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Monetary policy in a model with commodity and financial markets

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Uncovering the key drivers of business cycles of commodity exporting economies continues to dominate the literature on small open and emerging market economies. We contribute to this strand of the field by providing an analysis for the economic behavior of a major commodity exporter such as South Africa by developing a general equilibrium small open economy model that embeds key characteristics of the South African economy to analyze the main determinants of macroeconomic variables fluctuations while also paying attention to the role of monetary stabilization policies in mitigating shocks to the economy.

Recent studies found that commodity prices and global financial conditions are the main transmission channels in South Africa. In the literature, a commodity price shock can entail two main effects, viz., a competitiveness and a borrowing cost term effects in explaining key business cycle facts of procyclicality in main macro variables together with a countercyclical trade balance effect together with an ensuing real exchange rate appreciation and hence disinflationary pressures.

We add to the literature by firstly, formulating a model that depicts the dual sector feature of the South African economy, a non-commodity and a distinct commodity sector which produces output which is consumed both locally and for exports since the export component of South Africa roughly consists of 60% commodities. Secondly, in line with the current strand of the literature to incorporate financial markets in macro models, we make a distinction to the types of access to finance that the commodity and non-commodity sectors face. Within the commodity sector, many mining companies have their assets held by the global leading miners such as Rio Tinto, Xtrata, Anglo American and BHP Biliton among others. Their businesses range from platinum to gold, coal, industrial metals and minerals. These firms are all listed and they have no problem in raising equity and/or debt finance and hence can borrow internationally. While according to the World Bank report on small and medium enterprises (SMEs) finance which mainly consist of manufacturing non-commodity sector, these smaller firms are less likely to be able to secure bank loans than large firms. They find that 50% of formal SMEs in emerging economies don't have access to formal finance. The sectoral features are that the large companies dominate the commodity sectors, while SMEs populate the non-commodity sector which faces a credit friction in the local economy. Lastly, we analyze how Taylor rule targeting inflation compares to price-level and nominal GDP targeting rules for interest rates to stabilize the economy when faced by commodity price shock among a number of other important shocks.

The results from estimating the model on South African data outline few key contributions to the literature. We outline a novel effect in this paper which we dub the financial market effect following a positive commodity price shock that decreases the credit premium and hence exacerbate the commodity price boom. However the Dutch disease negative sectoral downturn affects entrepreneur credit together with disinflationary pressures of a real exchange rate appreciation. This opens the role for stabilization policies which we analyze comparing the aforementioned three types of monetary regimes. We find as conventional wisdom suggests that a hypothetical Taylor rule targeting the price-level allows for adjustment in inflation expectations that can dampen disinflationary pressures following a commodity price shock that entails real exchange rate appreciation. Furthermore, due to smoother change in nominal rate of interest, there is lesser variability in financial markets. These results altogether add to the literature on the interaction of commodity and financial markets while providing key insights into the role of monetary stabilization polices.