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# Rentierism, energy and economic growth: The case of Algeria and Egypt (1965–2010)<sup>☆</sup>



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## HIGHLIGHTS

- We examine the energy–growth nexus within rentierism phenomenon, by applying an ARDL bounds tests approach.
- The ARDL reveals to be a suitable tool within the context of analysis of semi-rentier (Egypt) and rentier (Algeria) economies.
- The results for Egypt are closer to a conventional economy, supporting the feedback hypothesis.
- The results for Algeria are quite different, given that the energy–growth relationship is negative.
- The degree of rentierism can influence the nature of the energy–growth nexus.

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## ABSTRACT

The Algerian economy is an example of a high level of rentierism, while the Egyptian economy shows a low/moderate level of rentierism. The ARDL bounds test approach was used upon annual time series data from 1965 to 2010. The results suggest cointegration for both countries. Bi-causality between energy consumption and growth in the long run was found. For Algeria there is a reversed (negative) energy–growth nexus, adding a new relationship to the traditional four causal hypotheses on the energy–growth nexus. For Egypt, we found positive elasticity both of oil price and energy, which is in line with the mainstream.

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## 1. Introduction

The study of the relationship between energy consumption and economic growth has been mainly focused on countries with diversified production structures. However, there has been little analysis of this relationship in countries heavily dependent on a limited number of economic activities. This small group of activities gives rise to a rent, while the activities themselves may result from the abundance of one or more resources whose use leads to their prevalence. This fact contextualizes the phenomenon known as rentierism.

The definition of rentierism is attributed to Beblawi (1987). The author indicates four characteristics of a rentier economy, or rentier state: (i) the rent activities must be predominant; (ii) the rent has an external source; (iii) the rent is generated by a limited number of people, most of whom are occupied either with its

distribution or consumption; and (iv) the rent is mainly channeled to the government.

This paper is focused on the energy–growth nexus for two countries which have slightly different rentierism characteristics: Algeria and Egypt. Our option is based on three main reasons. First, we are interested in studying the energy–growth nexus in the context of Africa. Second, there is available data covering the entire period from the mid-1960s till 2010. This long time span enables us to explore long-run relationships, bringing incremental confidence to the econometric analysis. Third, by studying these countries, we are able to explore the energy–growth nexus in two different types of rentierism, one with a predominant source of rent (hydrocarbons) and the other with few sources of rent. The two countries correspond to the typology proposed by Auty (2001) of *point* and of *diffuse* natural resources.

The main aim of this paper is to understand whether the nature of the relationship between energy and growth is affected by rentierism in countries where energy is a source of rent. In other words, the central question is: can the causality relationship between energy consumption and economic growth be negative, as opposed to what is usually indicated by the literature on energy–growth nexus, namely the traditional growth, conservation, and feedback hypotheses? If this relationship occurs, is it

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stable over time? To the best of our knowledge there are no studies that address the energy–growth nexus for rentier states.

We explore the potential of dummies to control for outliers and structural breaks. Indeed, if we did not take into account these outliers and structural breaks, then cointegration relations in the energy–growth nexus could be masked. To do so, the ARDL bounds test methodology is used. This econometric technique allows the use of both impulse and shift dummies, making it possible to capture cointegration relationships, given that they allow economic shocks and structural breaks to be accommodated, respectively.

The results strongly suggest that the analysis of the energy–growth nexus must be controlled for the rentierism phenomenon. Indeed, it is observed that the dependence on a particular source of rent can lead to an atypical relationship, i.e., energy consumption may not be a driver of economic growth. This result does not fit into any of the traditional hypotheses of the energy–growth nexus, namely growth, conservation, feedback and neutrality hypotheses.

The paper evolves as follows. Section 2 summarizes the energy–growth nexus, and exposes the idiosyncratic features of rentier states. Section 3 discloses data, methodology and models. Section 4 reveals the results. In section 5 the results are discussed, and section 6 concludes.

## 2. The energy–growth nexus and rentierism

Energy consumption and the economic growth nexus have been analyzed in a comprehensive body of literature. A review of literature is provided by Odhiambo (2010), Ozturk (2010), and Payne (2010). Approaches to both a single country (e.g. Lee and Chang, 2007; Wolde-Rufael, 2009 and Fuinhas and Marques, 2011), and a set of countries (e.g. Akinlo, 2008; Chiou-Wei et al., 2008 and Fuinhas and Marques, 2012a), have been used. The empirical results reveal endless diversity that is conditional on the nature of the data, time span, countries' idiosyncrasies, and the econometric approaches used (e.g. Ozturk, 2010).

Literature on the energy–growth nexus identifies four hypotheses (see, among others, Ozturk, 2010 and Fuinhas and Marques, 2012b): (i) the growth hypothesis postulates a unidirectional causality running from energy to growth; (ii) the conservation hypothesis assumes a unidirectional causality running from growth to energy; (iii) the feedback hypothesis asserts bidirectional causality between energy and growth; and (iv) the neutrality hypothesis states that energy and growth are neutral with respect to each other. Implicit in the assumptions of causality is that the relationship between energy and growth are positive (growth hypothesis, conservation hypothesis, and feedback hypothesis) or that this relationship is absent (neutrality hypothesis). Due to the complexities inherent in these hypotheses, policy makers must consider that policies towards energy could provoke dissimilar effects. However, none of these hypotheses suggests that increased consumption of energy causes a decrease in growth.

In the analysis of the energy–growth nexus, it is worthwhile considering that, on the one hand, high oil prices encumber the economy of non-producers and, on the other, they should benefit producer countries (e.g. Stevens and Dietsche, 2008). The evaluation of energy growth for countries that are abundant in hydrocarbons raises an issue that has not been adequately studied in the literature. In fact, the abundance of an energy source may influence the nature of causality, and may even constitute support for what is known in the literature as the resource curse. The literature on the natural resource curse is far from consensual (e.g. Brunnschweiler, 2008). Both the literature on the resource curse and the more specific literature on rentierism indicate several economic and social dysfunctions (e.g. Yates, 1996; Auty,

2001; Isham et al., 2005; Beblawi, 2008 and Kolstad and Wiig, 2009). Literature on the resource curse (for a survey see Rosser, 2006) argues that an abundance of a natural resource contributes to meager economic and social accomplishments; it also induces poor standards of democracy and may even breed civil war. More research is required regarding the energy–growth nexus.

Inherent in the phenomenon of rentierism are a rentier mentality and absence of tax pressure. The rentier mentality has profound consequences in terms of productivity (Yates, 1996). Labor is attracted by the activities of real estate speculation associated with the oil sector, or for jobs in the Government bureaucracy. The rentier is highly exposed to external price shocks. When confronted with low incomes, the rentier tends to adopt austerity measures instead of diversifying the economy (Yates, 1996).

Rentier economies are characterized by the near absence of taxes and, as such, people have little influence over the political class. So, the political class is not encouraged to attend to the real needs of the population. Instead the aim is to keep the citizen submissive and dependent, by creating various social support programs (Spiess, 2008). Another characteristic of rentier economies is the dependence on foreign human capital. The work is mostly done by skilled immigrants. According to Spiess (2008), national workers only stay in office for the duration of the work.

Algeria and Egypt reveal idiosyncratic characteristics of rentierism. Algeria is a rentier economy (Álvarez, 2010), while Egypt is a semi-rentier economy (Beblawi, 2008). As stated by Auty (2001), in economies with point source resources, few people have property rights and they are capital intensive. In economies with diffuse natural resources, property rights are disseminated through society and they have low investment barriers (e.g. Stevens and Dietsche, 2008). Egypt is an unusual case of a rentier in the sense that its sources of revenue are not dependent on one industry, but rather on a small number of sources, including: hydrocarbons (oil and natural gas), tourism, strategic location (Suez Canal), and foreign aid workers' remittances (first the USSR and then the USA).

Briefly, these North African countries experienced episodes of turbulence, either politically or economically. In Algeria, oil and natural gas (hydrocarbons) are the main sources of external rent. The oil crisis of 1973 was advantageous to the Algerian leadership, because it meant an increase in the in-flow of oil rent. After that, the Algerian economy became increasingly dependent on oil, which led to difficulties when the price dropped significantly during the 1980s, thanks to the oil glut. Natural gas was gradually gaining importance as a source of foreign rent. The doubling of capacity in 1984, the Trans-Mediterranean pipeline and the entry into operation of the Maghreb-Europe pipeline in 1996, contributed decisively to the development of natural gas exploration in this country. The death of Houari Boumediene, in 1978, allowed an increase in corruption, while the country became much more bureaucratic. Progressively, the entire economy in Algeria became based on external rent, which discouraged the development of a domestic production sector.

In its turn, Egypt has experienced three autocratic presidents during the period under consideration: (i) Gamal Abdel Nasser (1954–1970), (ii) Anwar Sadat (1971–1981), and Hosni Mubarak (1981–2011). After the six-day war in 1967, the remaining years of the Nasser government were much milder. In October 1973, Sadat declared war on Israel, partly to recover the pride wounded in the 1967 war. The interwar period (1967–1973) was therefore a time of hardship. The Gulf of Suez and the Western Desert are the main crude oil reserves, while the Nile Delta and the Western Desert are abundant in natural gas. In addition to oil and gas, other important sources of income are tourism in Egypt and revenue associated with the Suez Canal. Overall, Egypt has been a very autocratic country, with frequent geopolitical challenges, which is open to the outside world predominantly through tourism.

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