

## **Title: “Monetary and Fiscal Policy in Small Open Economies”**

### **Abstract**

This dissertation studies monetary and fiscal policies jointly, with their respective policy rules in a small open economy. Policy interactions have attracted new research interest since the 2008 crisis due to a global increase in fiscal debt. The first chapter extends the standard New Keynesian model of a small open economy with the structural specifics relevant for emerging market countries: two instruments of monetary policy – interest rate and foreign exchange interventions, two instruments of fiscal policy – public consumption and public investment, two types of households – forward-looking and rule-of-thumb consumers, and foreign debt via collateral constraint. Imperfect capital mobility is assumed, as foreign borrowings are restricted and there is a positive steady state difference between the domestic and foreign interest rates, due to more impatient households in the domestic economy. Parameters are calibrated for Hungary and the model's simulation is compared between two cases: with and without a collateral constraint.

The results show that fiscal and monetary policy shocks transmit to the economy differently from the standard Mundell-Fleming model. A positive public investment shock can cause exchange rate depreciation and crowd out private capital, expanding output due to the accumulation of public capital. Public consumption, in contrast, alters the demand side of the economy, appreciating the exchange rate and stimulating foreign debt. A monetary policy shock as a sudden increase in the domestic interest rate affects the main variables consistent with the New Keynesian prediction of nominal rigidities, yet the dynamics of foreign debt depend on whether a collateral constraint is on or off the model. The collateral constraint makes the model volatile, due to its Lagrange multiplier entering the uncovered interest rate parity and affecting the exchange rate.

The second chapter expands the model further by concentrating on a subset of developing countries that export oil. Thus, the oil production sector, a Sovereign Wealth Fund (SWF), and a world oil price shock are additionally included. The two types of monetary policy rule, CPI targeting and product price targeting (PPT) according to Frankel and Catao (2011), are examined across exchange rate regimes and pro/counter/acyclical fiscal stance based on a loss measure. The loss measure is, according to De Paoli (2009), represented as a sum of variances in domestic price inflation, aggregate output, and real exchange rate that is minimized to find the optimal Taylor rule in a small open economy.

Based on calibration for Kazakhstan, the study reveals that the best policy combination is a countercyclical fiscal stance and managed exchange rate regime with the PPT monetary anchor. This allows the fiscal policy to countercyclically offset a volatile terms of trade shock, to which developing countries are often exposed. It also allows the exchange rate to be managed by the central bank's interventions, which seem beneficial in providing a stable exchange rate since the economy borrows from abroad, imports foreign goods, and depends on the world oil price. It also suggests the appropriate monetary policy to target product price inflation, which includes oil price inflation that is important for the oil sector's exports and delivers a better stabilization of exchange rate than the CPI anchor.

However, if a flexible exchange rate regime is institutionally chosen, then the CPI targeting should be adopted, since it effectively stabilizes the domestic price inflation and aggregate output.

The third chapter in this dissertation finds an optimal public investment path for resource-rich low-income countries by modifying a perfect foresight general equilibrium model of Berg, Portillo, Yang, and Zanna (2013) in several respects: The policy rule for public capital is introduced. Public capital accumulation involves the effective public investment with its absorptive capacity constraint costs captured by a single parameter. External saving is an additional fiscal instrument which clears the government budget. There is a variable share of resource revenues to accumulate the SWF, and the natural resource sector has its real FDI shock. Based on calibration for African countries, the study finds that the front-loaded public investment path is optimal given an initial one-period resource windfall, absorptive capacity constraints in the economy, and capital scarcity. This result also holds under less productive public capital, while a scenario of no resource windfall produces the welfare loss due to a steady increase in consumption tax to finance public investment.