

Exploring the oil prices and exchange rates nexus in some African economies

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Abstract

This paper investigates the relationship between oil prices and exchange rates in three African countries using a Vector Autoregressive (VAR) model. We use daily data on nominal exchange rates, oil prices and short term interbank interest rates from 01/12/2003 to 02/07/2014. The results suggest that the exchange rate of the three selected countries behavior is different in the event of an oil price shock, not only before and after the oil peak of July of 2008, but also between each other. Therefore, no general rule can be made for net oil importing sub-Saharan countries, such as Botswana, Kenya and Tanzania. We conclude that after an oil price peak, the Botswanan pula clearly appreciates against the US dollar, the Kenyan and Tanzanian shilling.

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1. Introduction

Oil is one of the most important natural resources in the modern economy and also it is becoming more and more relevant for developing countries, which already account for more than

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a half of world total oil consumption. For example, in 2013 the total oil demand in the world increased by 1.4%, and more than a half of this growth was due to the non-OECD countries. According to [Energy Information Administration \(2014\)](#), most of the oil consumption growth is due to the increased demand in developing countries¹

In this paper we focus on some African economies. Accordingly to the [World Bank Africa Overview \(2014\)](#), it is crucially important the improvement of policymaking in order to assure the economic stability of the region². In this sense, the main motivation of the paper is to explore the nexus between exchange rates and oil prices in this continent, where so little has been done on policy improvement. The continent needs a better analysis of factors that may affect their economic stability, such as oil price shocks. [The Economist \(2013\)](#) gives us an insight of what perspectives may be waiting for African countries in the coming years. We may expect an African economic boom because a lot of improvements have taken place in the last decade: school enrolment is growing, new roads are being built, more democracies and civil activists have appeared in the continent and much fewer wars are now in course.

In sum, oil consumption has been growing in Africa during the last five years, and it is expected to remain at similar levels in next two decades, according to [Energy Information Administration \(2014\)](#). Oil consumption in sub-Saharan countries will continue growing, as well as sensitivity to oil price shocks. The novelty of this paper is precisely to study oil price shock effects in these countries with a standard methodology widely applied for the study of developed and developing countries.

The present paper investigates the relationship between oil prices and exchange rates in three African countries (namely Botswana, Kenya and Tanzania)³. We use a Vector AutoRegressive (VAR) model to evaluate the impact of oil prices on exchange rates, taking into account the role of interest rates. We do not only want to find a relationship between exchange rates and oil prices, but also with the interest rates of the country, in order to study in what way oil prices might affect or not the state of the economy through inflationary pressure ([Bernanke, Gertler, & Watson, 1997](#)). We are aware that monetary policy can play a determining role in the exchange rate in the event of disturbances which may come through the trading balance, such as an oil price shock, and it is not only the case of giants such as China ([Huang & Guo, 2007](#)), but also of small countries as the case of Fiji islands, studied by [Brahmasrene, Huang, and Sissoko \(2014\)](#). We select daily data on exchange rates and short term interest rates for Botswana, Kenya and Tanzania, from 01/12/2003 to 02/07/2014. To our knowledge, our research is the first to analyze exclusively these three African countries using daily data, with a sample period which covers the recent oil price dynamics over the period 2003–2014. [Coleman, Cuestas, and Mourelle \(2011\)](#) also study a pool of thirteen African countries, but they use monthly real effective exchange rate and monthly interest rates and they only overlap with our study in the case of Kenya. The other interesting paper, following a similar methodology, is [Hacihasanoglu, Turhan, and Soytas \(2013\)](#). These authors study a set of emerging countries, but only select Nigeria and South Africa. The other difference with our work is that while we only select oil importing countries, their data set has a large presence of oil exporting countries, also starting in 2003 (01/03/2003), but ending in 06/02/2010.

¹ For more information, see the report International Energy Outlook 2013 ([Energy Information Administration \(2014\)](#)).

² For more information, see [World Bank Africa Overview \(2014\)](#).

³ Previous studies have documented the relationship between oil prices and macroeconomic and financial variables ([Hamilton, 1983](#); [Bollino, 2007](#); [Zhang, Fan, Tsai, & Wei, 2008](#); [Jouini, 2013](#)).

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