Financial Development and Economic Growth in a Natural Resource Based Economy: Evidence from Angola

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FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN A NATURAL RESOURCE BASED ECONOMY: EVIDENCE FROM ANGOLA

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This paper analyzes the relationship between financial development and economic growth in Angola, an economy heavily dependent on natural resources. We extend existing literature by treating separately the oil and non-oil sectors of the economy. We test for Granger causality between three variables – oil revenues, non-oil GDP and financial development – for the Angolan economy for the period 1995-2012. The results show that the oil sector has been the great engine of Angolan economic growth, since we identified Granger causality from oil revenues to the other two variables, but none of these variables Granger causes oil revenues. On the other hand, financial development does not seem to have a significant role in economic growth in Angola: it does not Granger-cause either oil revenues or non-oil GDP, even though it is Granger-caused by both variables.

**Keywords:** Financial Development, Economic Growth, Natural Resources, Angola

**JEL Classification:** E44, O16, O43, Q32
1. INTRODUCTION

The existence (and the direction) of causality between financial development and economic growth has long been a subject of debate. The basic arguments point to the fact that financial development may promote economic growth through improved resource allocation efficiency, but economic growth also leads to increased demand for credit that should support the development of the financial sector.

Despite numerous studies, the question of cause and effect remains the subject of debate in the literature (see next section for references). However, most of this literature is based on cross-section or panel data that mixes information from different countries, with different economic structures, a feature that could be at the origin of the mixed results.

In particular, the financial sector / economic growth causality is likely to be different in natural resource-based economies than in non-resource based economies. In an economy largely dependent on natural resources (for example, oil), it is very unlikely that financial sector development has a significant influence on overall growth. The growth of the oil sector (and thus, the growth of the overall economy, if the economy is oil dependent) is mostly determined by the evolution of external markets for that commodity, and, as such, it is unlikely that the development of the domestic financial sector has a significant effect on overall growth.

But what about the relation between financial development and the rest of the economy (the sectors not directly related to oil production)? Does causality from financial development to the growth of the non-oil sector (or vice-versa) exist? The answer to this question may have important development policy implications. The growth of the non-oil economy may have a small impact on the (current) growth of the overall economy due to its small relative size, but it is the most important from a development perspective, especially in economies based on non-renewable resources (like oil), since future growth will depend more and more on the non-oil sector.

The main contribution of this paper is to provide an innovative approach to the financial development / economic growth debate, using evidence from the Angolan economy. The majority of the previous work is based mainly on two-variable models, looking at the relationship between financial development and economic growth. We use a three-variable model by separating the oil and non-oil sectors of the economy and analyzing the causality between these two sectors and the financial sector. Specifically, we test for Granger causality between three variables – oil revenues, non-oil GDP and financial development – for the
The Angolan economy for the period 1995-2012. The separation of the oil and non-oil economy allows for a more complex relationship between financial development and economic growth, allowing for different causalities between financial development and the oil and non-oil sectors, and allowing for the identification of the role of the oil economy as an economic driver in Angola.

The rest of the paper is organized as follows. In section 2 we provide some context on the Angolan economy and on the literature on the relationship between financial development and economic growth. In section 3 we present the methodology we used. Section 4 presents the main results from the estimation of our model, while section 5 is dedicated to the discussion of these main findings. Section 6 concludes.

2. CONTEXT

In the first decade of the twenty-first century, GDP growth in Angola has been one of the highest in the world. The main driver of growth in Angola has been the oil sector, which represents more than 50% of the Angolan economy, fostered by the increase in oil prices during that period (CEIC, 2013). Furthermore, the importance of oil for the Angolan economy is larger than its direct value added contribution to GDP, because over 50% of public investments are financed by oil revenues (CEIC, 2013). During the same period, the financial sector in Angola transformed from virtually non-existent to one of the largest in Africa, with 6 of the 23 Angolan banks in the Top 100 of Africa’s largest banks in 2011 (KPMG Angola, 2013).

The importance of natural resources (especially oil, but also diamonds) in the Angolan economy is widely recognized (see, for instance, International Monetary Fund 2014), but the effects of abundant natural resources on economic development are not necessarily positive. There may be a “resource curse”, i.e. a negative correlation between resource abundance and economic growth, especially in the absence of strong domestic institutions (see, for instance, Frankel 2010, Boyce and Emery 2011, Atkinson and Hamilton 2003). On the other hand, Brunnschweiler (2008) found a positive direct empirical relationship between natural resource abundance and economic growth. Agnani and Iza (2011) showed that in oil-dependent Venezuela economic growth was largely due to the development of non-oil GDP, and the behavior of the non-oil sector can largely be explained by the evolution of total factor productivity, which in turn could be influenced by the development of the oil sector. Thus, the
existing literature suggests that economic growth in countries with abundant natural resources depends on how the effects of the resource-based sectors are transmitted to the non-resource based sectors.

The financial sector may play an important role linking the resource-based sectors to the non-resource based sectors, namely by efficiently allocating the surpluses generated in the former sector to projects in the later sector. The positive effects of financial sector development on economic and productivity growth have been identified by many authors, such as King and Levine (1993), Pagano (1993), Levine (1997), Levine et al. (2000), Beck et al. (2000) and Deidda (2006). Other authors have identified bidirectional causality between financial sector development and economic growth (Demetriades and Hussein, 1996; Calderón and Liu, 2003; Fowowe, 2010; Raz, 2013; Rufael, 2009; Ang, 2008; Ang and McKibbin, 2007; Yang and Yi, 2008; Zhang et al., 2012; Ma and Jalil, 2008).

On the other hand, some authors have questioned the existence of causal relationship from financial development to economic growth (Disbudak, 2010; Ho, 2002; Loayza and Rancière, 2006; Odhiambo, 2008; Odhiambo, 2010). Others found no causality in the short term, but identified a long run causality between financial deepening and economic growth (Christopoulos and Tsionas, 2004; Bangake and Eggoh, 2011). Hassan et al. (2011) found bidirectional causality between financial development and economic growth in most regions, but found no causality from financial development to economic growth in sub-Saharan Africa.

Overall, the review of existing literature indicates that the debate regarding the importance of financial sector development for economic growth is still open. This mixed evidence could be the result of financial factors having a smaller role in economic growth than some economists expect, as Lucas (1988) considered. Or it could be the result of our limited understanding of how and why financial development brings about changes in the behavior of agents and the economic factors that ultimately leads to economic growth (Yang and Yi, 2008; Wachtel, 2003). Odhiambo (2008) claims that previous studies have shown that causality between the variables may differ from country to country and from time to time, and that, in addition to the methodology used to examine the link between financial development and economic growth, the direction of causality is quite sensitive to the choice of variables, and in particular, to the potential omission of an important third variable that affects both economic growth and financial development.

In this paper we explore the possibility that the relationship between financial intermediation
and economic growth is more complex than a simple bivariate model can capture, and that it depends on the specific conditions of each country. In particular, we explore the role of the oil sector in the Angolan economy in a three variable model that allows for different relations between the financial sector and the oil and non-oil sector.

3. METHODOLOGY

In order to analyze the relation between financial development and economic growth in Angola, during the period 1995-2012, we test for Granger causality between three variables: financial development, oil revenues and non-oil GDP.

Financial development is measured by the ratio of monetary aggregate M2 to GDP, following Outreville (1999) that considers this the most adequate measure of financial development and deepening. The growth of the oil sector is measured by oil rents per capita, while the growth of the non-oil economy is measured by the variable real non-oil GDP per capita, defined as the difference between total GDP and oil rents. All variables are in constant 2005 US dollars, and data were obtained from the World Bank: World Development Indicators database.

Following Odhiambo (2008) and Raz (2013), we used the following three variable model to test for Granger causality between financial development and economic growth in Angola:

\( \text{GDP}_{Cnp_t} = \delta_0 + \sum_{i=1}^{n} \delta_{1i} \text{GDP}_{Cnp_{t-i}} + \sum_{i=1}^{n} \delta_{2i} \text{M}_{2} / \text{GDP}_{t-i} + \sum_{i=1}^{n} \delta_{3i} \text{OR}_{t-i} + \mu_t \)

\( \text{M}_{2} / \text{GDP}_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} \text{GDP}_{Cnp_{t-i}} + \sum_{i=1}^{n} \beta_{2i} \text{M}_{2} / \text{GDP}_{t-i} + \sum_{i=1}^{n} \beta_{3i} \text{OR}_{t-i} + \epsilon_t \)

\( \text{OR}_t = \gamma_0 + \sum_{i=1}^{n} \gamma_{1i} \text{GDP}_{Cnp_{t-i}} + \sum_{i=1}^{n} \gamma_{2i} \text{M}_{2} / \text{PIB}_{t-i} + \sum_{i=1}^{n} \gamma_{3i} \text{OR}_{t-i} + \nu_t \)

Where:

\( \text{M}_{2} / \text{GDP}_t = \text{Ratio of monetary aggregate M2 to GDP in year } t. \)

\( \text{GDP}_{Cnp_t} = \text{Non-oil GDP per capita in year } t. \)

\( \text{OR}_t = \text{Oil rents in year } t. \)

\( \mu_t, \epsilon_t \) and \( \nu_t = \text{mutually uncorrelated white noise residuals.} \)
Before performing the causality test, we examine the stationarity of each time series testing for the presence of a unit root, using the augmented Dickey-Fuller (ADF) test, with a significance level of 5%, following MacKinnon (1996).

4. RESULTS

Table 1 presents the results of the ADF tests. The null hypothesis of existence of a unit root is not rejected for the three variables, implying that the time series of each variable is non-stationary in levels. However, the null hypothesis of an unit root is rejected for the variables in first differences, meaning that all variables are I(1), integrated of order one.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levels</th>
<th>First differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2/GDP</td>
<td>-2.6146</td>
<td>-4.3436 *</td>
</tr>
<tr>
<td>GDPCnp</td>
<td>-2.2791</td>
<td>-5.2634 *</td>
</tr>
<tr>
<td>OR</td>
<td>-2.5691</td>
<td>-4.9237 *</td>
</tr>
</tbody>
</table>

Notes: The table presents value of the ADF test statistic for each variable. The number of lags was selected using the Schwarz Information Criterion. The critical value at a 5% level is -3.7105 for the variables in levels and -3.7332 for the variables in first differences. * indicates that the null hypothesis is rejected.

<table>
<thead>
<tr>
<th>Causality</th>
<th>F- Statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2/GDP → GDPCnp</td>
<td>2.4644</td>
<td>0.1305</td>
</tr>
<tr>
<td>GDPC np → M2/GDP</td>
<td>7.0541</td>
<td>0.0107</td>
</tr>
<tr>
<td>M2/GDP → OR</td>
<td>0.5333</td>
<td>0.6011</td>
</tr>
<tr>
<td>OR → M2/GDP</td>
<td>13.5568</td>
<td>0.0011</td>
</tr>
<tr>
<td>GDPC np → OR</td>
<td>3.7159</td>
<td>0.0585</td>
</tr>
<tr>
<td>OR → GDPCnp</td>
<td>5.7979</td>
<td>0.0191</td>
</tr>
</tbody>
</table>

Table 2 presents the results of the Granger causality for the variables in first differences. Using a 5% significance level, one can reject the null hypotheses that oil revenues (OR) does not Granger cause both non-oil GDP (GDPCnp) or M2/GDP and that non-oil GDP Granger causes
M2/GDP. However, we cannot reject the null hypotheses that M2/GDP does not Granger cause both non-oil GDP or oil revenues and that non-oil GDP Granger causes OR.

5. DISCUSSION

The results of the Granger causality tests confirm that the oil sector has been the great engine of Angolan economic growth, since we identified Granger causality from oil revenues to the other two variables, but none of these variables Granger-causes oil revenues. On the other hand, financial development does not seem to have a significant role in economic growth in Angola. M2/GDP does not Granger-cause either oil revenues or non-oil GDP, even though M2/GDP is Granger-caused by both variables. The relationship between financial development and oil revenues was expected, since the oil sector dynamics are mostly exogenously determined, and should have a strong impact on the demand for financial services. However, given the evidence reviewed on section 2 on the positive effects of financial sector development on economic growth, one might expect to find Granger-causality from financial development to non-oil growth, which we did not find (although we did find strong causality in the opposite direction).

The results indicate that the development of the banking sector in Angola was demand-following instead of supply-leading, in the terminology of Patrick (1966). The creation of new banks and the growth of existing institutions were a response to increased demand for these services by investors and savers in the real economy, i.e. economic growth caused the development of financial intermediation (demand following). It seems that the supply-leading effect, when the creation of financial institutions and the provision of its services creates opportunities for savers and investors and thereby boosts economic growth, was not significant in Angola.

This result is in line with Hassan et al. (2011), who found that in sub-Saharan countries with low savings and underdeveloped financial systems, financial development does not cause economic growth, but the reverse causality is strong, to the extent that countries are highly specialized in the export of raw materials.
In short, the performance of the oil sector was the key to a strong economic growth of the Angolan economy in the period and this in turn greatly stimulated the development of the banking system.

6. CONCLUSION

In this paper, we revisited the relationship between financial development and economic growth by allowing for differences in the relationship of the financial sector with the oil sector and the non-oil sector. We tested for Granger-causality in a three variable model including the ratio of M2 to GDP, oil revenues and non-oil GDP per capita, using data for Angola for the period 1995-2012.

Our results show that in the Granger sense, the development of the banking system did not cause economic growth in Angola, both for the oil and non-oil sectors. However, economic growth (both oil and non-oil) caused the development of the banking system. These results suggest that any argument that financial development unambiguously leads to economic growth should be treated with extreme caution.

The lack of impact of financial development on the non-oil sector is surprising, given the positive effects found in other countries. This result suggests that Angola’s financial sector may be underdeveloped, and that the implementation of policies that foster the efficiency of the financial sector could provide a boost to growth in the non-oil sector.
REFERENCES


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