Model Risk Management

Responding to the challenges presented by COVID-19

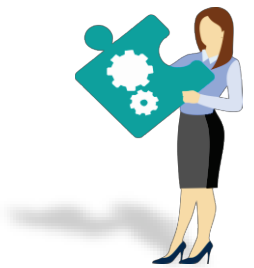
COVID-19 implications for model risk management
June 2020

The COVID-19 pandemic has significantly affected financial markets in the first quarter of 2020. Stock markets have moved sharply and volatility has increased. Bond yields and rates have reached record lows and credit-default-swap indices have been surging, reflecting concerns of increased corporate default risk. This has led to wide-ranging impacts on risk model outputs that are used for risk-weighted asset (RWA) computations as well as for capital and financial reporting.

Risk models that were developed in a pre COVID-19 macroeconomic landscape may not have responded well to current market dynamics, which puts pressure on those responsible for managing and validating these models. In this paper, we set out key impacts on various risk model clusters and argue for an urgent refocus on model risk management (MRM).

Are our models still reliable?

Models by their nature are expected to be relatively stable and work on the law of large numbers, distribution tails, and calibrations to central tendencies. Most banks would not have developed models that would auto-calibrate to US unemployment figures of 15+%, systemic loan payment holidays, loan forbearances, and extreme volatility in financial markets. This therefore renders the following questions: Are risk models still reliable during the crisis? What actions should be taken given their widespread usage in risk management, pricing, financial reporting, and business decision-making?



"COVID-19 may render some risk models and their outputs completely irrelevant and nothing has been done about it yet.... "

Some quick fixes can be applied in the short to medium term to address deficiencies in models; mainly in the form of overlays and adjustments. Longer-term model redevelopments may be necessary after risk models are thoroughly vetted and validated using crisis data. Proactive model risk managers may already be taking actions to escalate issues to management and develop plans for enhancements to increase model reliability.

Additional governance and controls should also be put in place over modified processes and adjustments that may have been implemented to address current model deficiencies in this crisis. For example, independent reviews should be performed on any credit risk model(s) overlays and overrides that may have been applied on top of model outputs to assess the reasonableness of these adjustments. Validation teams may need to move forward model reviews for those models that are deemed more at risk of generating inaccurate results.

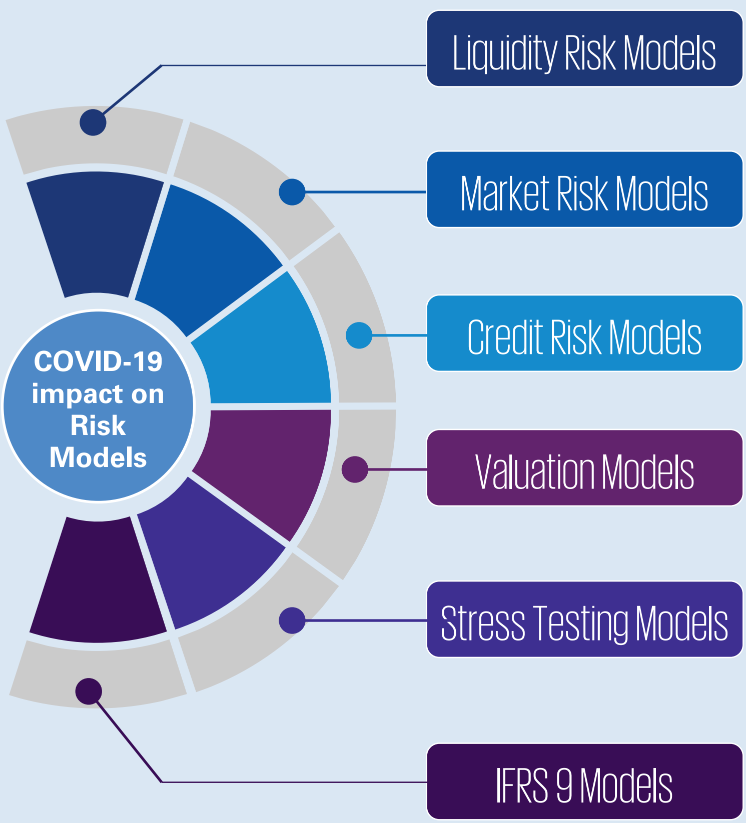
What is our plan?

It is imperative that banks start to formulate comprehensive plans to address risk model issues in the coming few months. These plans should be reviewed and supported by risk committees throughout the banking sector. The following four actions should be immediately taken if they have not already been conducted:

1. Review all risk models, identify those at risk of material output error, and then prioritise models based on materiality.
2. Quickly identify which models are 'failing' and their outputs can no longer be relied upon, and then decide if outputs can be replaced by management overlays or qualitative adjustments.
3. Urgently draw up short-term model "fixes" and more long-term model risk mitigation plans and submit for management approvals.
4. Enhance governance processes where needed and refresh model review and validation plans for those risk models that are affected.

The first reaction to COVID-19-related model risk issues may be to make quick adjustments and overrides, but this may not be sufficient to address longer-term breakdowns in statistical relationships. Some risk models may need to be completely redeveloped or replaced by new types of models. Without urgent and comprehensive model risk management actions banks risk using faulty output and drawing incorrect conclusions on risk.

COVID-19 impacts on risk model clusters:



Liquidity model **assumptions on outflows and inflows**, **large facility draw-downs**, **deferrals in loan repayments**, and potential changing nature of deposit behavior all need to be reviewed and adjusted to incorporate the recent "reality" when forecasting the cash flows for liquidity risk management.

Increased **noise and lack of liquidity in market data**, dispersion of spreads and high market volatility lead to limit breaches, **back-testing outliers** and RWA increases. Remedial actions should focus on exception analysis, re-balancing risk positions (e.g. reducing exposure, VaR / SVaR) and recalibrating models.

Credit models may be the most challenged given their longer update cycles and reliance on historical data. **Government relief measures and other relief schemes may mask credit risk.** Early warning triggers and IRB models may need to be recalibrated to reflect actual default risk in the portfolio.

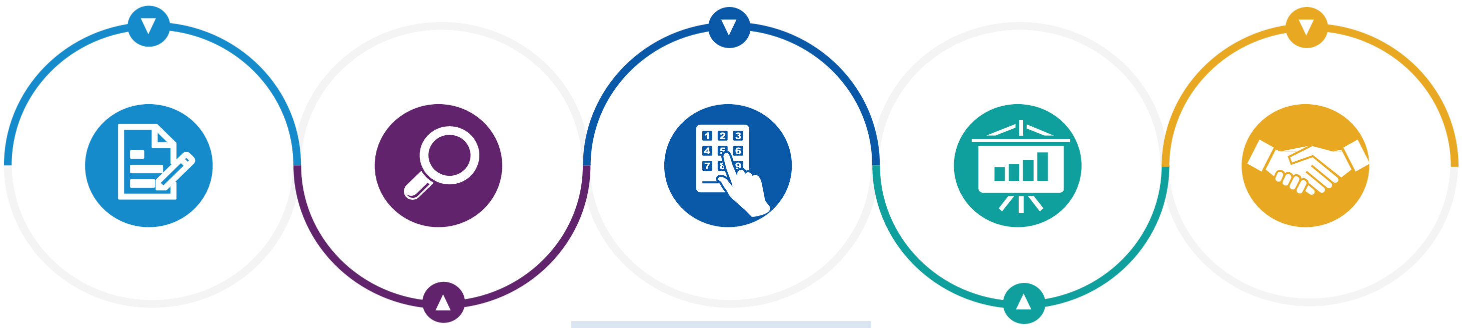
Prudential valuation models should be reviewed with regards to their adequacy and methodology in lieu of the volatile market conditions. **xVA model outputs may cause P&L swings** and will therefore require more frequent monitoring, recalibration and validation.

The rapidly evolving economic situation means that banks **need to reconsider stress scenarios and severity levels** if these models are to be considered insightful for management. **External and internal views on stressed forecasts** should be incorporated into stress tests outputs on capital and liquidity.

Payment holidays, guarantee schemes, rapidly changing economic forecasts, **volatile collateral valuations and credit risk uncertainty** all require additional factors and judgement to be incorporated. In the short-term, post-model adjustments may be required and in the long term, potential model redesign.

COVID-19 Model Review Service

KPMG has developed a tactical model review solution that can be rolled out quickly and cost effectively. **Our service can be delivered in a matter of weeks,** and we can start with one group of models such as IFRS 9 ECL models. We can also help you design more automated validation testing thresholds and reporting to allow model validators to gain efficiencies and thus free up resources for more value-add risk management tasks at the bank.



Model Inventory

Review and create a tiered inventory of all risk models. Identify the high risk models which should be prioritised as well as model dependencies to assess the downstream impact

Model Review

Quickly review model methodology, assumptions and other inputs that are no longer appropriate due to COVID-19 and may lead to inappropriate outputs.

Model Validation

Using our model specific data collection templates and validation tools, we can perform impact analysis and prompt validations via our pre-built quantitative tests to assess the reasonableness and reliability of the risk model outputs.

Recommendations

We will provide remedial recommendations on all model issues identified as part of our model specific validation reporting package.

Handover

KPMG will provide full handover of validation processes when and if requested by the bank, including knowledge transfer. Our tools can also be provided upon request.

KPMG Automated Model Validation Tool

The KPMG automated validation solution is a scalable, fast and automated tool that can be used to support model validation as a service and reduce the time and costs involved with routine model validation. It can cover credit risk, IFRS 9, and other types of risk and predictive models.

KPMG Regulatory Driven Technology Solutions Guide: https://assets.kpmg/content/dam/kpmg/cn/pdf/en/2020/04/regulatory-driven-transformation.pdf

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