



Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem

Financial Stability Notes

Risk Weights on Non-Financial Corporate Lending by Irish Retail Banks

Paul Lyons & Jonathan Rice

Vol. 2022, No. 4

Risk Weights on Non-Financial Corporate Lending by Irish Retail Banks

Paul Lyons & Jonathan Rice¹

Central Bank of Ireland

Vol.2022, No. 4, 2022

Abstract

Risk weighted assets reflect the risk profile of a bank's lending. In this Note, we look at the risk weighted assets of the non-financial corporate (NFC) exposures of Irish and European banks. We find that Irish NFC risk weights are higher than those in most other European countries. Factors that explain these higher risk weights include the measurement approach used and the higher default rates for Irish NFC loans, particularly during crisis periods. Overall, the evidence suggests that the current risk weights on Irish NFC lending are reflective of the relatively higher risk of Irish retail banks' NFC exposures.

1 Introduction

Risk weighted assets (RWA) link the minimum amount of capital required of banks with the risk profile of their balance sheet assets. Under rules established by the Basel Committee on Banking Supervision (BCBS), banks with riskier assets are required to have more capital to absorb potential losses. The primary purpose of RWA is to inform the capital needed to cover unexpected losses.

On aggregate, Irish retail banks have higher risk weighted density (RWD - risk weighted assets as a share of total exposure) than European banks, and this equates to higher Pillar I capital requirements. Higher RWD typically reflects a higher level of risk on the asset side of the balance sheet. Since banks with higher average risk weights are required to have more capital for every euro lent, higher average risk weights will directly improve a bank's capacity to absorb losses, proportionate to the higher risk of losses that they face. However, higher capital charges also result in a higher cost of credit for households and businesses as institutions price for the risk of their lending.

¹ Macro-Financial Division. For correspondence contact paul.lyons@centralbank.ie or jonathan.rice@centralbank.ie. With thanks to Fergal McCann, Paul Dolan, Vasileios Madouros and other Central Bank colleagues for comments when preparing this Note. *All views expressed in this paper are those of the authors alone and do not represent the views of the Central Bank of Ireland.*

This Note examines RWAs on small and medium enterprises (SME), corporates and commercial real estate exposures – collectively, non-financial corporate (NFC) exposures held by the Irish retail banks which represent the largest component of their total credit RWAs. A related analysis looking at the factors explaining the relatively higher RWAs for Irish mortgage exposures was published in early 2022 (Lyons & Rice, 2022).

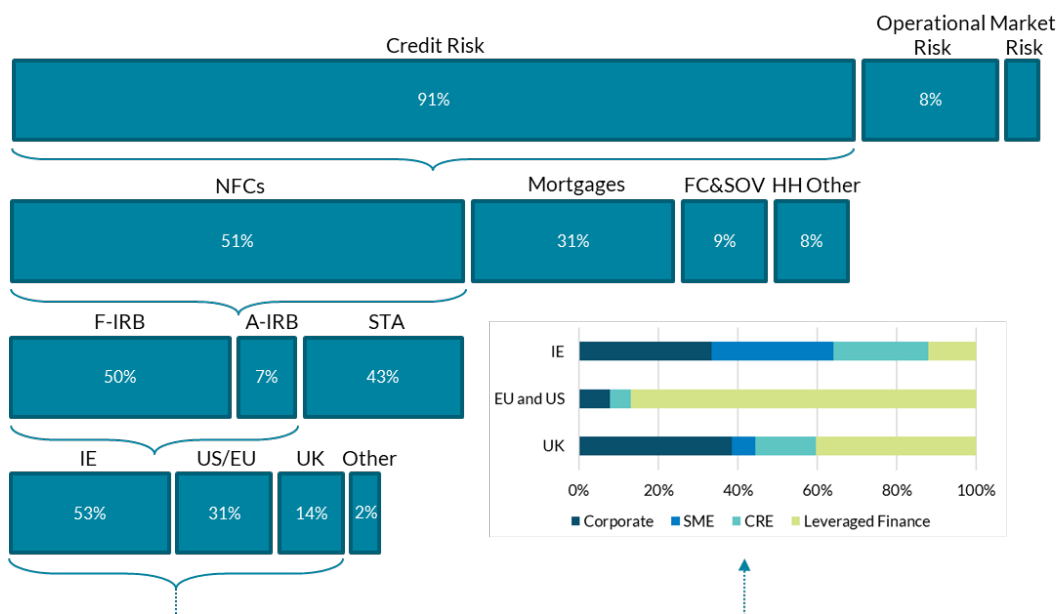
The Central Bank is currently carrying out a review of its macroprudential framework for bank capital. The role that RWAs play within the capital framework is an important topic for this review, and the findings of this Note will form an input to the Central Bank’s approach to the setting of macroprudential capital buffers.

2 The Composition of NFC Portfolios at Irish Retail Banks

2.1 Current Risk Weighted Asset Profile

This section provides an overview of the composition of RWAs on the books of the Irish retail banks. Credit risk dominates, representing 91% of overall RWAs, followed by operational risk (8%) and market risk (1%) (Chart 1).

Chart 1: RWAs waterfall – Irish Retail bank NFC Portfolios



Source: Authors’ calculations using Dec-21 regulatory returns and loan level data for the 5 Irish retail banks; AIB, BOI, KBC, PTSB and UBI DAC. Corporate represents loans to non-financial corporations, SME represents loans to small and medium sized enterprises, CRE represents loans for commercial real estate purposes, and Leveraged Finance represents leveraged asset finance. F-IRB represents foundation-internal ratings based, A-IRB represents advanced-internal ratings based, and STA represents standardised. NFC represents non-financial corporates and FC&SOV represents financial corporates, central banks and sovereigns.

NFC lending represents the largest component of total credit risk, representing 51 per cent of total RWAs (line 2 of Chart 1). For NFC lending, banks typically follow the Foundation

IRB (F-IRB) or the Standardised Approach (STA) in calculating risk weights for capital quantification (line 3 of Chart 1). The risk quantification approach (STA versus IRB) is important for any cross-country comparisons of total NFC RWAs since average European risk weights for NFC portfolios are higher when using a STA approach versus an IRB approach.

Given the STA approach offers banks very little discretion, meaning that banks do not estimate risk weights using their own models, this *Note* focuses primarily on IRB-based NFC exposures. Under the Basel capital requirements framework (BCBS, 2010), the F-IRB approach is a constrained approach that fixes some parameters (in particular, the LGD and EAD) while allowing discretion to the banks to model the other key component, probability of default (PD). For the Irish retail banks, 53 per cent of IRB-modelled NFC RWAs relate to Irish lending.² There is also sizeable exposure to the US and EU (predominantly leveraged asset finance) and the UK (predominately non-SME corporate exposures, including leveraged finance).

2.2 Historical Changes in the Composition of Assets

The Global Financial Crisis reshaped the composition of the Irish banking sector and of the surviving banks' balance sheets. The retail banking sector halved in size between 2007 and 2021. On the assets side, defaults and loan sales dramatically reduced the size of banks' asset holdings (from €728bn in assets (2007) to €323bn (2021)). These changes were particularly evident in Irish retail banks' commercial real estate (CRE) portfolios, which led to a dramatic reduction in exposure to CRE loans between 2008 and 2012 (Chart 2 for domestic exposures). Thereafter, an important focus of the post-crisis policy reforms has been an improvement in the measurement of risk on bank balance sheets (via improvements in the estimation of RWAs) and an increase in the capital requirements for banks (expressed as a share of RWAs).³ These post-crisis reforms have resulted in higher capital levels in the global banking system over the past decade and the Irish banking system is now in a better position to absorb adverse shocks as they arise.

Chart 2 shows the composition of the aggregate loan book of all banks resident in Ireland. The relative share of domestic CRE exposure has declined substantially over the past ten years, while the relative share of domestic household mortgage lending has increased by

² This amounts to 14 per cent of total RWAs.

³ One of the main elements of the post crisis reforms consists of implementing the international standards agreed in the Basel Committee for Banking Supervision (BCBS), specifically the so-called "Basel III reform".

about 20 per cent since 2008. While there are many factors behind the reduction in RWD, this change in the composition of Irish banks’ loan portfolios, from more risky forms of lending to relatively safer lending, will have also contributed to the reduction in RWD observed by the declining line in Chart 2. This is consistent with findings from a European study (Bruno et al. 2017) who find that risk weights are affected by bank size, business models and asset mix. Specifically, they find that higher risk weights are associated with smaller banks and those exhibiting a larger share of NFC lending. In addition, the authors find that banks using IRB approaches more extensively have reduced more (or increased less) their corporate loan portfolios between 2008 and 2014.

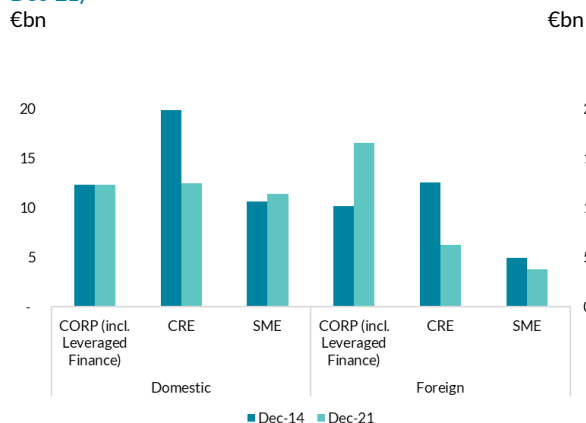
Despite the overall reduction in balances, in recent years, Irish retail banks have greatly expanded their lending to non-CRE corporates, particularly in leveraged finance vis-à-vis large foreign corporations. This is evident in Chart 3 which shows the lending exposures at two time points, December 2014 and December 2021.

Chart 2: Irish bank lending into domestic economy by sector, including the aggregate risk weight density per cent



Source: Authors’ calculations using Central Bank of Ireland money, credit and banking statistics. Includes all banks resident in Ireland. Irish exposures only. RWAD taken from Bureau Van Dijk and represents the weighted average of the three main domestic banks.

Chart 3: NFC Balances by asset class and location (Dec-14 & Dec-21) €bn



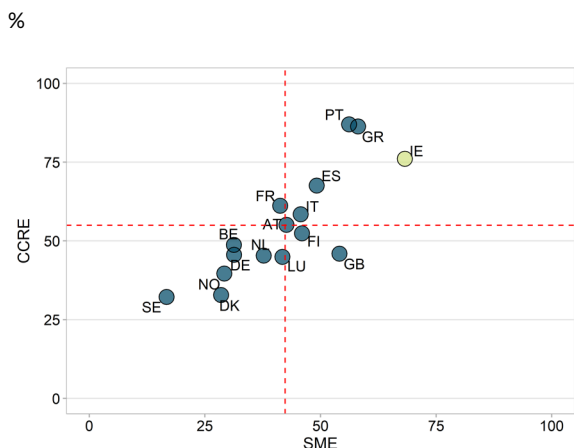
Source: Central Bank of Ireland Loan Level Data collected from the retail banks. Includes IRB and STA NFC loans. Domestic refers to all NFC lending to ROI customers.

3 Irish NFC Risk Weights in an International Context

As at June 2021, RWDs for domestically located NFCs held by Irish retail banks remain higher than European averages. Chart 4 below shows a scatter plot of RWDs on domestic exposures across European countries for two NFC sub-portfolios; small and medium sized enterprises (SMEs), and a combined portfolio of corporates and commercial real estate (CCRE). Irish SME risk weights are the highest among all countries in our sample while the risk weights associated with CCRE are third highest behind Portugal and Greece. Chart 5

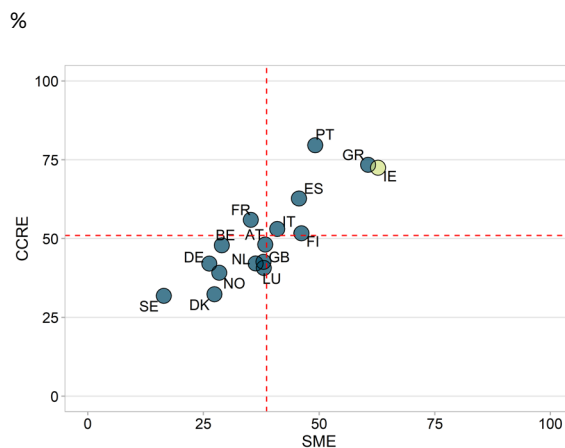
presents a similar picture focusing on risk weights derived under the IRB approach only (i.e. ignoring portfolios subject to the STA approach).

Chart 4: Risk weight densities for SME & Corporate/CRE domestic lending for Ireland and European countries – STA & IRB - June 2021.



Source: EBA Transparency Exercise data for June 2021. The dashed red line represents the average risk weight density across countries. SME represents the risk weight density associated with SME lending while CCRE represents the risk weight density for the combined corporate & CRE portfolios. Includes IRB & STA lending.

Chart 5: Risk weight densities for SME & Corporate/CRE domestic lending for Ireland and European countries – IRB Only - June 2021.



Source: EBA Transparency Exercise data for June 2021. The dashed red line represents the average risk weight density across countries. SME represents the risk weight density associated with SME lending while CCRE represents the risk weight density for the combined corporate & CRE portfolios. IRB lending only

4 The Drivers of Risk Weights on Irish Retail Banks’ NFCs Lending

The first factor we consider in explaining the relatively elevated Irish NFC risk weights versus the NFC risk weights in other European banks is the regulatory capital approach adopted. The majority of Irish retail banks’ NFC exposures are treated under the Standardised or the Foundation IRB (F-IRB) approach for regulatory capital quantification. In contrast, the majority of the NFC portfolios for IRB banks in European countries are treated on an Advanced IRB (A-IRB) basis (Chart 6). Under the Basel capital requirements framework (BCBS, 2010), the F-IRB approach is a constrained approach that fixes some parameters (in particular LGD), while allowing discretion to the banks to model other components such as probability of default (PD).⁴ The standardised approach for corporates features some degree of risk sensitivity via a straightforward mapping between external ratings and risk weight categories, but does not necessitate any formal risk quantification by the banks.

⁴ The BIS report <https://www.bis.org/publ/bcbs256.pdf> notes that AIRB banks tend to have lower risk weights than FIRB banks for corporate exposures on average with much of this difference explained by the lower LGDs AIRB banks assign to corporate exposures as compared with FIRB banks – 33% versus 40% on average.

Chart 7 displays the general relationship between RWA approach and RWA density for NFC lending. In general, the highest RWA densities result from the use of the standardised approach.⁵ The next highest RWA densities apply to the F-IRB approach and finally, the lowest RWA densities apply to those using the A-IRB approach. Included in Chart 7 is the 10th and 90th percentiles of RWA densities for the sample of banks in the EBA stress test. We observe the most variability in RWA density between banks that use the F-IRB approach (the largest distance between the 10th and 90th percentiles).

Chart 6: RWA Approach by share of total NFC exposure across a sample of European countries (Dec-20).

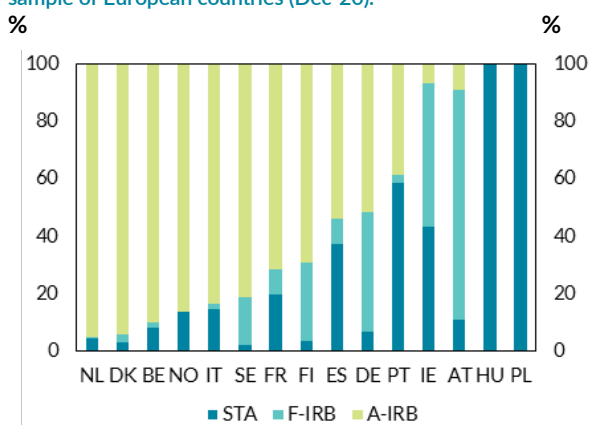
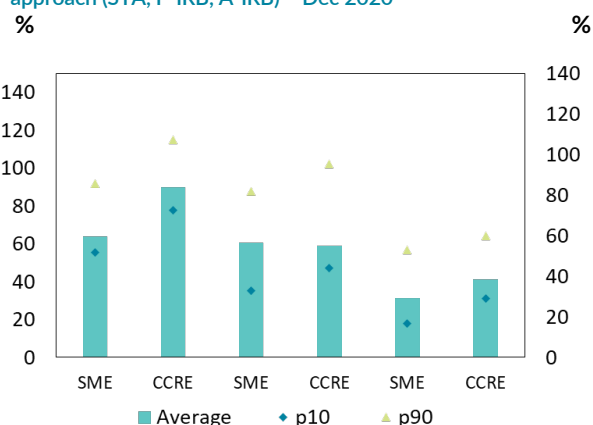


Chart 7: RWA density by asset class (SME, CCRE) and by RWA approach (STA, F-IRB, A-IRB) – Dec 2020



Source: Shares of STA/F-IRB/A-IRB for NFC exposures (SME and CCRE) are obtained from EBA Stress Test 2021 data (<https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing>) and Irish retail banks' regulatory returns for IE.

Source: EBA Stress Test 2021 data. Sample includes all participating European banks. P10 and p90 represent the 10th and 90th percentile of RWAs in the bank sample.

4.1 NFC Default Rates and Probability of Default

One of the key drivers of the higher risk weights on Irish NFC lending is the higher bank-estimated Probability of Default (PD) for the purposes of deriving RWAs under the IRB framework. These PDs are driven primarily by historical default rates (DRs), which we examine below. The key requirement for banks (per European legislative requirements) is that PDs must be estimated from long-run, one-year default rates and that the historical series must include both good and bad years.

Chart 8 shows the time series of Irish NFC defaults relative to other European countries. Defaults during the Global Financial Crisis (GFC), a time that had been preceded by a period of rapid credit growth, were very high, above the 90th percentile in our sample of European countries. From 2013 to 2019, Irish NFC default rates were falling, but they remained substantially higher than the European average up to 2017, and did not reach

⁵ Variability in outcomes using the STA approach can result from loan composition effects

the European average in 2018 and 2019, despite strong economic conditions. Default rates began increasing again above the 90th percentile during the COVID-19 pandemic period. Chart 9 shows that the same trend applies if we focus on SMEs only.

Chart 8: Average Corporate & SME (NFC) default rates for Ireland and Europe (2009-2021). %

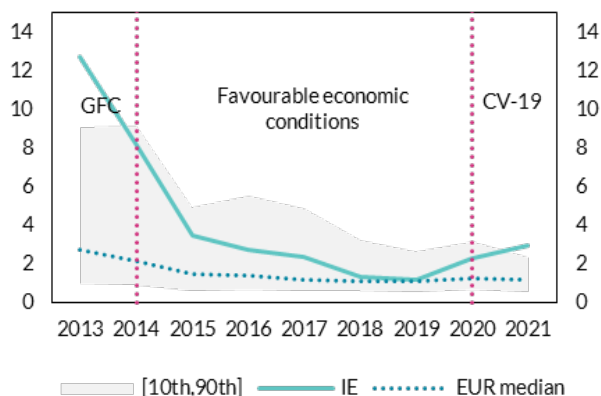
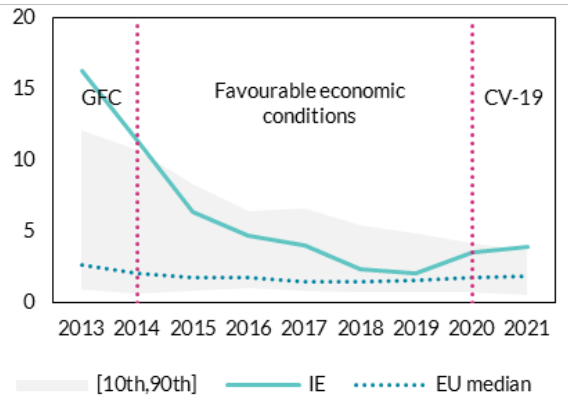


Chart 9: Average SME default rates for Ireland and across European countries (2013-2021). %



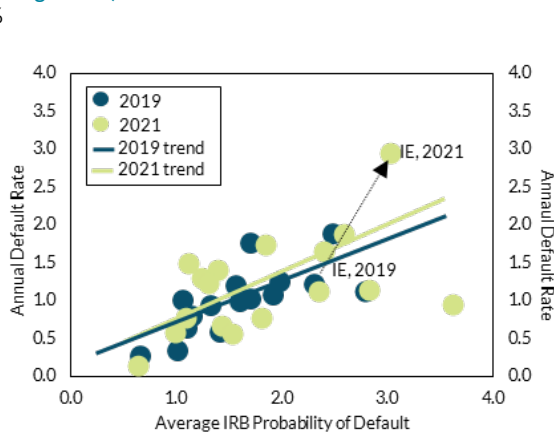
Source: EBA Risk Dashboard Data and CBI Loan Level Database. Average annual default rates for Irish retail banks and a broad sample of European countries. IRB NFC portfolios. GFC = Global Financial Crisis; CV19 = Covid-19 period.

Source: EBA Risk Dashboard Data and CBI Loan Level Database. Average annual default rates for Irish retail banks and a broad sample of European countries. IRB SME portfolios. GFC = Global Financial Crisis; CV19 = Covid-19 period.

To better understand how bank estimated PDs that input into RWAs reflect underlying default risk, Chart 10 and Chart 11, for NFC and SME respectively, show the relationship between actual default rates and bank estimated PDs in 2019, before the pandemic (a period of relatively strong economic performance), and in 2021, during the pandemic (a period of increased distress). Chart 10 shows that higher bank estimated PDs for Irish NFC lending are consistent with the higher observed default rates for these exposures. In the pre-pandemic period, the relationship between bank estimated PDs and actual defaults was broadly in line with the relationship observed across other European banking systems. During the pandemic, where the default experience of Irish NFCs was higher than elsewhere in Europe, PDs, if anything, appear below what would be implied by the equivalent relationship across other European banking systems.

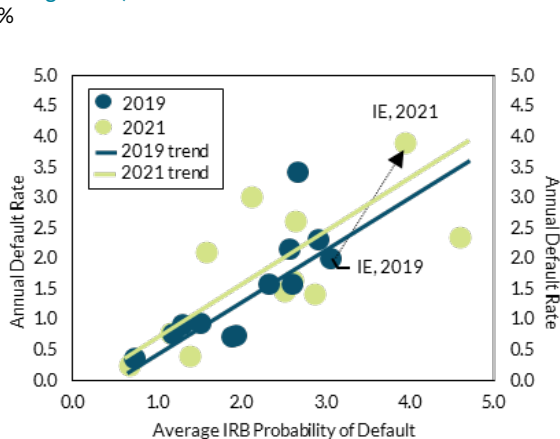
Together Charts 8-11 highlight that Irish NFC and SME default rates are at the higher end of a European range over a long run period, and they also display a higher level of cyclicity, which is a key driver of bank-estimated PDs, feeding through to higher risk weights.

Chart 10: Average annual NFC default rates and average IRB PDs for Ireland and other European countries (before and during CV-19).



Source: EBA Risk Dashboard Data and Irish banks regulatory returns. Annual default rate shown is from 2020 to 2021, and PDs are the average across the first three quarters of 2021 for domestic and performing exposures only. Sample includes AT, BE, CZ, DK, FI, FR, DE, HU, IE, LU, NL, NO, PL, RO, ES, SE.

Chart 11: Average annual SME default rates and average IRB PDs for Ireland and other European countries (before and during CV-19).



Source: EBA Risk Dashboard Data and Irish banks regulatory returns. Annual default rate shown is from 2020 to 2021, and PDs are the average across the first three quarters of 2021 for domestic and performing exposures only. Sample includes AT, BE, DK, FI, FR, DE, IE, LU, NL, NO, ES, SE.

We note that Irish banks, similar to other European banks, can have regulatory or self-detected adjustments applied to their modelled parameters for some of their NFC IRB models. These adjustments, which are common across the EU (see [ECB TRIM, April 2021](#)), lead to higher risk weights than the banks’ estimated risk weights since they account for deficiencies identified in banks’ underlying models. While individual bank regulatory adjustments are not disclosed, it is estimated that the aggregated impact of the ECB’s targeted review of internal models (TRIM), which was a large scale review looking at the reliability and comparability of results from internal models resulted in an overall absolute increase in RWAs of about €275 billion over 2018-2021 for European banks.⁶

Over time, as banks’ models are redeveloped and are calibrated to better reflect the underlying risk, these adjustments may no longer be required, subject to supervisory review.

4.2 Loss Given Default

In Charts 12 and 13, we consider the role of LGD, a key input parameter in the determination of risk weights. As can be seen in Chart 12, the average IRB LGD for Irish retail banks’ NFC portfolios is just over 41 per cent, which is above the 90th percentile of our European sample. This higher average LGD can primarily be explained by the

⁶ https://www.bankingsupervision.europa.eu/press/publications/html/ssm.faq_TRIM~fe2d6ba3ff.en.html

predominant risk weight approach used by Irish retail banks, as discussed in the previous section (F-IRB makes up 88 per cent of the total IRB NFC exposure for Irish retail banks).⁷

In order to demonstrate the role that LGD has on final NFC risk weights, we estimate IRB risk weights where LGDs are set to be 2 percentage points lower for both corporate/CRE and SME portfolios, roughly in line with the average LGD observed across Greece, Italy, Portugal and Spain. Chart 13 shows the average performing RWDs for Ireland and a sample of European countries, with Corporate and CRE loans on the y-axis and SME loans on the x-axis. The calculated RWD with LGDs two percentage points lower is shown in Chart 13 as IE*. The effect of LGDs being in line with the average across Greece, Italy, Portugal and Spain is a reduction in average RWD of 3% (reduction from IE to IE* in Chart 13) for both the SME portfolios and for the corporate and CRE portfolios. The position of IE*, which remains towards the top of the European sample in Chart 13, provides evidence that the use of F-IRB alone does not solely explain the high risk weights on NFC lending in Ireland.

Chart 12: Average Performing IRB NFC Loss Given Default rate for banks in Ireland and European countries (June-2021).

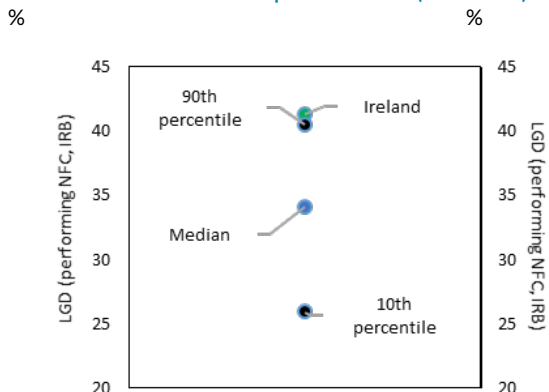
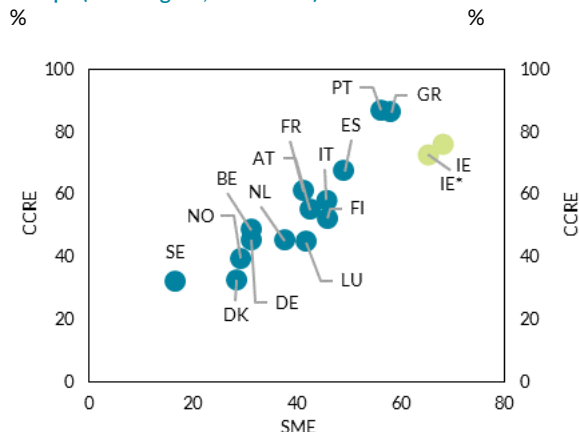


Chart 13: Average Performing IRB NFC RWDs for Ireland and Europe (including IE*, June-2021).



Source: EBA Risk Dashboard data at Sept 2021 and Irish retail banks' regulatory returns. Shown are the 90th and 10th percentiles of average performing IRB NFC LGDs for the sample of European countries and the average performing IRB NFC LGD for Irish retail banks.

Source: EBA Transparency Data June 2021 and CBI Loan Level Database. Performing and domestic exposures only. IE* denotes the Irish RWD if the Irish CCRE and SME LGDs were each 2 percentage points lower.

5 Conclusion

Risk-weighted asset densities (RWD) are a key driver of banks' capital requirements. This Note has highlighted that RWD for Irish banks' lending to NFCs is among the highest in Europe. Irish banks usage of the Standardised and Foundation IRB approaches play a contributory role in explaining this difference, due to the lack of risk discrimination and the

⁷ LGD levels will also be impacted by the levels of credit risk mitigation (e.g. collateral, guarantees) associated with each exposure rated under the IRB approach.

higher modelled Loss Given Default required under these approaches respectively. However, the major driver of Irish banks' position are the elevated default rates observed across Irish NFC portfolios relative to European averages. Default rates over a long run period are a direct input to PDs, which are a key driver of risk weighted assets. Even during the relatively strong Irish economic recovery after the financial crisis, default rates remained substantially higher than European averages, despite a marked change in the size and composition of business lending assets, with Irish banks' exposure to commercial real estate loans in particular undergoing a significant reduction. More recently there has been an elevation in Irish corporate default rates above the European 90th percentile during the Covid-19 crisis.

Regulatory or bank-detected adjustments increase RWDs in cases where models are deemed to insufficiently capture the level of risk present on loan portfolios. Where, for example, PDs are deemed too low relative to observed default rates, such adjustments may be necessary.

Finally, it is worth noting that upon full implementation of Basel III ([Basel III implementation, Banking Package 2021, Oct 2021](#)), banks will be constrained in the amount of capital benefit obtained from their use of internal models. The introduction of the 'output floor' is the central element that will reduce the variability in outcomes from bank's internal models. As such, Basel III implementation will, all else being equal, reduce the differences between Irish banks' modelled risk weights and those in other jurisdictions. Overall, the evidence suggests that the current risk weights on Irish NFC lending are reflective of the relatively higher risk of Irish retail banks' NFC exposures.

References

- [1] Basel Committee on Banking Supervision, Calculation of RWA for credit risk, CRE31 IRB approach: risk weight functions, version effective as of 01 Jan 2022. https://www.bis.org/basel_framework/chapter/CRE/31.htm?tldate=20191216&inforce=20220101&published=20191215
- [2] 2021 EU Wide transparency exercise. <https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-transparency-exercise>
- [3] Basel III: international regulatory framework for banks. <https://www.bis.org/bcbs/basel3.htm>
- [4] Lyons, P. & Rice, J., Risk Weights on Irish Mortgages, Central Bank of Ireland, FS Note Vol. 2022, No. 01, <https://www.centralbank.ie/publication/financial-stability-notes>

[5] Gropp, R., Krainer, J. and Laderman, E., 2019. Deleveraging and Consumer Credit Supply in the Wake of the 2008-09 Financial Crisis. 59th issue (September 2019) of the International Journal of Central Banking.

[6] Bruno, B., Nocera, G., Resti, A., 2017, The impact of risk-based capital requirements on corporate lending: Evidence from Europe, <https://voxeu.org/article/risk-based-capital-requirements-and-corporate-lending>

[7] European Commission, Oct 2021, Banking Package 2021: new EU rules to strengthen banks' resilience and better prepare for the future, https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5401



Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem