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"DSGE Model with Fiscal Block: The Case of Kazakhstan"
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Moderation:

Mr. Nurdaulet Abilov, Economist, CCAMTAC

Presenters:

Ms. Aigerim Rysbayeva, Senior Economist, Research and Statistics Department, National Bank of Kazakhstan

Mr. Sabit Khakimzhanov, Advisor to Governor, National Bank of Kazakhstan

Intervention:

Mr. Saba Metreveli, Economist, Monetary Policy Department, National Bank of Georgia

In this research seminar, economists from the National Bank of Kazakhstan (NBK) presented a benchmark small-open-economy DSGE model augmented with a rich fiscal block to study alternative ways of financing an increase in government spending. The model features optimizing households (Ricardian and non-Ricardian), monopolistically competitive intermediate firms with Calvo price rigidity and indexation (yielding a domestic Phillips curve), a standard Taylor-rule monetary authority, and an explicit government sector with VAT, personal income tax (PIT), lump-sum taxes, domestic debt issuance, and transfers from the sovereign oil fund (National Fund). Market-clearing conditions close the system. The National Fund's accumulation/decumulation is modeled via an accounting identity: foreign asset returns plus new oil proceeds minus transfers to the budget; the transfer rule combines a fixed share of the fund with a discretionary component to reflect observed practice. Tax rules are written in "Taylor-style" form with inertia and feedback on the deviation of debt from steady state, allowing the authors to trace macro-fiscal dynamics under alternative policy paths.

Calibrated to Kazakhstan's structure, the model analyzes a 1% of GDP increase in government spending (treated as transfers to households) financed in five distinct ways: (i) debt, (ii) lump-sum taxes, (iii) National Fund transfers (oil revenue), (iv) higher VAT, and (v) higher PIT, as well as combinations of debt and taxes. The fiscal transmission runs through demand, inflation, the policy rate, the exchange rate, and external trade. Because the spending shock raises demand, domestic inflation increases and the Taylor rule produces a higher policy rate; with tighter rates, the exchange rate appreciates and imports rise, especially when the National

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Fund is used (owing to higher foreign-currency cash flows and the import intensity of demand).

From a growth/impact angle, the largest short-run multipliers on (non-oil) GDP arise when financing mixes debt and lump-sum taxes; from a debt angle, relying on National Fund resources produces the lowest domestic debt accumulation but is associated with stronger exchange-rate appreciation and higher imports. From a price-stability angle, using oil-fund transfers tends to deliver the lowest inflation outcome after a spending shock—relevant if the policy priority is strict inflation targeting. From a household-welfare angle, results depend on whose welfare is prioritized: maximizing non-Ricardian welfare points to VAT financing, whereas maximizing aggregate household welfare favors the scenario that includes PIT in the mix. The presenters emphasized that there is no one-size-fits-all answer: the "best" financing option depends on the policymaker's objective function—price stability, near-term growth, debt containment, or distributional goals.

Saba commended the structure and suggested extensions reflecting small-open-economy frictions typical for emerging markets: (i) dollar invoicing in trade pricing, which weakens expenditure-switching and slows/tilts exchange-rate pass-through; and (ii) UIP smoothing/adjustment costs to temper capital-flow and exchange-rate responses. He encouraged the team to show impulse responses under these frictions and to consider estimating key commodity and fiscal elasticities (e.g., via a compact, linearized version) rather than relying only on calibration. He also asked how oil prices/production and National Fund transfers are modeled (separate shocks vs. a single fiscal-revenue shock) and whether transfers are rule-based or state-contingent. Finally, he raised the issue of fiscal–monetary interactions and episodes of fiscal dominance, asking how the model separates fiscal impulses from monetary reactions.

The authors noted the current version is calibrated (to study dynamics and trade-offs) but is suitable for estimation in future work. Monetary policy is a standard Taylor rule; fiscal dominance/coordination is not the focus in this benchmark. The National Fund transfer rule has two parts—a fixed share and a discretionary add-on—chosen to mirror real practice; the National Fund itself is modeled by accounting identities (no separate "fund shock"), while the main policy experiment is an exogenous government-spending shock with inertial tax rules feeding back on debt. They underlined three messages: (i) using oil-fund transfers can help contain inflation after a spending increase, but tends to appreciate the currency and raise imports; (ii) raising taxes and/or issuing debt now and servicing with future taxes can dominate oil-fund financing when long-run trade-offs and debt dynamics are considered; and (iii) fiscal rules should look at net government position (including the Fund), keeping the non-oil deficit at levels consistent with macro-stability and trend growth.