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No Such Thing as an Average Loss – How to Estimate Accurate LGD for Large Obligors

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In recent years, the global banking industry has invested large sums building 'dual rating' credit risk systems that can take separate account of each lending transaction's 'probability of default' (PD) and 'loss given default'(LGD).

However, banks lending to wholesale sector clients such as corporations, banks, the public sector or major industrial or infrastructure projects, direct nearly all their analytical firepower at default rates rather than the LGD statistic.

This is because the industry lacks the masses of relevant loss data necessary to help it isolate and measure the risk factors that drive the LGD of individual deals at a suitably granular level. In the rush to comply with the advanced internal ratings-based (AIRB) approach under the Basel regulations to calculating credit risk capital, banks instead plugged a gap in their new dual rating schemes with an approach to LGD developed for the retail lending industry that measures only the average LGD risk per facility posed by each broad segment or sector of large obligors.

This quick fix has left the industry dependent on look-up 'tables of average' LGDs that are inappropriate for determining the risk of large obligors, for reasons we discuss later in this chapter, and which cannot be extended to improve competitive business decisions.

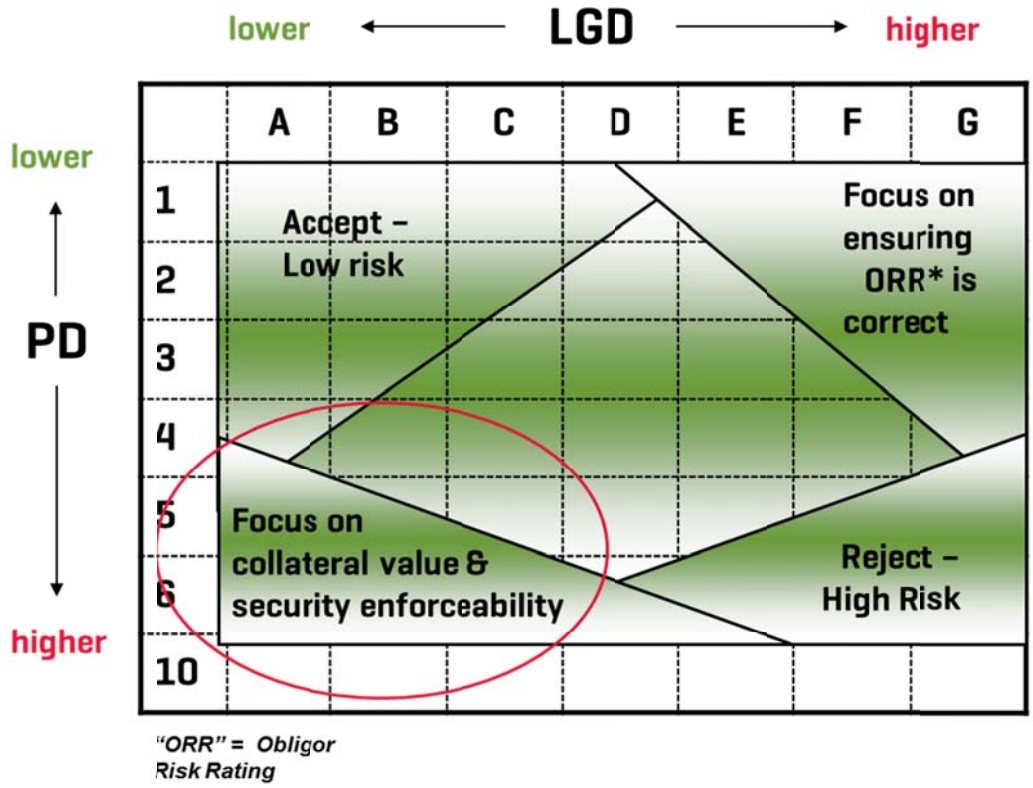
Meanwhile, banking regulators are insisting that banks use a conservative placeholder estimate of LGD to calculate regulatory capital until each bank can produce convincing LGD estimates. At 45%[1], this placeholder appears to be conservative for almost every lending sector, however it particularly penalises lending areas such as trade finance and project finance where default rates are high but where the industry has, as a result, put many risk mitigants in place. A combination of collateral, letters of credit, third-party guarantees and insurance help ensure that the losses after a default remain low.

For some banks, accurately estimating LGD across their main lines of business might therefore generate savings of billions of dollars in regulatory capital, as well as improving internal economic capital calculations.

The more fundamental motive for improving LGD estimation is that this allows banks to make a more efficient trade-off between default rates and LGD and therefore seek out, and structure, the most attractive deals from a pricing and risk management perspective (Figure 1). As we argue later, however, gaining this competitive advantage will mean abandoning tables of averages in favour of a systematic approach to individual deal LGD risk analysis.

[1] Signifies the requirement from Basel III for senior facilities whenever a bank has no internal LGD methodology.

Figure 1: Active Credit Risk Management as a Two-Dimensional Problem



In Figure 1, the separation of the two credit risk dimensions – default risk and recovery risk – permits the bank to both analyse and manage the distinct risks in different ways. Thus, facilities can be structured most effectively by minimising expected losses. Source: S&P Capital IQ.

Looking Down On Look-Ups

In an ideal world, banks would gather together internal historical data on each obligor that defaults; track any subsequent recoveries and then use statistical techniques to work out which obligor and loan factors are associated with high and low rates of recovery. This, however, requires enormous amounts of richly detailed, accurate and relevant default and recovery data.

Even in the retail world, which has large amounts of default and recovery data, this is not what happens. Instead, retail LGD analysis focuses on the average LGD associated with particular groups or segments of defaults, such as new versus existing clients or mortgages versus consumer loans, as defined by the bank's LGD model. The amount of bank data available internally determines how detailed the segmentation can become, while still preserving some degree of statistical strength.

The fact that this approach generates an average for a segment, rather than directly addressing the risk of each loan, is a weakness that is relatively unproblematic in the retail sector because

retail loans are small. The bank can afford to be wrong about the risk of a particular loan so long as it is right about the average risk of each segment.

The approach becomes a lot less satisfactory as the LGD analysis moves on to small- and medium-sized entities (SMEs) where:

- The number of loans and sometimes also the overall default rate is lower and therefore data sparser.
- The number of segments must rise to capture more loan variability such as the great variety of collateral (e.g., machinery versus property).

It's when analysts turn to portfolios of large obligors, however, that the problems inherent in the table of averages approach become devastating.

Large Obligors – Why Average Is Not Good Enough

Lending to large obligors can represent a third, or even more than 50%[2], of a bank's lending in terms of the total value of its credit exposure. However, the absolute numbers of such deals are small and default rates are hopefully low. A large portfolio of 5000 such loans with a 2% default rate would yield data on only 100 recoveries a year. Even after waiting ten years to build a 1000-strong database of observations, the bank would not be able to conduct a statistically robust LGD analysis that usefully captures the heterogeneity of large obligors' LGD risk[3].

The heterogeneity is important because the recovery pool of assets, which ultimately serves creditors in the case of bankruptcy, differ fundamentally by type of assets on a debtor's balance sheets.

Many banks therefore add their SME portfolio LGD data to their 'large corporate' LGD data to make up the numbers, but the amount of data is still usually less than ideal as Box 1 below makes clear. A more fundamental problem when combining data is that SMEs and large corporations are different animals in many regards:

- **SME obligor defaults do not affect collateral value, large obligor defaults do.** For example, the value of the tools of the trade of an SME (e.g., four vans) might retain most of their value when the SME defaults. While the sudden offloading of 400 trucks when a major freight firm collapses is likely to depress their value substantially.
- **Large obligor defaults shake their economic and sometimes even the political environment.** The collapse of a large obligor creates its own political and economic waves that substantially affect the value of assets and the hoops the bank has to jump through to make a recovery. Prominent examples are the near-collapse of various US car manufacturers and the current wave of rescues for European sovereigns.

[2] Based on the Pillar III reports (market disclosure) from various globally operating banks, which are publicly available.
[3] Around the world, there are now a number of data consortia hoping to bring default and LGD data together to create aggregate industry databases on credit risk, including some supported by S&P Capital IQ Risk Solutions. However, these pooling efforts do not lead to an LGD methodology, but merely provide banks with the foundation for a solid benchmarking exercise.

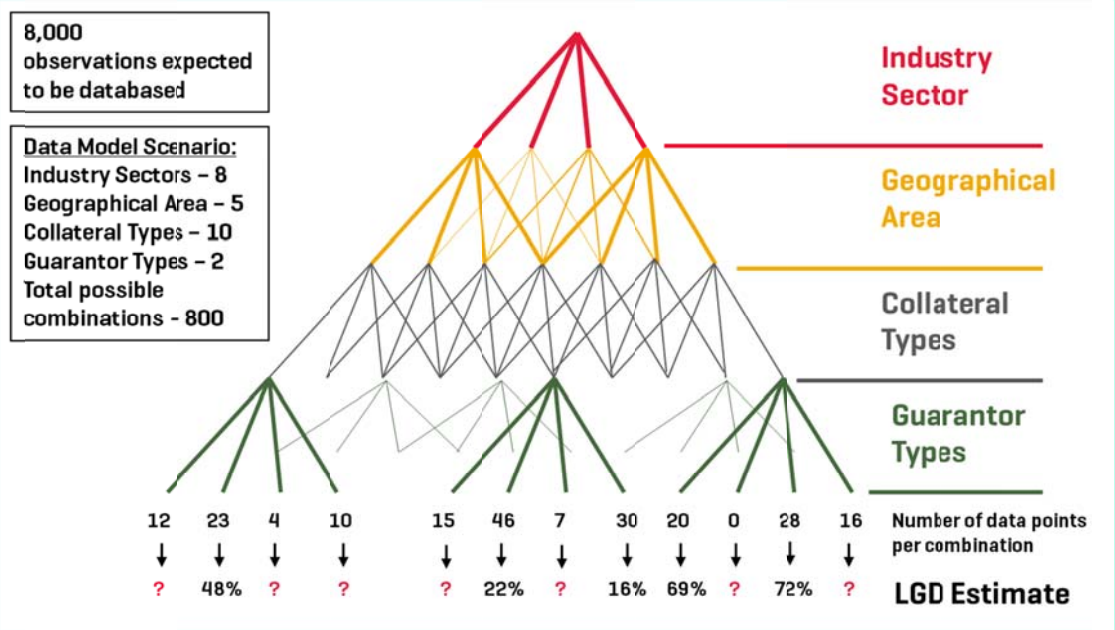
Box 1: Combining SME and Large Obligor Data – Will this Workaround Work?

Estimating segment LGD averages with statistical rigour is challenging even when analysts combine SME and large obligor credit data to enrich the data set.

Figure 2 below sets out a reasonably typical number of borrower types, i.e. industry sectors (eight), split across geographical areas (five), collateral types (10) and guarantor types (two). In turn, these give rise to some 800 possible combinations or segments (i.e., borrower type x geographical area x collateral x guarantor).

In this example, we assume that the combined SME/large obligor database contains 8000 defaults with good recovery data, and the defaults are spread quite evenly across each segment. But even then the number of recovery data points associated with each type combination (or segment) is often too low to conduct a robust analysis - as the red question marks indicate in the figure.

Figure 2: Example of a Table of Averages or Look-Up Table



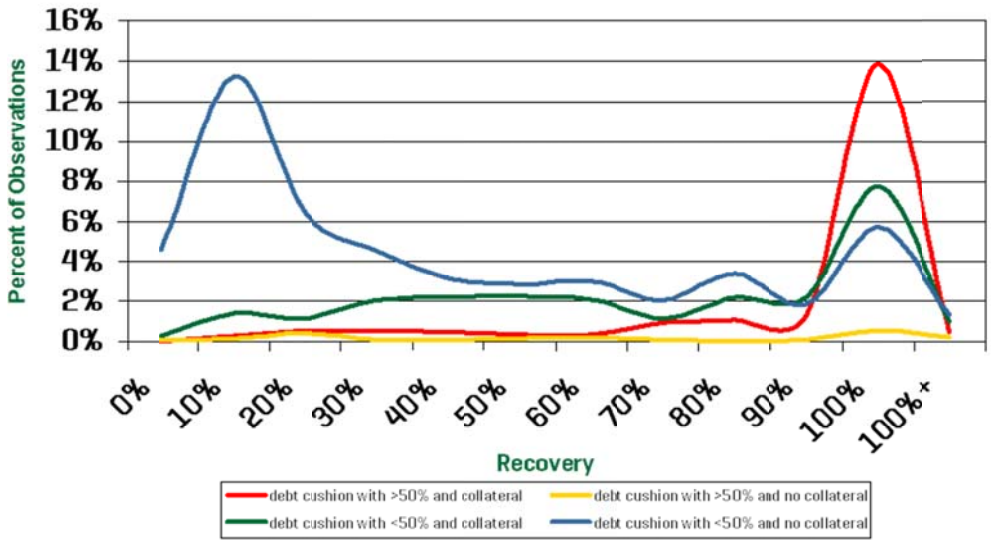
Average of 10 observations per combination based on 80,000 observations.
Conclusion: Even with such a large database, only some type combinations end up with sufficient samples for modeling or comparisons (in example above, minimum of 20 observations were required).
Source: S&P Capital IQ – for illustration purposes only.

This means that LGD estimates based on combined data may be unreliable for large obligor portfolios. However, the real knock-out blow for the 'segment average' LGD approach is that large obligor loss rates are simply not well described by averages, even if these are accurate. Empirical data shows instead that the distribution of bank losses is 'bi-modal', i.e. most losses are either much better or much worse than average in terms of their recovery rate.

This is a critical point because each and every large obligor loan is important to the bank. Unlike retail LGD analysis, being right on average is not good enough.

Figure 3 illustrates this in regard to the losses from large corporate facilities that have defaulted in since the 1980s, collected into the S&P Capital IQ's LossStats database. The figure shows how losses vary in relation to two key variables: whether the facility was collateralised and the size of the debt cushion, defined as the percentage of debt of the defaulted company that ranked below the bank's own facility.

Figure 3: Smoothed Histograms of Observed Recoveries from S&P Capital IQ's LossStats Database for Large Corporations



S&P Capital IQ's LossStats® database of facilities from almost 5000 defaulted corporations: The bi-modal behaviour of recovery rates – known from the retail sector – appears to hold for large obligors as well: Dependent on key facility characteristics (here: debt cushion and secured debt versus unsecured debt) actual recovery rates tend to be either very high (right hand side) or very low (left hand side). Relatively few observations are centred around mean values of recovery. Source: S&P Capital IQ LossStats®.

Apart from the bi-modal behaviour, we can also see that lenders with a solid debt cushion and collateral recover around 85% of their money (the red line illustrated in Figure 3) while lenders with a debt cushion below 50% and no collateral recover only around 32% on average (the blue line illustrated in Figure 3). This information; vital for differentiating between deals; would be hidden within most segment average statistics[4].

[4] Bi-modal LGD distributions have so far been observed in many LGD datasets, including high-default environments like retail or SME. The implications, however, are much more severe in larger obligor lending, where the discrimination of good from bad borrowers should also be based on recovery prospects.

The Framework Solution – Focusing Expertise on the Drivers of Individual Deal LGD Risk

The answer is for the industry to move away from segment averages and to estimate accurate LGD for each deal. However, to achieve this, banks need to support their credit analysts with a rigorous analytical framework that helps them to:

- Ask the questions that are most relevant to the deal in hand in terms of the asset class that it occupies (e.g. corporations versus project finance).
- Bring the risk factors together and assign each of them an appropriate level of importance for the derivation of the overall LGD estimate.

Implementing this kind of framework for LGD analysis need not take long, but it is important that it covers the principal drivers of LGD – some universally important and others more sector specific. In the final section of this article, we therefore look at the top 10 drivers of LGD that tend to get lost in segment averages but that can be uncovered by robust individual deal analysis.

Not every bank will be able to move at once to this kind of sophisticated individual deal analysis. Banks that simply want to improve their look-up tables of averages can pick out the most important steps below for their particular portfolio (e.g. more in-depth jurisdiction analysis to cope with highly international portfolios) and improve the accuracy of LGDs associated with particular deals by adjusting the segment average up or down to capture risk more accurately.

Ten Steps Away from the Average

RECOVERY POOL

The first step is to identify which of the obligor's assets can be regarded as a part of the recovery pool, i.e. the pool of assets that the bank can use to recover its money. This is particularly important with respect to the unsecured part of the loan facility.

Volatility in Value

The best way to define the recovery pool is to work through the balance sheet of the obligor, picking out the relevant assets and assigning a degree of riskiness (i.e. volatility in disposal value). Riskiness can be assessed in various ways, e.g. by considering both the market price volatility of the asset, and the haircut that would be imposed by a speedy disposal.

Franchise Value

For some obligors, an important part of the recovery pool will be the continuing franchise value of the defaulter. For example, a company with a very strong brand in its sector may find that the brand continues to be valuable after default. A broad indication of franchise value can be gained by comparing the market capitalisation of the obligor, which includes the market's appraisal of franchise value, to the book value of the company. The bigger question is how much of this value will be preserved after default, e.g. financial institutions, such as banks or insurance companies, tend to lose much of their brand value after default.

Contracts Can Be Assets

Certain kinds of large obligors will continue to generate revenue long after the moment of default. This is particularly true if they have a product that is always in demand, such as energy, and contracts that they can continue to fulfil. For example, in the case of project finance lending to a merchant power plant, the plant may be selling most of its power to the wholesale market or it may be selling power at a guaranteed price to off-takers like municipalities with low credit risk profiles. The LGD analyst therefore needs to identify the proportion of safer, or even guaranteed, streams of post-default revenue, like the municipality power contracts, as these can reduce the volatility risk of future cash-flows dramatically.

Path Dependency

It is important when evaluating the recovery pool to differentiate between the value of assets in a work-out situation as opposed to an orderly liquidation, or even a fire-sale of debt on the secondary market. As an example, selling real estate from non-performing mortgages during an economic trough tends to lead to a much larger loss than waiting for a more benign period, even after appropriate discounting for the time until recovery.

COMPETING CLAIMS

The next part of the process is to try to understand the claims that other creditors might have on the recovery pool and the debtor's assets more generally, in the event of default. There are a number of dimensions to this including:

Understanding the Creditor Hierarchy

The analyst needs to set out the other types of loan that will have claims on the recovery pool, and understand which will rank higher or lower in seniority than the bank's own facility.

Identifying Your Peers

It's also important to identify the amount of debt that is ranked equal to the bank's own facility, in terms of seniority. How exactly will the recovery pool be divided up among this pari-passu debt?

Checking Up On Collateral

This means totting up the amount and nature of the collateral pledged to other creditors, or even to other facilities extended to the obligor by the analyst's own bank.

Watching Out For Off-Balance Sheet and Other Liabilities

There may be a number of 'super senior' creditors, including the tax man in the case of a corporation. In some jurisdictions outstanding salaries may need to be paid before other debts are taken into consideration. Pension liabilities are another prominent example. In the case of sovereigns, the debt owed to multilateral institutions such as the IMF will nearly always need to be paid back before bank debt is settled.

LEGAL AND POLITICAL ENVIRONMENT

All the factors we have outlined so far must be considered in relation to the particular legal and political environment inhabited by the creditor.

Coping With Countries

Many banks lend to smaller obligors in their home territory while building large obligor portfolios that are more international. So a key issue is identifying the jurisdiction under which each large obligor's insolvency will be managed and characterising the risks that this generates (or defuses). For example, the United Kingdom is generally thought to be creditor friendly, with simple and straight forward rules to the pecking order of creditors, as well as easy and timely access to pledged collateral. In the United States, the process of gaining agreement between creditors is much more tedious, while in countries such as France, Spain or Italy, it can take a long time until the recovery pool is opened to creditors. In emerging markets, the levels of political stability and corruption may need to be considered. The big issue for many banks is the sheer number and complexity of different regimes, with even a medium-sized portfolio of 500 (facilities in a medium-sized portfolio) typically demanding in-depth knowledge of the legal environment in 20 countries (countries the bank's obligor resides in).

LINK TO DEFAULT RATES

Counting Correlation

It is convenient for banks to estimate default and LGD rates separately, and it is also a requirement under the Basel III regulations. However, it makes no sense to ignore the strong empirical evidence that a change in one risk factor often prompts a change in the other. In particular, as default rates rise, the amount that banks lose from defaults in unsecured senior facilities tends to rise. This empirical fact cannot be easily captured because the magnitude of the correlation varies across economic cycles. Furthermore, the relationship breaks down once reasonable risk mitigants, including collateralisation, are in place. In a table of averages approach, based on historical data that may or may not capture a full economic cycle, it is difficult to adjust LGD estimates in order to reflect a downturn scenario, one of the main conditions for the approval of an LGD methodology by the Basel regulators. The best way to approach the problem of default and loss correlation in downturn conditions is to ensure that the mechanism in place produces LGD estimates that have a margin of conservatism via the combination of input factors, rather than by adding a 'downturn-LGD' overlay at the end of the analysis.

Conclusion

The present approach to LGD analysis – look-up tables of segment averages – is deeply flawed when applied to portfolios of large obligors.

The answer is to improve and eventually replace those tables with an accurate analysis of the LGD risk associated with each facility. This analysis should, at a minimum, take better account of the top 10 risk factors outlined in this article.

The potential benefits for the industry are huge in terms of improved risk management and more accurate regulatory capital calculations. Meanwhile, banks that lead the effort to improve LGD analysis can gain competitive advantage from differentiating more accurately between the deals available in the marketplace.

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