risky lending, so that banks increase granularity in their pricing of loans. If the new risk weights largely reflect actual risk, it is reasonable to assume that the increased risk sensitivity associated with the new approach can improve risk management and reduce financial system vulnerabilities.[59] If the new approach contributes to ensuring that the supply of loans is to a higher degree directed towards firms with good debt-servicing capacity, a larger share of the capital will also be invested in profitable projects.

11. Conclusion

The largest Norwegian banks calculate capital requirements using the IRB approach, while the smaller banks employ the standardised approach. The current standardised approach results in higher capital requirements than the IRB approach for low-risk banks. In 2025, the European Union plans to introduce changes to the capital adequacy rules that will increase the standardised approach's risk sensitivity. In addition, the authorities are introducing a rule stipulating that IRB banks' capital requirements shall account for at least 72.5 percent of capital requirements under the new standardised approach. This rule is often referred to as an output floor for IRB banks. The regulatory amendments will be introduced in Norway through the EEA Agreement.

Our results show that the new rules may provide more equal capital requirements for equal risk. According to our calculations, the new standardised approach can on average increase SA banks' CET1 ratio by 3.6 percentage points. In particular, regulatory amendments may improve low-risk SA banks' competitiveness. SA banks' residential mortgage loans with an LTV ratio of less than 55 percent will be assigned approximately the same risk weight as the minimum requirement for IRB banks' average risk weights. This may enable SA banks to offer cheaper loans. The new standardised approach may also lead to more granular loan pricing because it is more risk sensitive than the current approach. This can mitigate financial system vulnerabilities and contribute to more efficient use of capital.

The calculations indicate that the new output floor will not have a significant impact on Norwegian IRB banks. According to calculations, the transitional arrangements will prevent the floor from being binding on any of the

[59] The effect of regulatory amendments on competition in the Norwegian banking market are unclear. According to an analysis carried out by Norges Bank, increased competition may result in less correlation between lending margins and loan loss risk (see Müller et al. (2021).

Norwegian IRB banks before 2032. The floor may nevertheless contribute to more equal and comparable capital requirements between Norwegian and foreign banks. Overall, the regulatory amendments may therefore provide a more level playing field for banks in Norway.

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Appendix 1 – Formula for calculation of own funds requirements (BIC) for operational risk

The formula for own funds requirements for operational risk (BIC)[60] under the new standardised approach is:

$$\text{BIC} = \begin{cases} 0{,}12(\text{ILDC} + \text{SC} + \text{FC}), \ where\ (ILDC + SC + FC) \leq 1 \\ 0{,}12 + 0{,}15\big((\text{ILDC} + \text{SC} + \text{FC}) - 1\big), \ where\ 1 < (ILDC + SC + FC) \leq 30 \\ 4{,}47 + 0{,}18((\text{ILDC} + \text{SC} + \text{FC}) - 30), \ where\ (ILDC + SC + FC) > 30 \end{cases}$$

$$\text{ILDC} = \min(\text{IC}, 0{,}0225 \cdot \text{AC}) + \text{DC}$$

$$\text{SC} = \text{maks}(\text{OI}, \text{OE}) + \text{maks}(\text{FI}, \text{FE})$$

$$\text{FC} = \text{TC} + \text{BC}$$

IC: Interest component: annual average net interest income over the previous three years.

AC: Asset component: annual average over the previous three years of total gross outstanding loans and interest-bearing securities.

DC: Dividend component: annual average over the previous three years of dividend income from investments not consolidated in the financial statements of the institution.

[60] BIC/0.08 is used to calculate operational risk. The Basel Committee proposed that operational risk capital requirements should also depend on the bank's operational losses, but the European Commission did not include this in its proposal.

OI: Other operating income: annual average over the previous three years of operating income that is not included in other items of the BIC.

OE: Other operation expenses: annual average over the previous three years of the institution's expenses and losses not included in other items of the BIC.

FI: Fee and commission income component: annual average over the previous three years of income received from providing advice and services

FE: Fee and commission expenses component: annual average over the previous three years of expenses paid for receiving advice and services.

TC: Trading book component: annual average of the absolute values over the previous three years of the net profit or loss, as applicable, on the institution's trading book, including on trading assets and trading liabilities, from hedge accounting, and from exchange differences.

BC: Banking book component: annual average of the absolute values over the previous three years of the net profit or loss, as applicable, on the institution's banking book, including on financial assets and liabilities measured at fair value through profit and loss, from hedge accounting, from exchange differences, and realised gains and losses on financial assets and liabilities not measured at fair value through profit and loss.