

# ***A DSGE MODEL FOR AN EMERGING OPEN ECONOMY OIL-PRODUCER: FOREIGN EXCHANGE INTERVENTIONS AS A POLICY INSTRUMENT***

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## **Overview**

Recent developments in the international commodity markets have stimulated renewed interest in the study of the impact of large external shocks on resource rich economies. The Nigerian economy is heavily dependent on revenues from oil exports and is therefore considerably vulnerable to oil price fluctuations. Over the past four decades, oil and gas revenues have accounted for about 80.0 per cent of total government financing and earned around 90.0 per cent of its total exports. With proven crude oil reserves estimated at 37 billion barrels and a production output of approximately only 2.5 million barrels of crude daily (OPEC Annual Statistical Bulletin 2015), Nigeria remains a 'price-taker' subject to the interplay of market forces which are determined by the dictates of dominant producers and the global demand for oil and gas. Consequently, the mono-product nature of exports and fiscal revenue in the economy makes macroeconomic outcomes susceptible to the vagaries of oil prices.

This paper develops an open-economy DSGE model of an emerging oil-producing economy and incorporates a number of features important for emerging economies in general and the Nigerian economy in particular: a large proportion of credit-constrained consumers, incomplete exchange rate pass-through, oil revenue and foreign exchange (FX) interventions a second monetary instrument. FX interventions has been extensively used as a policy instrument to manage the impact of capital flows on the exchange rate in emerging economies with questions raised regarding the effectiveness of such a tool.

The DSGE model for an oil exporting economy in this paper follow the prototypical new-Keynesian framework of the open economy (Gali, 2008). Given the peculiar structure of the domestic economy, the research highlights the efficacy of macroeconomic management, albeit large external shocks. The rest of the paper is organized as follows. Section 2 presents the oil exporting emerging economy model used for the simulations which are reported and discussed in Section 3. Section 4 concludes.

## **Methods**

Dynamic Stochastic General Equilibrium Models.  
Simulation method.

## **Results**

The model confirms some recent conclusions in the literature on the benefits of FX interventions by central banks that respond to significant external shocks which may drive sudden and huge capital flows. Foreign exchange interventions can be useful depending on agents perceptions' on overall policy objectives. Therefore, FX interventions may be used to support the achievement of inflation stability and output goals of a central bank.

## **Conclusions**

Developments in New-Keynesian DSGE models have improved how optimising agents are modelled with the ultimate goal to provide a better informed framework for policy decision making. Incorporating the peculiar features of oil exporting economies further supports this conclusion. FX intervention can be incorporated as an additional policy instrument into an emerging oil exporting economy DSGE model with an inflation objective.

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