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CCAMTAC Regional Webinar on “Climate Risk Analysis from a Regulatory Perspective”

Wednesday, October 26, 2022

Introduction:

Mr. Norbert Funke, Director, CCAMTAC

Moderator:

Ms. Aliya Kistaubayeva, Economic Analyst, CCAMTAC

Presenter:

Mr. Apostolos Panagiotopoulos, Senior Financial Sector Expert, Monetary and Capital Markets Department, IMF

Climate change presents risks and opportunities for the real economies and financial sectors of all IMF member countries. Understanding the risks is key to preparing for a successful transition to a lower-carbon global economy. Such a transition will introduce new challenges but will unlock the many opportunities for technological progress and structural transformation that will require financial sectors around the world to adapt to and support. IMF's Monetary and Capital Markets Department invests great efforts in exploring the nexus between climate change and financial stability. The regional webinar gives a comprehensive introduction to [IMF's approaches to climate risk analysis in the context of the Financial Sector Assessment Program \(FSAP\)](#).

During the first session of the webinar, Apostolos Panagiotopoulos focused on characteristics of climate risks, their identification, designing of relevant climate scenarios, as well as approaches and modelling methodologies and their impact on the financial system. It is common to distinguish between physical and transition climate risks. While events directly related to climate change (earthquakes, droughts, floods, etc.) bring in physical risks, transition risks result from policy, technology, legal, and market changes that occur during the move to a low-carbon economy. Physical and transition risks are inter-twined, but trade-offs exist between economic and financial effects arising from them.

The first step in climate risk analysis is to assess which climate risks and hazards are the most relevant for the country under consideration. This assessment is based on a climate risk assessment matrix (C-RAM) that IMF staff compile based on aggregate climate risk metrics that can be derived from a variety of sources for transition and physical risk. The next step, a much more complex one is designing climate scenarios, which requires modeling macroeconomic outcomes of physical and transition risk. Finally, to integrate climate scenarios into the stress test of banks, two approaches could be used depending on the level of data granularity. A macro approach is used to map climate scenarios into macro and sectoral scenarios and use the standard stress testing methodologies to assess the implications of climate risks for the banking



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system's resiliency. If more granular data are available, a micro approach can be applied to focus on borrower-level (corporates and households) assessments and their implications for banks. Apostolos Panagiotopoulos explained that the macro approach incorporates the analysis of capital and productivity shocks due to hazard damages on macroeconomic and financial variables using macro models, including single-country Dynamic stochastic general equilibrium (DSGE), global econometric models and several others. Once macro-financial scenarios are built, the standard FSAP stress testing approach for credit and market risks is applied to assess the risks and the impact on bank capital. Overall, it was pointed out that climate risks tend to amplify traditional financial risks, i.e. credit, market, and operational risks, in the form of defaults, the repricing of assets, and increased operational costs.

In the second part of his presentation, Apostolos Panagiotopoulos went over several case studies of climate risk analysis and regulatory challenges related to climate risk assessment. The assessment of physical risk (typhoon) in the Philippines FSAP showed a significant increase in capital damage rate for the country. In the case of Norway FSAP, transition risk was expected to lead to a drop in international credit ratings and increase credit risk impairments, as well as banking losses from oil sector exposures and deterioration of investors' balance sheets. In 2022 the UK FSAP piloted assessing the implications of a "climate Minsky moment" where agents price in upfront the change in companies' prospects caused by shocks associated with technology and/or policy and incorporate the new expected cash flows in the valuations of assets, leading to market and credit losses for financial institutions. The results of different scenarios revealed that banks' corporate loan portfolio and market losses can be rather dramatic.

Climate risk analysis should in principle be informative for supervision and regulation, especially once methodologies are further developed and validated. However, the challenges of climate risk analysis are related to its complexity relative to standard macro-financial modeling in stress testing, its evolving nature, very long risk horizons, and poor quality of data disclosure. This work also requires new expertise in climate science, which can be achieved by collaborating with more advanced counterparts or by extending capacity development demands in relevant area.

During the general discussion, the questions to the speaker covered (i) benchmark carbon prices for countries without developed carbon markets; (ii) the Kyoto Clean Development Mechanism; (iii) the first step to introduce climate risk analysis in a national regulatory framework; and (iv) priority between physical and transition risks.

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