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CCAMTAC- Regional Research/Analytical Economic Policy Seminar Series

“An Estimated DSGE Model for Integrated Policy Analysis”

February 23 and March 9, 2023

Introduction:

Mr. Norbert Funke, Director, CCAMTAC

Ms. Aliya Kistaubayeva, Economic Analyst, CCAMTAC

Moderator:

Mr. Martin Fukac, Resident Advisor, CCAMTAC

Presenters:

Mr. Jesper Linde, Advisor, Monetary and Capital Markets Department, IMF

Ms. Jianping Zhou, Senior Economist, Monetary and Capital Markets Department, IMF

The outcome of any important macroeconomic policy change is the net effect of forces operating on different parts of the economy. A central challenge facing policymakers is how to assess the relative strength of those forces. Dynamic stochastic general equilibrium (DSGE) models are the leading tool for making such assessments in an open and transparent manner. Observing a growing demand for capacity development in developing a DSGE model among the officials in the CCAM region, the IMF's Monetary and Capital Markets Department's team shared their knowledge in developing an estimated model for an integrated policy analysis that is based on [Adrian et al. \(2021\)](#) quantitative model, which draws on the conceptual model by Basu et al. (2020).

During the first session, Jesper Linde and Jianping Zhou mostly discussed assumptions and specifications of a linearized two-country New Keynesian model, consisting of one small open domestic economy and one large exogenous foreign economy (proxied by the U.S.). The key assumptions of the model included incomplete financial markets, imperfect exchange rate pass-through, discounting in IS, PC and UIP curves, micro-founded private and sovereign borrowing spreads, sticky wages, and a role for integrated policy analysis (both interest rate and exchange rate policies). It was explained that the model was designed to analyze monetary policy and financial stability issues and the effects and interactions of various instruments. So far, the model focused on the demand side shocks, but the team is working on adding supply side and commodity shocks.

The second session of the research seminar was devoted to the presentation of estimation results, including the example of Kazakhstan, and the work on the extension of the model.



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The model estimated results for 17 countries, including both advanced economies (AEs) and emerging market economies (EMs). Jesper Linde and Jianping Zhou pointed out that policymakers must be aware that ER depreciation can be contractionary or expansionary for the output gap in the economy, so the impact of the FX intervention can become ambiguous. For some EM countries, ER shocks (depreciation) can cause significant upward pressure on the inflation rate and downward pressure on domestic demand. As a result, when adjusting the interest rate monetary policymakers face a tradeoff. This situation does not occur in the AEs, where the inflation response is muted. When the model estimates systematic FX intervention, even a large number of interventions does not affect the ER and monetary transmission mechanism, if the domestic market is deep enough. Therefore using FXI in a liquid market will not be effective to stabilize the ER, but it can still be a favorable environment to build up international reserves.

Jesper Linde also explained the advantages of introducing the supply side into the model. A model with a supply side allows us to capture the effects of supply-side changes due to reforms or real convergence (technological catching-up). In addition, it allows for explaining episodes with high economic growth and low inflation. Adding a supply side allows making estimations without prefiltering the data. Fairly straightforward to implement in closed economy models, adding the supply side can be more challenging in an open economy setting, where one country may experience stronger growth than foreign trading partners for some time.

The subsequent discussion focused on technical aspects of the presented estimated DSGE model, such as getting several optimum levels with estimated structural parameters and dealing with structural breaks.