

# SS 1/23 is here

Prudential Regulatory Authority spurs  
big change in model risk management



**CRISIL GR&RS analytical contacts:**

**Nageswara Ganduri**

EMEA and APAC Head of Quantitative Services  
nageswara.ganduri@crisil.com

**Jinu Chandrasekhar**

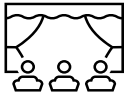
APAC Head, Enterprise Risk and Model Governance  
jinu.chandrasekhar@crisil.com

**Ashok Kumar Subramanian**

UK Lead, Model Risk and Controls  
ashok.subramanian@crisil.com

**Souvik Basu**

Model Governance Expert  
souvik.basu@crisil.com



## Making its debut

The Prudential Regulation Authority's (PRA's) Supervisory Statement (SS) 1/23 on model risk management (MRM) principles for banks, effective May 17, 2024, marks a pivotal milestone in the regulatory landscape.

It establishes enterprise-wide requirements for identifying, measuring, monitoring and controlling model risk across models.

Model risk, driven by increasing reliance on models in banking, is poised to become "a risk discipline in its own right". Recognising this, regulators worldwide are increasingly developing guidelines for its effective management.

SS 1/23 underscores the importance of robust MRM practices, acknowledging that not all models pose the same level of risk.

This paper delves into the key tenets of SS 1/23 and their implications for banks, focusing on model identification and classification, governance, development, implementation and use, independent validation, and risk mitigation strategies.

It emphasises the need for a holistic approach to MRM that aligns with the PRA's mandate.



## Who will SS 1/23 apply to?

SS 1/23 will initially apply to banks with internal model (IM) approvals for regulatory capital purposes. Banks that are applying to use the IM approach will have 12 months to be compliant effective from May 17, 2024.

The principles of SS 1/23 may serve as a standard for governance of models and tools in various industries and sectors, not just limited to the UK banking industry.

Non-IM banks will have to wait to find out how the principles will be applied to them, consistent with the PRA's commitment to implementing regulations in a way that is proportionate to the situation.

Out-of-scope banks should take note of the PRA expectation — irrespective of the scope of application of SS 1/23 and regardless of size, all banks are expected to manage the risks associated with models and apply supervisory expectations relevant to them.



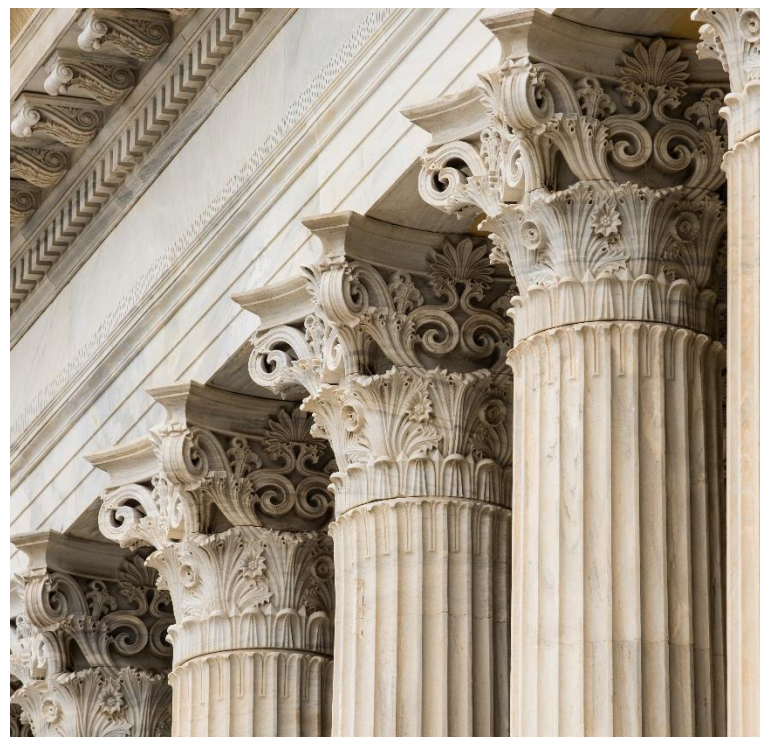
## The five principles of SS 1/23

The PRA sets out five core principles to be adopted by firms, each with several more detailed sub-principles.

The principles outlined encompass the entirety of the model lifecycle, spanning from the initial stages of model development and validation through to ongoing performance monitoring and the reporting of model risks.

These principles are applicable to a wide range of models utilised in guiding critical business decisions, including those specifically employed for financial reporting objectives.

The PRA considers that, taken together, the proposed principles and sub-principles provide an effective overarching MRM framework, to which firms can be held accountable.





## Principle 1: Model identification and risk classification

SS 1/23 broadens the model definition to encompass both quantitative and qualitative outputs, reflecting the evolving nature of models in the banking sector.

The expanded scope of the model definition results in the addition of novel model categories, where output can either be quantitative or qualitative.

In addition, the potential inclusion of deterministic quantitative methods, i.e., non-models, presents challenges in delineating areas governed under MRM.

For banks, this means enhancing the frameworks for model inventory and risk classification.

Banks need to implement a robust model risk inventory platform that aligns with their policies and processes, enabling real-time monitoring of the model landscape, integration of controls and development of risk reporting dashboards.

This wider definition requires the bank to classify models based on their risk profile and implement controls commensurate with their risk level.

Firms must design appropriate conditions for model identification/ recognition. With an expanded model landscape, a robust risk-tiering mechanism covering firmwide inventory is required for optimal allocation of resources and prudent risk management.

They should ensure all models, irrespective of output type, are subject to rigorous MRM practices.

While the broader definition ensures comprehensive coverage, identifying and classifying all models, particularly those embedded in complex systems, can be challenging.

Collaboration between business units, risk management and IT functions is crucial for effective model identification. Standardised risk classification frameworks can aid in efficient model categorisation.

### CRISIL view

Principle 1 defines models considering the rise of new model types, such as climate and financial-crime models, as well as advanced modelling techniques, such as artificial intelligence and machine learning.

Additionally, the PRA acknowledges that deterministic quantitative methods, which are not models, are becoming more complex and statistically oriented due to advancements in technology and data processing capabilities.

It will be a critical and resource-intensive exercise for banks to determine where to 'set the bar' for models to be included in the model inventory and model governance processes under SS 1/23.

Since the PRA's intent is to define 'model' broadly, not narrowly, this will lead to an expansion of the model landscape for banks.

Developing a robust risk-tiering/rating mechanism at the model level, appropriate for each model category under the expanded model scope — covering key risk drivers such as materiality, complexity, uncertainty and reliability — will be another key challenge for banks.



## Principle 2: Strengthening model governance

The principles of SS 1/23 place strong emphasis on model governance, requiring Boards to provide robust oversight of models.

Banks are expected to develop comprehensive frameworks that specify roles, responsibilities and governance mechanisms related to MRM.

The increased emphasis on the Board of Directors' role in overseeing model risk necessitates the design and implementation of enhanced risk appetite metrics.

For banks, this means augmenting the scope of management and Board-level reporting and governance mechanisms to adequately address model risk.

Effective Board oversight requires clear communication and training on model risk. The establishment of a dedicated model risk committee with representation from various functions can facilitate informed decision-making.

The Board should endorse the MRM policy and designate a responsible individual (senior management function or SMF) to oversee the implementation of a robust MRM framework, ensuring the adoption of effective MRM practices.

Further, SS1/23 mandates enhanced governance of third-party models. The requirements include augmenting the existing MRM process to guide the selection, use and ongoing monitoring of third-party vendor models.

### CRISIL view

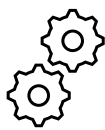
Principle 2 requires banks to establish an overarching risk framework, policies and guidelines, in line with regulatory requirements, to outline the complete process flow for risk identification and quantification.

The PRA mandate is expected to prompt banks to define the model risk appetite statement, design/calibrate risk appetite thresholds and key performance indicators (KPIs), and ensure periodic monitoring through senior committees.

Additionally, roles and responsibilities have to be delineated between the development and validation teams. This necessitates not only the allocation of specific skill sets to each team but also a cultural shift for many banks to ensure independence and objectivity of the functions.

SMF should establish a framework to enable the MRM team to support the members of the internal audit committee in effective oversight, by helping them develop a general understanding of model risk.

An MRM policy and standards for third-party models will enable banks to identify and assess gaps in third-party model information and engage with model vendors to address such gaps. The PRA requires third-party model documentation to be sufficient for independent validation to ensure sufficient knowledge of models including its methodology, output, assumptions and limitations.



### Principle 3: Model development, implementation and use

SS 1/23 calls for banks to implement a robust model-development process that includes defined standards for model design and implementation, model selection, and model performance measurement.

Periodic testing of development data, model structure, assumptions and model outcomes is important to proactively identify, monitor, document and address any limitations or weaknesses in the model.

In terms of model development, implementation and use, the principles of SS 1/23 overlap with the Basel Committee on Banking Supervision's (BCBS) 239 guidelines.

These principles extend the requirements to cover the data used for modelling purposes. This underscores

the importance of data quality frameworks in aiding model development and ensuring the accuracy and reliability of models.

Supervisory expectations around model adjustments necessitate firms to implement a robust mitigation mechanism for addressing model limitations and uncertainties.

Banks must establish a standardised guidance outlining the principles, criteria and objectives for creating and maintaining model documentation.

Documentation must be thorough, current and facilitate comprehension of the model's operations, key assumptions and limitations. It should also enable a skilled practitioner to reconstruct the model effectively and independently by leveraging the model development documentation.

#### CRISIL view

Principle 3 formalises the need for model development data to be suitable, unbiased, consistent with the chosen methodology, and representative of the population to which the model will be applied.

Banks can leverage their existing BCBS 239 compliance efforts to enhance data quality for model development, streamlining compliance efforts across regulatory requirements.

Integrating MRM practices with the existing BCBS 239 compliance programmes can create synergies and optimise resource allocation.

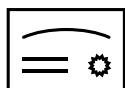
Streamlining data governance practices across all models can further enhance data quality and model performance.

Adjustments (model adjustments and expert judgements) should be understood, monitored and managed with an appropriate plan for remediation.

Banks need to identify model networks and develop a process for assessing network risk design-specific metrics to monitor post-model adjustments (PMAs) and expert judgements.

The inclusion of models and complex 'non-models' in the MRM mix will necessitate banks to address various development-related workflows.

Banks need to establish an appropriate implementation process that is specific to a model family, by outlining the implementation scope and plan. Roles and responsibilities of the stakeholders (such as delivery lead, IT implementation lead, model owner etc.) involved in model implementation must be defined and documented to ensure a robust implementation framework.



## Principle 4: Independent model validation

SS 1/23 highlights the crucial role of independent model validation. Banks should establish a validation function that offers continuous, independent, and robust scrutiny of model development and utilisation.

In addition to independent validation, the validation function is expected to review PMAs and monitor their use, ensuring that adjustments are appropriate and do not introduce additional risk.

With the expanded scope of model definition, firms may have to plan for a substantial increase in model validations and periodic revalidations. This may require a quick ramp-up in validation expertise, resources and appropriate cost-allocation.

Investments in validation expertise, including the use of external validation specialists for complex models, can strengthen the validation process. Additionally, fostering a culture of challenge within the validation function can lead to more robust evaluation of models.

Approval of model usage by the model oversight committee should ensure appropriate implementation of validation suggestions (for identified gaps, redevelopment, etc.) so that the model is suitable for designated use.

Robust controls and oversight mechanisms must be established to prevent unauthorised 'model overrides' to ensure appropriate model usage, leading to accurate decision-making.

### CRISIL view

Principle 4 establishes that banks need to develop standardised validation and monitoring standards, along with documentation template, for consistent and comprehensive assessment of the model.

The supervisory statement requires all models to be subjected to independent validation, determined as per the model's risk profile.

To manage the expanded model estate, banks must prioritise validation controls based on the specific model's risk profile. Banks need to implement both generic and model category-specific standards for validation.

Additionally, a formal reporting hierarchy and performance-monitoring report approval process should be established to ensure that any adverse monitoring outcome is identified and actioned upon, including all third-party vendor models.

Independent replication of model-specific key metrics for model monitoring necessitates the design of 'live' workflows to ensure model monitoring (including performance, tracking of assumptions and limitations, and PMAs) coverage for the expanding portfolio of models and is subject to review by the independent model validation function.

Such a task offers potential for banks to leverage industry experts for automating the workflows and manage resources efficiently.

From an operational point of view, the availability of skilled resources for a robust validation function is crucial.

Banks need to establish a comprehensive resource management process with periodic reviews to ensure adequate availability of expert resources, including industry experts, to ramp up the second line of defence.



## Principle 5: Model risk mitigants

SS 1/23 emphasises the importance of identifying and implementing effective mitigants to manage and control risks arising from the use of models.

This means banks will need to design risk mitigants that encompass various strategies, controls and practices, aimed at reducing model risk and enhancing the reliability of model outputs.

Banks need to develop a robust process for monitoring the use of PMAs. All PMAs will be subject

to independent review, which calls for enhanced oversight by including PMA monitoring as a part of periodic model review.

Model performance must be monitored through pre-determined thresholds. Models with sub-optimal performance should be tracked, escalated for additional oversight, and subject to additional approvals prior to use.

As per supervisory recommendations, banks need to enhance model risk policies to restrict model use when significant deficiencies/errors are identified during the validation process or ongoing monitoring assessments.

### CRISIL view

Principle 5 formalises the need to design an enterprise-wide workflow for applying PMAs to compensate for model-specific limitations.

For sufficient oversight, banks, particularly those with a vast model network, need to document model outputs with and without PMAs.

Banks' MRM policy and procedure documentation must establish a robust process to capture model-specific information on limitations, exceptions and performance-related escalations to enhance governance around PMAs.

The PMA reporting framework should determine whether the tenure of the existing PMAs is suitable for future usage of the model.

Based on the risk profile, PMAs for material models must be sufficiently documented and approved by either the model risk oversight committee or designated SMF.

For each model category, banks need to design a model monitoring framework (including performance, assumptions and limitations, and PMAs) and implement an annual review process.

Banks must establish a workflow to identify and document upstream and downstream dependencies for all models. They should also implement and incorporate dependency check in, in order to identify and mitigate network risk, as a part of model monitoring and annual review assessments.

Overall, the principles emphasise the need for robust processes for managing model risk, including incorporating model risk into financial reporting and external audits. This requires thorough and transparent processes for identifying, measuring and managing model risk.

Banks should develop clear escalation procedures for the identified model risk issues and ensure effective communication with external auditors. Embedding MRM practices within the broader risk management framework fosters a holistic approach to risk management.



## SS 1/23 implementation challenges

Principles	Potential challenges
<b>Model identification and risk classification</b>	<ul style="list-style-type: none"> <li>Identifying and classifying all models, particularly those embedded in complex systems, can be a daunting task. Streamlining data collection and leveraging technology for model inventory management can be helpful.</li> <li>Global systemically important bank (G-SIBs), with a vast array of models, may require sophisticated technology-driven solutions for model inventory management and an advanced risk-based classification framework</li> <li>Smaller banks need to determine where to 'set the bar' for defining models. A simpler inventory management practice may be adopted with a simpler classification process, without losing the rigour of the SS 1/23 guidance. Smaller banks may have limited expertise and resources to address the gaps sufficiently</li> </ul>
<b>Model governance</b>	<ul style="list-style-type: none"> <li>Banks need to ensure that the Board members and SMF designates have the necessary expertise in the MRM practice</li> <li>G-SIBs need to ensure that the established governance structure is reviewed and refined to meet the specific requirements of SS 1/23. This will involve integrating MRM that is more ingrained into the existing risk governance framework</li> <li>Smaller banks may need to establish or overhaul the existing governance frameworks, potentially creating new roles and committees focused on model risk oversight</li> </ul>
<b>Model development, implementation and use</b>	<ul style="list-style-type: none"> <li>Existing data governance practices might require upgrades to ensure that data used in models is accurate, complete and relevant. Collaboration among IT, data management and model development teams is crucial</li> <li>G-SIBs need to adhere to robust development protocols (including establishing a data quality framework, development documentation standards and implementation standards) to ensure that models are aligned with the supervisory standards and business objectives</li> <li>Smaller banks may need to invest in systems and capabilities to establish or enhance procedures for development and implementation</li> </ul>
<b>Independent model validation</b>	<ul style="list-style-type: none"> <li>Banks may need to invest in additional resources or upskill the existing staff to meet the enhanced validation requirements under SS 1/23. Utilising external validation specialists for complex models can be a strategic solution.</li> <li>G-SIBs will need to expand their existing resources to ensure all newly identified models are challenged effectively through validation. G-SIBS will need to invest more by hiring, upskilling or partnering with external validation specialists to manage their complex model network</li> <li>Smaller banks may need to establish a validation function following the SS 1/23 supervisory mandate. Banks will need to tactically partner with industry specialists to overcome any lack of validation and experience expertise</li> </ul>
<b>Model risk mitigants</b>	<ul style="list-style-type: none"> <li>Integrating MRM effectively into the existing governance structures and ensuring clear communication of model risk with the Board can be challenging</li> <li>G-SIBs need to enhance the existing risk mitigation frameworks to include robust controls, usage restrictions and contingency plans, to manage risks appropriately</li> <li>For smaller banks, this may be a new area of engagement, involving additional expertise and resources</li> </ul>

## Partner with CRISIL to be SS 1/23 compliant

### Risk reporting

Establish a reporting framework for senior management, governance forums and Board members

### Inventory enhancement

Conduct an exploratory analysis of in-scope models across business areas to help enhance model inventory. Also, consider non-models as a part of this exercise to determine the adequate requirements for sufficient oversight

### Framework, policy and risk appetite

Enhance model risk framework, policies, standards and risk appetite to cater to increased regulatory oversight and the evolving model landscape

### Independent validation function

Develop standardised validation and monitoring standards, along with documentation template, for consistent and comprehensive assessment of the model



### Gap analysis

Review and prioritise gaps, identify quick wins, and develop plans to address gaps that will require significant implementation effort, including resource availability and experience

### Oversight workgroup

Set up cross-functional steering and working groups to address gaps against regulatory requirements, covering all areas of the bank that could be impacted by the broader definition of an in-scope model

### SMF/ Board engagement

Provide training to the Board and senior management and develop broader communication for colleagues impacted by the new requirements. Enable enhanced oversight through risk-appetite and management information

### Operational efficiency

Review the operating model for the MRM function, designate relevant SMF role(s) and design the governance approach for effective oversight across various teams that develop models

## Conclusion

The principles and sub-principles, outlined in the PRA's supervisory statement, are intended to enhance the MRM framework of banks, integrating 'model risk' as a distinct risk discipline. SS1/23 underscores the regulator's recognition of model risk as a significant risk type. It requires firms to incorporate model risk in their financial reporting and subject it to external audits.

Through SS 1/23, the PRA's intent is to define 'model' broadly to include AI/ML models (with qualitative or quantitative inputs or outputs) as well deterministic quantitative methods, this is a complete departure from how model risk management was defined in SS 11-7. The principles reinforce the growing importance of effectively managing model risk, reflecting the broader trend towards greater transparency and accountability in the MRM practice.

The PRA SS 1/23 embeds the proportionality principle to oversee that the regulatory requirements are proportionate to the size, complexity and risk of the firm. Banks need to assess and identify their respective action items, which may be a challenge.

Partnering with CRISIL will ensure seamless compliance with SS 1/23, mitigating regulatory scrutiny and potential shortcomings.

CRISIL can help banks build a robust framework that identifies and mitigates model risk effectively, fostering long-term confidence in their decision-making capabilities.

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