Low-default portfolio models ripe for reboot

Given data scarcity, default pooling would be the most suitable option – especially since the new normal warrants new models

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rise
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Executive summary

- **Low-default portfolios (LDPs) pose significant modelling challenges**: It is widely acknowledged that credit modelling teams at banks face significant challenges in developing rating and probability of default (PD) models for LDPs because of sparse defaults.

- **Regulatory scrutiny on the rise**: While the challenges of model uncertainty have traditionally been offset by manual overrides by credit officers, the objectivity of these overrides is increasingly being called into question by global regulators. Ever since the publication of SR 11-7 by the US Federal Reserve (Fed), other global regulators have followed suit with their own guidelines and/or standards. Over time, the growing influence of the independent validation function and reviews from supervisors have posed additional challenges, with questions raised over model performance, especially in the LDP space. European regulators have taken scrutiny to a whole new level, with their multiple programmes of internal ratings-based (IRB) model repair, harmonisation of definition of default (DoD) and targeted review of internal models (TRIM).

- **The new normal warrants a review of existing models**: The Covid-19 pandemic has triggered a sharp economic recession that is likely to lead to a spike in default rates from what was a period of prolonged benign credit environment. This has rendered credit models to scrutiny. The US economy slipped into recession after its longest post-World War II period of economic expansion, while the European economy has benefitted from an extended period of low but positive economic growth rate since the sovereign debt crisis. We firmly believe that a host of factors – the rising scrutiny of rating and PD models globally, the effects of potentially game-changing corporate supply chains and/or business models and geo-political equations in a post-pandemic world, the upcoming Basel III implementation and the TRIM remediation in Europe – will necessitate banks to consider holistic re-development or re-calibration of their models.

- **Default data pooling is a compelling option for PD and rating models of LDPs**: In this publication, we make a case for banks to consider the option of default data pooling for their LDP portfolios, especially for the 'banks' and 'large corporates' portfolios. These portfolios have a high likelihood of arriving at a rich data pool through a consortium construct. We firmly believe that this is the most superior alternative available when internal defaults fall short. Major global regulators are also comfortable with data pooling when internal data is inadequate, subject to specified conditions. The option of leveraging a data pool with binary classification of obligors as 'defaulters' or 'performing' are both objective and transparent, as compared with alternative options of shadow ratings or PD pooling consortiums, where the output is subjective and arguably, a 'black box' estimate of PD.

Figure 1: PD models for LDPs: current industry practices and RISE recommendations

Portfolios	Estimated universe	Most common practice	RISE recommendation
Sovereigns	200	Shadow ratings	Shadow ratings or Constrained expert judgment models
Central banks and MDBs	200-250	Expert judgment	Constrained expert judgment models
Regulated funds	~123,000	Expert judgment	Statistical approach based on default proxies, PD pooling
Banks	40,000-50,000	Shadow ratings	Statistical approach based on default pooling
Large corporates*	15,000-80,000	Shadow ratings	Statistical approach based on default pooling

*Rough estimated volume for large corporates, which may vary widely depending upon the definition of obligor (consolidated group level or legal entity level) and/or minimum annual revenue threshold (for e.g., €100 million or €500 million)

Source: Risk Intelligence and Solutions Ecosystem (RISE) estimates based on various industry sources

LDPs

LDPs are low-risk, but material, portfolios…

While there is no official definition for LDPs, they are broadly believed to be portfolio segments that include obligors with high credit worthiness, and hence, have a very low likelihood of default. It may also include portfolios where internal defaults are inadequate for modeling purposes. The European Central Bank's on-going TRIM exams for LDPs include banks and financial institutions, large corporates and corporates-specialised lending.

These are also material portfolios because – a) they are less granular (usually medium to high ticket size of exposures); and b) they account for a material share of group exposures. To illustrate materiality better, let us consider 'large corporates' as an example. As highlighted in Figure 2, for the sample of banks considered, the segment's share of aggregated risk-weighted assets (RWAs) ranged from 12.1% to 55.1% (averaging 28.5%) at end-fiscal 2019. We acknowledge that the contribution would be much higher on an exposure at default (EAD) basis.

…whose modelling methodologies suffer from data scarcity

Figure 3, which presents averages from three global systematically important banks, or G-SIBs, with varied business models, clarifies how PD modelling choices for these portfolios are severely constrained by the scarcity of default data. This, in turn, leads to uncertainty in model outputs and consequently, transaction pricing, driving up the margin of conservatism (MOC). And that ultimately leads to sub-optimal or excessive regulatory capital charges.

The time is ripe for a reboot of LDP PD models

- **In global IRB banks**: In light of the upcoming implementation of Basel III reforms, the phase-in of output floors and the elimination of advanced internal ratings-based (A-IRB) approach, PD models would be the only source of RWA optimization for the 'banks' and 'large corporates' portfolios. Furthermore, with TRIM and revised DoD, several European banks will need to improve their model methodologies on select portfolios, including LDPs.

- **In US banks**: Amid the pandemic, US banks are likely to face scrutiny from their supervisors on credit processes, underwriting practices and model performance. Further, since most US banks may have developed their underwriting models a few years ago, it may be a good time to revisit the existing models, especially those that performed unfavourably during the pandemic possibly because of sub-optimal methodologies.

Figure 2: Large corporate group's share in total group RWA of select banks (end-FY19)
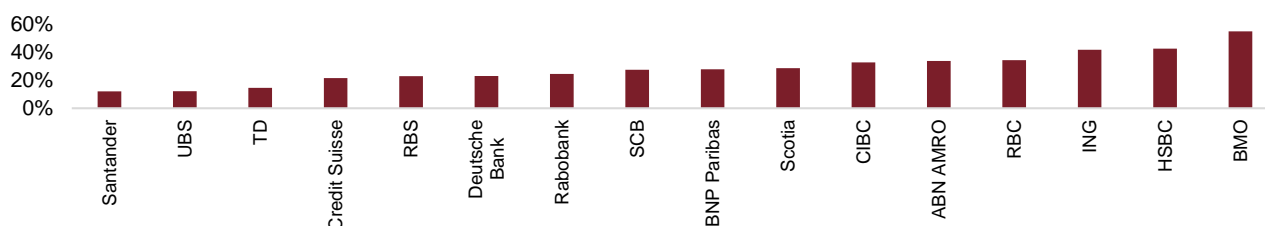
Note: The definition of large corporates vary across banks and in some cases (such as HSBC, BMO and a few others) may include all corporates classified as wholesale clients, especially where bifurcation of small and medium enterprises (SMEs) and specialised loans were not disclosed
Source: Annual reports and Pillar 3 disclosures

Figure 3: Typical volumes of total and defaulted obligors in LDPs of tier 1 banks

Description	Central governments / banks	Financial institutions	Corporates*
Number of total obligors	492	1,573	53,715
Number of defaulted obligors	Negligible**	24	2,740

* The definition of corporates may vary, perhaps with varied thresholds of revenue size and may also include mid-market obligors in some cases which had led to inflated volumes; ** the disclosed values were zero for HSBC and Barclays while DB's value was undisclosed

Source: As per Table EU CR6 of FY19 pillar 3 filings (average of DB, HSBC and Barclays, since they represent diverse business models)

Current industry practices

Industry practices for ratings and PD models on LDPs are fairly consistent given the limited options available and are driven by – a) the inadequacy of internal default data, and b) the volume of obligors rated by major rating agencies. For sovereigns and central banks, modellers have to choose between expert judgment and shadow ratings as the limited number of defaults renders it impossible to build a defaults-based logistic regression model. Though similar challenges haunt the 'banks' and 'large corporates' portfolios, the practices and possibilities are somewhat different.

A focus on the large corporates portfolio

- **Portfolio definitions vary widely**: Current industry practices of internal definitions of large corporates vary widely, but are mostly defined by thresholds on annual revenues of the obligors. Figure 4 below highlights our observations from banks' pillar 3 disclosures and also from conversations with many G-SIBs. On the other hand, the Basel Committee defines the segment as entities belonging to groups with €500 million or more revenue.

- **Number of models also vary**: We have also seen a fair degree of variance on the number of PD models for large corporates across banks. Some banks prefer to leverage a single global model but others prefer to have multiple models, with the segmentation driven by the obligors' country of operations, industry, and external agency ratings and/or by ownership status (public vs private) - see Figure 5 for more details.

- **Though data is inadequate, methodologies, where specified, are broadly consistent**: Of a list of 24 global banks that we reviewed, we observed that only 18 of them provided adequate clarity on their model methodologies for the large corporates PD model. Of these, as many as 15 have been unable to develop an internal defaults-based statistical model. And of these, the most common large corporates PD model methodology is the shadow ratings approach. A few of them use the expert judgment approach.

Figure 4: Observations of internal definitions at Tier 1 banks for the large corporates portfolio

Observations of minimum revenue criteria (based on annual revenue)					Non-revenue criteria	
€42mn ($50mn)	€85mn ($100mn)	€300mn ($354mn)	€500mn ($590mn)	€593mn ($700mn)	All overseas CIB clients	All CIB clients

Note: CIB - Corporate and investment banking division

Source: Annual reports, pillar 3 filings of banks, RISE research

Figure 5: Typical bifurcation of models at Tier 1 banks for the large corporates portfolio

Single model	Multiple models		
Single global model for all large corporate obligors	Multiple models by region (e.g., domestic vs. overseas; developed vs emerging markets; one for each major market)	Multiple models due to niche features of select industries (e.g., one model for energy; one for all other sectors)	One model for rated and/or publicly traded entities; another for unrated or unlisted entities

Source: Annual reports, pillar 3 filings of banks, RISE research

Figure 6: Observed PD model methodologies at Tier 1 banks for the large corporates portfolio

Shadow ratings (most common)	Expert-judgment (less common)	PD pooling (emerging)
The models are developed using external agency ratings as data inputs	The models are primarily developed by incorporating inputs from subject matter experts	Leverages data pooling consortiums that provide consensus PD estimates pooled from multiple banks

Source: Annual reports, pillar 3 filings of banks, RISE research

Figure 7: PD model methodologies for the large corporates portfolio

Bank	Headquarters	Internal defaults-based model?	PD model methodology
HSBC Holdings	UK	No	Shadow ratings approach
Standard Chartered	UK	No	Shadow ratings approach
Natwest Markets	UK	No	Shadow ratings approach (ratings agency replication models)
Barclays	UK	No	Merton's methodology for publicly traded, rating agency replication for externally rated, vendor model for others
Lloyds	UK	No	Ratings agency replication for publicly listed, rank-order assessment by expert judgment for others
UBS	Switzerland	No	Merton's model for publicly traded or rated / shadow ratings for others
Santander	Spain	No	Shadow ratings
BBVA	Spain	No	Shadow ratings
Rabobank	Netherlands	No	Expert-judgment models
ABN AMRO	Netherlands	No	Shadow ratings (stated as 'based on a combination of internal + external data')
BNY Mellon	US	No	Shadow ratings approach (external ratings + external defaults)
State Street	US	No	Shadow ratings approach
Northern Trust	US	No	Statistical model combining internal and external data
CIBC	Canada	No	Estimates from third party PD models supplement the internal default data for rating bands where internal data is sparse
Scotiabank	Canada	No	PD is estimated using the bank's historical data as well as available external benchmarks
Societe Generale	France	Partly	10 models that vary by region; some are statistical and some are not
Deutsche Bank	Germany	Partly	Statistical models for some segments, expert judgment for others
BMO	Canada	Partly	Internal data for some segments, shadow ratings for others

Bank	Headquarters	Internal defaults-based model?	PD model methodology
TD	Canada	Unclear	No specific disclosures on large corporates
RBC	Canada	Unclear	No specific disclosures on large corporates
ING	Netherlands	Unclear	No specific disclosures on large corporates
BNP Paribas	France	Unclear	Two models - mix of statistical, expert judgment
Credit Agricole	France	Unclear	No specific disclosures on large corporates
Credit Suisse	Switzerland	Unclear	For portfolios with a small number of empirical defaults, LDP techniques are used

Note: The model methodologies specified above are subject to our interpretation of the disclosures on a best efforts basis

Source: 2019 annual reports, Pillar 3 disclosures

Basel III reform magnifies importance of PD model optimisation

The final rules of Basel III (also known as Basel III reform), which were published in December 2017, are likely to result in a few game-changing implications for IRB models.

- **The end is near for loss given default models on LDP**: Banks will have only two options to choose from (standardised approach or foundation IRB approach) as A-IRB models will be disallowed for the portfolio segments of 'banks', 'other financial institutions,' and 'entities that belong to corporates with group turnover exceeding €500 million'.

- **Incentive for IRB remains despite imposition of output floors**: The Basel committee has recommended imposition of output floors on RWAs, which means that the RWAs calculated as per IRB approach cannot be lower than specified percentages of the calculation as per the standardised approach. However, we believe that banks are likely to prefer F-IRB models over the standardised approach, because – a) the output floors will have a pro-longed phase-in period until January 2028, and b) even on a fully-loaded basis, there remains an incentive of up to 27.5% lower risk-weighting under the F-IRB method (owing to 72.5% floor).

Figure 8: Credit risk model methodology changes in Basel III reform (December 2017)

Portfolios/ exposure class	IRB methods under new standards	Changes from current standards
Banks and other financial institutions	SA or F-IRB	A-IRB removed
Corporates with group revenue > €500 million	SA or F-IRB	A-IRB removed
All other corporates	SA, F-IRB or A-IRB	No change
Specialised lending	SA, supervisory slotting, F-IRB or A-IRB	No change
Retail	SA or A-IRB	No change
Equity exposures	SA	All IRB removed

Note: IRB: internal rating-based; SA: standardised approach; F-IRB: foundation IRB approach; A-IRB: advanced IRB approach

Source: Basel III reforms (BCBS 424)

Figure 9: Phase-in of output floors recommended by Basel III final rules
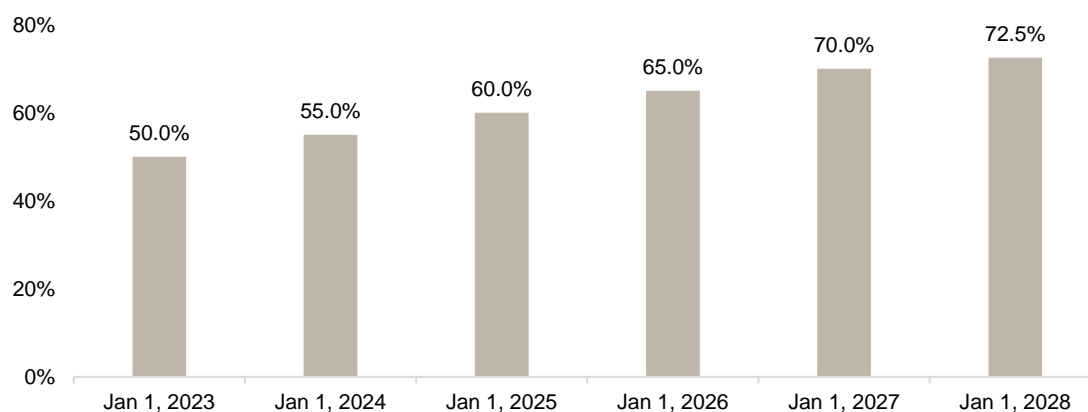
Note: In addition, national supervisors may cap the increase in a bank's total RWAs that results from the application of the output floor during its phase-in period. The transitional cap on the increase in RWAs will be set at 25% of a bank's RWAs before the application of the floor. The cap will be removed on 1 January 2028

Source: Basel III Reforms (BCBS 424)

TRIM remediation and DoD driving model reviews in Europe

TRIM is a rigorous study of IRB models of European banks

TRIM is a multi-year project being carried out by the European Central Bank in close cooperation with the national competent authorities. It comprises a rigorous review of banks' internal models which are used to calculate RWAs for regulatory capital. The objective is to reduce "inconsistencies and unwarranted variability" in these models. The project was expected to be carried out in two phases:

- **Phase 1 / 2017 (second quarter) – 2018 (second quarter)**: This phase included a review of IRB models for retail and SME portfolios, and also market risk and counterparty credit risk models.

- **Phase 2 / 2018 (third quarter) – 2019 (fourth quarter)**: This phase focused on the assessment of the LDP models (financial institutions, large corporates and specialized loans). While the examination processes are largely complete and ECB outcome letters were meant to be handed out in early 2020, there has been a pause due to the pandemic since March 2020. However, the ECB has recently announced that this exercise will resume in October.

Nevertheless, gleanings so far point to an inevitable re-examination of bank LDP models.

Several European banks need to remediate their LDP models

- **Banks are faced with RWA inflation:** As an outcome of the TRIM exams, many banks are staring at higher RWAs. Figure 10 highlights the TRIM impact as disclosed by select banks. Some banks have already incorporated TRIM add-ons based on their own estimates. However, there in a chance these may go up further for banks that are yet to receive their final outcome letters which were delayed due to the pandemic.

- **Potentially adverse remarks on LDP models are also on cards**: While the ECB has published three separate update letters with 'aggregate findings' of the high default portfolio exams, there has not yet been any publication on the LDPs. However, anecdotal evidence from several banks in their recent earnings

commentaries indicate that quite a few shortcomings are being pointed out on the LDP models, related to data quality and also sub-optimal model methodologies which, in turn, may be driven by lack of internal data.

- **Hence, banks are exploring data solutions**: Our recent conversations with European banks revealed that many of them are currently in the process of re-development or re-calibration of their LDP models. As a first step, they are exploring data options to offset the challenges from their lack of internal defaults for select portfolios.

Figure 10: Estimated TRIM impact (in basis points of CET1 ratio)
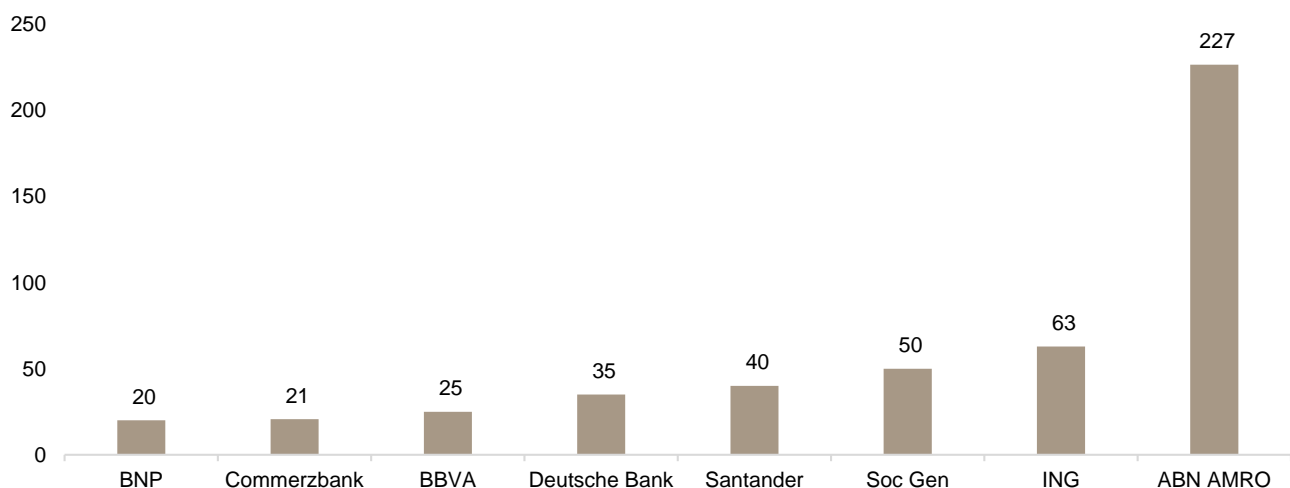
Note: Santander has estimated a range of 30-50 bps; CET1 = Common equity Tier 1

Source: Disclosures by select European banks, RISE calculations

DoD could also drive model re-calibration

The EBA's DoD guidelines mandate harmonisation of default definitions across European banks. This is also being broadly adopted by the UK and Swiss regulators. It involves reviewing defaulted cases going back several years for compliance with the new definition, and in some instances, could eventually warrant PD models to be re-calibrated, depending on the extent of changes in historical default rates between the new and old standards.

Data pooling offers opportunity to optimise regulatory capital

High model uncertainty in LDP leading to high MOC

In its benchmarking study report titled "Results from the 2019 low-default and high-default portfolios exercise", the ECB stated "*for the LDPs, the main challenge is to overcome the scarcity of data, and many issues directly stem from the attempt to overcome this lack of data*". We have consistently heard similar views during our conversations with global banks. We also note that these challenges drive up MOC levels to offset the uncertainty. While the MOC is difficult to quantify, we make an attempt to visualise this in Figure 11 below, which presents the rather conservative estimate of PD when compared to the long-run average actual default rates of four global banks with varied business models.

Figure 11: Estimated reduction of RWAs and corresponding CET1 release, based on PD reduction scenarios

Particulars	Average estimated PD*	Actual default rate**	Excess PD estimate
Sovereigns and central banks	1.83%	0.80%	1.03%
Financial institutions	1.00%	0.48%	0.52%
Large corporates	3.05%	1.68%	1.37%

*Note: * the average estimated PD is computed on a simple average basis; ** the actual default rate is a 5-year average*

Source: Average figures of four banks (Deutsche Bank, HSBC, Barclays, UniCredit)

A default pooling consortium could help develop robust LDP models

As per industry practices, the most favoured rating and PD model methodologies in descending order of preference are – a) logistic regression based on internal defaults; b) shadow ratings; and c) expert judgment. As stated earlier, for lack of internal data, banks often opt to choose shadow ratings or expert judgment for LDPs, while some are evaluating pooled PDs as model inputs. However, we argue that a 'default pooling solution' would be the best option moving forward, as it would help banks revert to their most favoured logistic regression methodology.

Figure 12: Possible PD model methodologies for LDPs, especially 'banks' and 'large corporates'

Description	Model uncertainty	Portfolio representativeness	Target variable transparency
Logistic regression (internal defaults-based)	Low (Statistical back-testing possible)	High (Own portfolio)	High
Shadow ratings	Medium (Statistical back-testing possible)	Medium (Constrained by rating coverage)	Medium
Expert judgment	High (Open to validation challenges)	N/A	N/A
Shadow ratings (PD pooling consortium)	Medium (External PDs are subjective inputs)	Medium/high (subject to availability)	Low (No info on PD estimation methodology)
Logistic regression (default pooling consortium)	Low (Statistical back-testing possible)	High	High (Default vs non-default is an objective outcome)

Source: RISE analysis

Even a small MOC reduction could lead to a material release of regulatory capital

According to our calculations, if an effective data pooling solution were able to drive a reduction in the large corporates portfolio PD of just 3-10 bps, the median level of CET1 capital release for the 16 banks analysed (based on their end-fiscal 2019 data) would be in the range of $49~164 million (corresponding increase in CET1 ratio would be 2-7bps).

Figure 13: Estimated reduction of RWAs and corresponding CET1 release, based on PD reduction scenarios

Particulars	Scenarios and estimated impact on regulatory capital release			
Scenario – PD reduction (bps)	3	5	7	10
Reduction in RWAs (median, $ million)	614	1,023	1,432	2,046
CET1 release (median, $ million)	49	82	115	164
CET 1 increase (median, bps)	2	4	5	7

Note: This is a simplistic calculation on year-end reported figures, assuming varied scenarios of PD reduction in the corporates portfolio, while other components of the RWAs and the value of CET1 capital remain unchanged; CET 1 release is calculated as RWA reduction divided by 12.5

Source: FY19 official disclosures for base RWA, CET 1 and large corporates portfolio PD values of 16 banks (Santander, UBS, TD, Credit Suisse, Natwest, Deutsche Bank, Rabobank, Standard Chartered, BNP, Scotia, CIBC, ABN AMRO, RBC, ING, HSBC, BMO)

Major global regulators are comfortable with data pooling

Regulators across major global jurisdictions explicitly allow for data pooling, subject to certain conditions

As Figure 14 shows, major global regulators permit data pooling across banks for PD models, especially in cases where the availability of internal default data is limited. However, such usage is subject to select conditions (as specified in Figure 15).

Figure 14: Regulators' views on data pooling

Fed

"It may be <u>appropriate for a firm to use external data if internal data limitations exist</u> as a result of systems limitations, acquisitions, or new products, or other factors that may cause internal data to be less relevant for developing stressed estimates. If a firm uses external data to estimate its losses or PPNR, the firm should ensure that the external data reasonably approximate underlying risk characteristics of the firm's portfolios or business lines. Further, the firm should make adjustments to estimation methods or outputs, as appropriate..."

– Federal Reserve SR 15-18

ECB

"Where an institution <u>uses data that is pooled across institutions</u>, it shall meet the following requirements ... the pool is representative of the portfolio ... <u>pooled data is consistently used over time</u>"

– Article 179(2) of CRR, published in 2013

"The use of pooled data is treated similarly to the situation where internal data are combined with data derived from a different (and external) set of obligors or facilities"

– ECB Guide to Internal Models -- risk-type-specific chapters, Credit Risk, July 2019

OSFI

"Institutions <u>might wish to rely on third-party vendor sources for models or data</u>, where it is understood this information might be proprietary. Aside from outsourcing the model development phase, adopting a vendor product does not eliminate the need to apply a similar process for vetting, approval, ongoing validation, decommissioning and overall documentation, as would be conducted for in-house developed models and data sources. Institutions should have ultimate accountability for all outsourced activities and should seek access from the vendor to adequate technical documentation related to the model to understand how the model is designed, calibrated and operating, as would be expected for an internally developed model."

– E-23/Official Model Risk Guidelines published September 2017

	PRA	*"The data used to develop a model should be assessed for quality and relevance. Where adjustments are made, proxies are used, or where the data are not representative of the bank's portfolio or asset mix, the impact should be justified and documented so that users are aware of the potential model limitations ... when applying the CRR requirements relating to the estimation of the probability of default, the PRA <u>expects firms to comply with the EBA's guidelines on PD estimation</u>, LGD estimation and the treatment of defaulted assets <u>(EBA/GL/2017/16)"</u>* **– Model risk management principles for stress testing, SS-3/18** *"Where <u>external or pooled data are used</u> institutions should obtain sufficient information from the data providers to assess the representativeness of such external or pooled data to the institutions' own portfolios and processes"* **– EBA/GL/2017/16**
	APRA	*"Internal default experience: In this case, the ADI (authorized deposit-taking institutions or simply banks) would generally ensure its estimates are reflective of its underwriting standards and of any differences in the rating system that generated the data and its current rating system. Where only limited data are available, or where underwriting standards or rating systems have changed, the ADI would be expected to add a greater margin of conservatism to its PD estimates. <u>An ADI could use data that have been pooled across institutions;</u> in this case, the ADI would normally ensure that the data are relevant to its own circumstances."* **– Official IRB guidelines APG 113, published in January 2013**

Source: Model risk guidelines as sourced from official documents from the respective supervisors. The specific source guidelines are mentioned in each box above

Figure 15: Regulatory conditions for use of pooled data

US Fed	EBA	PRA
• The data should be justified • It should be documented • It should be reasonable	• The data should be representative of each bank's internal portfolio • The pooled data should be used consistently over time • The definition of default must be transparent • Double-counting of same obligors must be avoided	• Impact must be justified and documented • In general, data must comply with EBA guidelines (EBA/GL/2017/16) - Obtain sufficient information from vendors to assess representativeness

Source: US Fed Wholesale IRB Program Supervisory Guide (2015); EBA TRIM guidelines (Nov 2019); Bank of England's Prudential Regulation Authority's Model Risk Management Principles for Stress Testing SS 3/18

Presenting RISE LDP as a solution for banks' LDP PD models

A solution to solve the default scarcity problem of LDPs

RISE LDP is a data consortium which pools obligor data from multiple banks to create a rich default data pool that can be leveraged to develop robust ratings and PD models. This solution would yield improvements in model output certainty and greater confidence in risk pricing of credit exposures. It would also optimise regulatory capital charges.

- **Portfolios in scope**: The solution pools data for two portfolios – banks and large corporates

- **RISE LDP deliverables**: Access to a rich global LDP data pool (defaulted + performing obligors)

- **Consortium rules**: Only banks that contribute data to the pool would have access to the data pool

Data attributes

Figure 16 below illustrates how the RISE LDP data pool provides adequate transparency that would help model developers extract a curated sample that meets regulatory requirements on pooled data across jurisdictions:

- **Avoidance of double-counting**: Transparency in obligor names facilitate an easy de-duplication process

- **Portfolio representativeness**: Banks can filter out obligors from the regions, sectors and vintages that are in line with their internal portfolios

- **Transparent default definition**: Transparency in default classification would help banks better understand the nature of default of each obligor. Banks can choose to include all options or retain only the objective defaults (such as 90 days overdue, restructuring or liquidation)

- **Consistent data over time**: The data pool would be refreshed annually with all consortium banks submitting annual updates to the pool. This would enable consistency in usage of data over time

Additional insights: In addition to the above, RISE also adds its own insights on the defaulted cases to provide banks with an additional lens while curating a default sample that is representative of the banks' own portfolios.

About the RISE LDP consortium: The RISE LDP consortium already hosts default data from several G-SIBs. Please reach out to us for more information on the consortium.

Figure 16: LDP data pool: Select obligor-level data attributes

Obligor name*	Country	Sector	Vintage	Default classification
Alpha	US	Industrials	2008	>90 days overdue
Beta	Canada	Energy	2009	Distressed restructuring
Gamma	UK	Retail	2010	Liquidation (by creditors)
Delta	France	Utilities	2011	Liquidation (by self)
Theta	Spain	Leisure / Entertainment	2012	Transferred to non-accrual
Rho	Brazil	Travel / Transport	2013	Related-party default
Etc…	Etc…	Etc…	Etc…	Etc…

Name transparency avoids double-counting	Filters to curate sample for portfolio representativeness	Transparency in default definition

*Note: *Obligor names have been masked for the purpose of this report but the names will be provided to subscribing banks in the licensed version*

Source: RISE LDP

About RISE

RISE is a unique ecosystem that collaboratively works with financial institutions to develop best practices and centralise delivery, thereby reducing duplication and strengthening risk management standards. Participation in RISE allows global financial institutions to engage with one another and discuss industry issues, best practices and benchmarks. Based on these, RISE engages in the customised design and build of innovative industry solutions across the risk management and compliance value chain that add significant value to financial institutions.

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