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Impact of Climate Risk on Balance Sheet Management

Introduction

In June 2022, the Basel Committee on Banking Supervision published a report on "Principles for the effective Management and supervision of climate-related financial risks" recognizing the severity of challenges posed by Climate change for global financial institutions. This report was followed by its earlier publications, "Climate related risk drivers and their transmission channels" and "Climate related financial risks – measurement methodologies".

Climate risk is defined as the potential economic cost or financial losses emerging from climate change, its associated impact and consequences.

But, what does climate risk mean for modern Banking and how challenging is it for the Banks to adopt climate risk as a part of their traditional risk management framework in terms of identification, measurement, monitoring and reporting?

The extant literature on Climate risk identifies two major transmission channels for its impact on Banks and financial institutions - Physical and Transitional.

Physical Climate Risk Drivers are the economic or financial risks emerging from the direct physical damage. For example, a rise in temperature may reduce the productivity of a particular industry affecting a bank's ability to

recover its loans. Transition Climate Risk Drivers on the other hand, impact the Banks through the costs generated in adapting to Climate Change and mitigation efforts. As per the supervisory survey conducted among the members of the Basel Committee, current measurement of climate risk largely takes into account the Transition Risk Drivers with negligible progress in effective measurement or quantification of climate risks caused due to physical drivers. These transmission channels can further be classified as Macroeconomic and Microeconomic transmission channels. Microeconomic transmission channels involve the climate risk drivers that impact individual Banks' and their counterparties. Macroeconomic transmission channels on the other hand affect the Banks through economy wide financial stress caused by Physical or transition climate risk drivers. In order to assess the magnitude of climate risk impact on the financial risk exposures of the banks, understanding these transmission channels is of prime significance. An analysis of literature on this subject suggests that climate risks can directly or indirectly translate into the traditional financial risks through these transmission channels and can be categorised into Credit, Market, liquidity, Operational and Reputational risk.

Our focus in this blog would be understanding the transmission mechanism of climate risk into Liquidity Risk for a Bank, its identification, measurement and reporting framework.

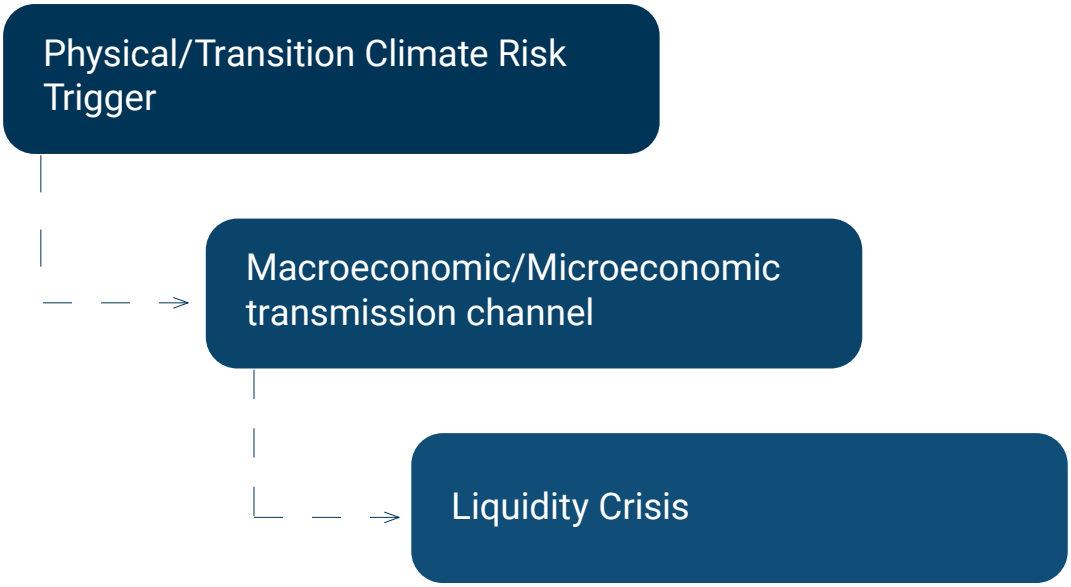
Drivers of a Liquidity Crisis

Climate risk drivers whether physical or transition, can severely affect a Bank's ability to raise additional funds to meet its daily financial obligations with a potential of turning into a full-fledged liquidity crisis.

The review of existing literature provides substantial evidence for the existence of physical drivers such as natural calamities to liquidity risk within Banks. However, there hasn't been much evidence on transition drivers in this regard. Empirical evidence suggests that the natural disasters around the globe or a particular geography can impair a Bank's ability to meet its funding obligations as they come due without incurring unacceptable losses. This might happen due to a huge deposit runoff in the aftermath of a natural crisis owing to a sharp increase in precautionary demand by households and corporates. Precautionary demand for liquidity is likely to increase even by the financial institutions leading to a potential intervention by the Central Bank. As per the Basel report on the climate related risk drivers, some studies indicate a negative and significant impact of the aftermath of a calamity on the liquidity buffers of the financial institutions. This has been explained by an increase in lending following a natural disaster.

Transition climate risks play an equally critical role in driving a liquidity crisis. As the effects of climate change are increasingly felt across the planet, the average mitigation and response costs are likely to see a massive surge in terms of increased carbon emission taxes, surge in global fuel prices in carbon intensive supply chains implying higher firm production costs negatively impacting

their profitability, investments and growth. The increase in the cost of firms would eventually lead to inflationary pressures on the households and fiscal stress on the Government. Thus, transition climate risks can trigger a chain of macroeconomic shocks severely affecting all the economic agents viz. firms, households, government alike. These macroeconomic risk factors can trigger further deposit runoff or large drawdown on the Bank's credit lines. Evidence suggests that the Banks may find themselves unable to access the debt markets or do so at an unacceptable high borrowing costs. This may further prompt other stress factors such as a rating downgrade, deterioration of the Bank's collateral value, exacerbating their ability to secure funding and access liquidity.



Management Framework

Considering the high volatility and uncertainty around the magnitude and timing of climate related risks, banks need to adopt a dynamic and robust risk management framework, developing capacities and processes to identify and assess climate related financial risks that is commensurate with the size, nature and complexity of their business activities. The Basel Committee has published a set of eighteen principles guiding Banks for the effective management of climate risks. These guidelines also aim to improve the much needed existing global banking practices in this area. A broad overview with respect to liquidity risk is outlined as follows:

Governance

- The Basel framework requires the Board and senior management to assign clear set of responsibilities with regards to the effective

monitoring and oversight of climate related liquidity risks across the organisational structure of the Bank. A bank must ensure that the Board and senior management are adequately equipped with necessary skills and training in climate risk management.

- The Banks must ensure appropriate documentation, adoption and implementation of climate risk related policies, procedures and controls. Climate risks must be incorporated across all the relevant functions and business units of the Bank.

- Physical and transition climate risk drivers must be taken into consideration in the development and implementation of Bank's short term, medium term and long term business strategy and planning.

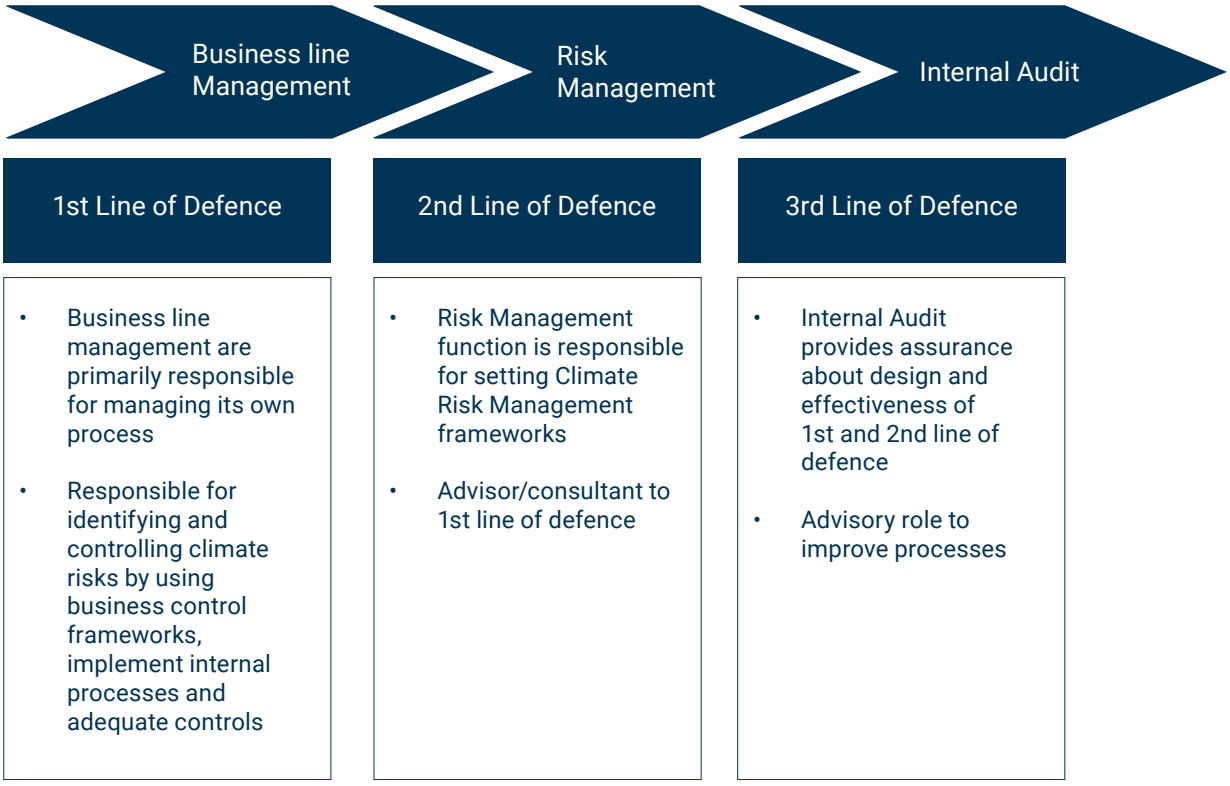
Internal Control

- Climate related liquidity risks should be incorporated into the internal control framework of the Banks across the three lines of defence with a clear definition and demarcation of climate risk related responsibilities.

- The first line of defence can function at the level of client engagement process with respect to on boarding, business approval, credit application, review, monitoring etc.

- The risk and compliance functions in the Bank are the second line of defence that would further conduct independent climate risk assessment and ensure adherence to regulatory and internal policies.

- Internal audit function will act as the third line of defence. It should be responsible for the validation and review of the internal control systems with respect to climate risk management.



Liquidity Adequacy Assessment

- Banks must quantify their climate risk exposures and incorporate those into their Internal Liquidity Adequacy Assessment process (ILAAP).

- Banks must identify the links between the climate and traditional liquidity risk exposure, their drivers and transmission mechanisms. They should work on developing appropriate indicators and key liquidity risk metrics to adequately assess the climate related exposures.

- An evaluation of potential climate risk related net cash outflows or depletion of liquidity buffers in both BAU and stressed conditions is required that may negatively affect a Bank's Internal liquidity assessment process.

Management Methods

The Basel framework requires Banks to establish an appropriate risk management and risk appetite framework for a robust assessment of the climate related financial risks. In implementing a reliable approach to identify, measure, monitor climate risks, banks must put in place systems and infrastructure for aggregating climate related financial risk data. Given the dynamic and uncertain nature of the climate risk drivers, data collection is expected to be one of the most challenging aspects of the risk measurement exercise. Thus, Banks must ensure that adequate IT infrastructure is established for the accuracy, completeness, granularity and reliability of the data. In case suitable data is unavailable, Banks must rely on using sound assumptions and proxies in the models employed for the measurement and management of climate risk.

The subsequent steps in the risk management framework would require Banks to develop qualitative and quantitative metrics for the assessment of climate related risks. As the climate related risk management practices are still in their early stages globally, the consensus on the best measurement practices is still under development. However, as climate risks are expected to eventually translate into the traditional financial risks modelled by Banks, conventional methods for modelling risk can principally be adapted for climate related financial risks. The Basel report on climate risk measurement methodologies provide the following standard approaches relevant for measuring liquidity exposures:

Scenario Analysis

Climate risk scenario analysis considers the projected, forward looking risk outcomes under a variety of physical and transitional risk scenarios. The first step is to identify the drivers of climate risk – physical or transitional. The impact of these scenarios is then linked to the liquidity risks by evaluating the sector or counterparty sensitivities to these drivers. Lastly, the impact of these sensitivities is extrapolated to compute the measure of potential

losses. Scenario analysis should include a wide range of plausible scenarios and must be conducted at different levels of granularity.

Stress Testing

Stress testing exercise is conducted by the Banks on a regular basis for the traditional financial risks. It is essentially a subset of the scenario analysis where Banks assess the resiliency of their liquidity buffers or other liquidity metrics to various levels of Bank specific, Market wide or combined stress scenarios for a range of plausible stress/risk factors. The stress testing can be adapted to include climate related stress scenarios and stress factors.

Sensitivity Analysis

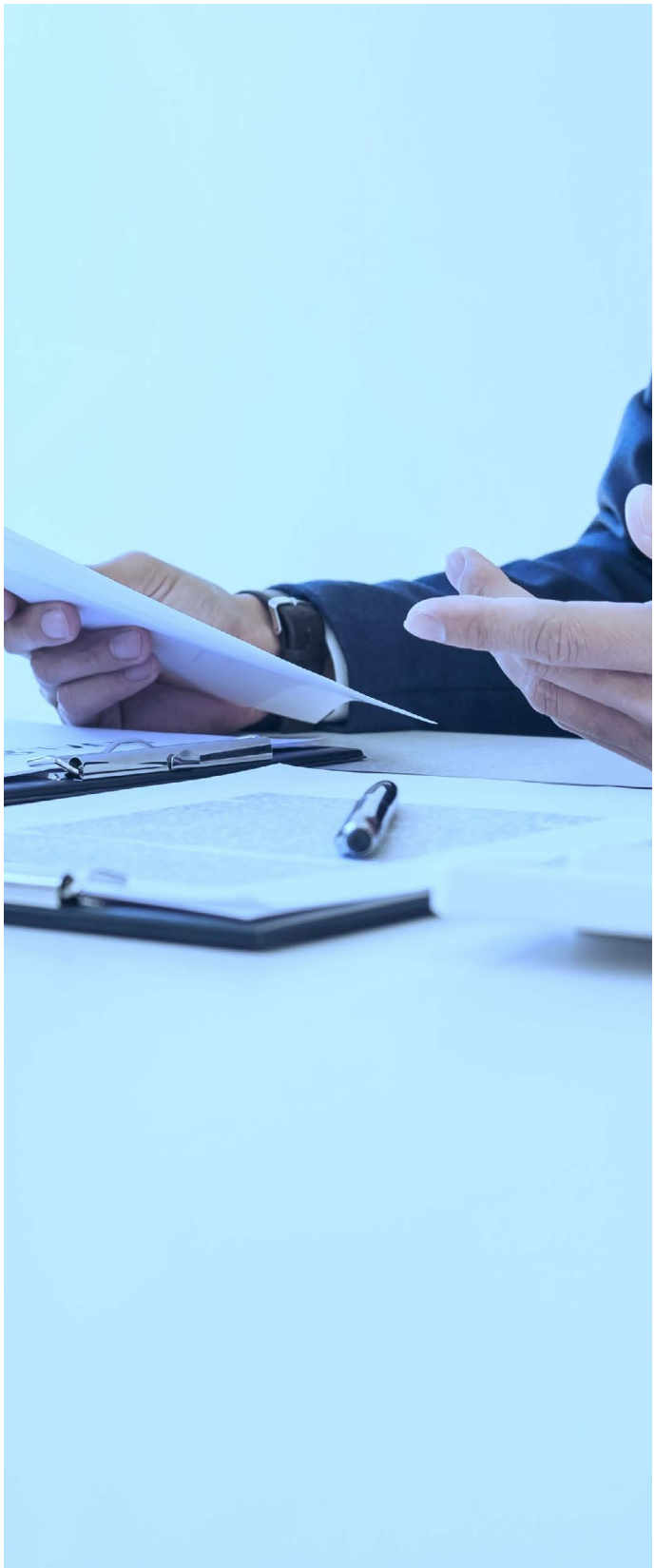
Sensitivity analysis is assumed to be fundamental in evaluating the impact of transition risk drivers on the Bank's overall liquidity adequacy. It can be used to measure the sensitivity of economic outcomes to a number of potential climate related policies such as an increase in carbon tax. It is also a subset of the scenario analysis.

Climate Value at risk

The impact of climate change is quantified using the traditional value at risk approach by computing the value of financial assets over a given time horizon at a given confidence level for a specific climate risk scenario.

Natural Capital Analysis

Natural Capital Analysis involves a portfolio, client or transaction level evaluation to identify the dependencies of the Bank's assets on the natural resources. The process involves a detailed assessment and identification of the relevant borrowers/Assets, geography, sectors that are most affected by an impending climate disaster. Links are established to assess the potential natural disruptions in the identified sectors and portfolio. Such an analysis would prove to be relatively useful for physical risk identification and measurement.



Challenges

Theoretically, Climate risks are often mapped to the traditional risks – Liquidity, Credit, Market, Operational- through a number of microeconomic and macroeconomic transmission channels. However, practical assessment with the existing risk management frameworks would be rather challenging for Banks. Given the high degree of uncertainty and complexity around climate risk drivers in terms of their impact, time horizons, unavailability of historical data, the outputs of the traditional models are expected to be unreliable and inaccurate.

Climate related disclosures and reporting is still under different stages of development across the world and is a relatively recent phenomenon. Therefore, the usability of the available data would pose further methodological challenges. For example, the data available might lack the required granularity or the quality might vary among jurisdictions. Banks should therefore invest heavily on the development of effective system infrastructure in order to address the potential gaps in terms of data reliability, completeness and consistency.

Additionally, climate change is a long term phenomenon which naturally makes the measurement of its impact highly uncertain. It requires Banks to consider relatively longer time horizons than are generally used in the traditional stress testing exercises. Projecting such forward looking outcomes that are so ahead into the future limit their practical use and accuracy.

Beyond the data and methodological challenges, climate risk measurement would also raise operational challenges in processing large volumes of climate specific data that would demand significant investment in human resources, IT systems and operational capabilities.

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