Risk Parameter Modeling

The role of correlation in downturn loss given default estimation

History shows that the impact of downturn conditions on loss severity varies across institutions. That's why it's important that every banking institution perform a robust analysis of loss rates and their statistical relationship with default rates and other key risk drivers

Within the banking industry, reduced recovery rates during economic downturns are often a source of unexpected losses. This is because failure to identify the relationship between loss rates and key risk drivers can cause banking institutions to underestimate their capital needs. What's more, data limitations further complicate the loss given default (LGD) modeling process. That's why it's necessary to calculate a downturn LGD in order to ensure that banks have adequate capital and liquidity.

In general, there are three important relationships to consider when modeling LGD: correlation between PD and LGD for the same obligor; LGD correlation among a group of obligors; and correlation between LGD and collateral value.

Measuring the correlation between PD and LGD of various obligors helps determine whether or not LGD becomes increasingly severe as default rates rise. Methods for identifying a relationship between loss severity and default rates include comparing long-run average recovery rates with downturn recovery rates, and conducting a statistical analysis of the relationship between default rates and recovery rates over a complete economic cycle.

Studying the correlation of LGD among a group of obligors helps determine the likelihood that a rise in the LGD of one obligor will be accompanied by a rise in LGD across the group. Techniques for detecting this relationship include identifying the key risk drivers underlying loss rates and studying their relationship. Common risk drivers among a group of exposures can lead to a correlation in loss rates. Also, performing a population stability analysis of loss rates can help determine if loss rates are correlated over time.

The correlation between LGD rates and collateral values helps determine if loss rates increase as collateral values decline. Approaches for studying this correlation include: comparing LGD estimates generated from models that use both average collateral values and downturn collateral values; comparing observed recovery rates, given average collateral values with observed recovery rates when collateral values are stressed; and performing a statistical analysis of the relationship between loss rates and collateral values over a complete economic cycle.

Once any relationships between loss rates, default rates, and other key risk drivers have been identified, they need to be incorporated into LGD modeling to estimate a robust downturn LGD. Common approaches for achieving this involve basing loss-rate estimates on average losses experienced during economic downturn periods and/or estimating downturn LGD by stressing key risk drivers as part of the quantification process. If a bank determines that there is no material relationship between its downturn experience and loss rates, then LGD estimates can be based on long-run default-weighted average loss rates or forecasts that do not rely on stressed risk drivers. Under no circumstances can the LGD for an exposure be lower than the long-run default-weighted average loss rate for that exposure's category. However, in some situations, long-run average LGD will equal downturn LGD.

The Tools You Need, the Experience You Trust

Capgemini's Risk & Compliance practice has developed and validated risk models at a variety of large and mid-sized banks. This experience spans PD, LGD, EAD, RAROC and stress testing models.

Our experience with model implementation has allowed us to build proprietary tools to help jump start your modeling initiative. Capgemini's approach to model development includes the identification of all relevant regulatory requirements to ensure that models exceed supervisory expectations. Additionally, our model development report templates and pre-coded algorithms help keep costs down, while maintaining the highest quality standards.

Capgemini's Data Quality Framework for Risk provides you with our proven data quality scoring methodology to measure and score key risk indicators. Our **Data Governance Framework** can help you manage the different aspects of risk data across your organization. And our **Metadata Framework** lets you gain data consistency and transparency from source systems through report generation.

About the Authors

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