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Dynamics between economic growth, labor, capital and natural resource abundance in Iran: An application of the combined cointegration approach

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ABSTRACT

This paper discusses the missing case of Iran and tests the resource curse hypothesis using the updated time-series data over the extended period of 1965–2011. This study incorporates economic growth as a function of natural resources, exports, capital and labor in a Cobb–Douglas production function. The results of Bayer-Hanck combined cointegration test confirm that the underlying variables are cointegrated, while the finding from the long-run analysis validate the resource curse hypothesis and suggest that the natural resource impede economic growth in Iran. A 1% increase in natural resource production results in a 0.47% decline in GDP. This suggests that the exploitation of natural resources negatively affects the competitiveness of other sectors and limits their ability to contribute to economic growth. Furthermore, the results of the causal analysis conclude that there is a feedback effect between natural resource abundance and economic growth. These findings are useful for the development of policy controls in the case of Iran.

1. Introduction

The debate on whether natural resource abundance hinders economic growth started with the seminal study of Sachs and Warner (1995). Their study analysed a sample of 95 developing economies, and concluded that economies with a limited endowment of natural resources outpace the economic growth of resource abundant economies. These results led to the formulation of the 'resource curse hypothesis'. Since then, the literature on natural resource abundance and the economic growth nexus has been testing the resource curse hypothesis on various macro- and micro-economic indicators, but the findings have been mixed (Collier and Goderis, 2008). Over the past two decades, there has been plenty of literature exploring the oil-rich economies, which have found a negative relationship between resource richness and economic growth (Ross, 1999; Sachs and Warner, 2001; Papyrakis and Gerlagh, 2004; Robinson et al. 2006). Amid several theoretical explanations presented in the literature, the most common is that resource rich economies have a tendency of resource dependence (Williams, 2011; Dubé and Polèse, 2015). However, Brunnschweiler and Bulte (2008) who refer to the resource curse hypothesis as a 'red herring', claim that resource abundance determines resource dependence, but does not affect the ratio of economic growth. Furthermore, the findings of Papyrakis and Gerlagh (2004) suggest that resource abundance only affects economic growth when considered in isolation. In addition to the mixed emperical evidence, a sufficient gap persists in the theoretical framework presented to date. For example, Van der Ploeg and Poelhekke (2009) consider volatility as the quintessential characteristic of the resource curse. Whereas, Frankel (2010) concludes that commodity exporting countries perform well and control the crowding out effect of resource endowment. James (2015) suggests that the

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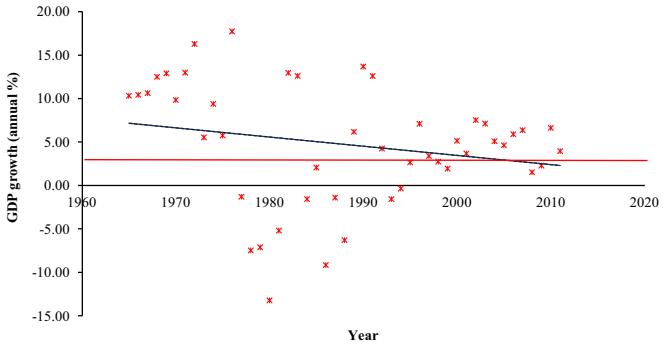

Fig. 1. Iran's GDP Growth Trend (1965–2011).
Source: World Bank (2014).

resource curse depends on industry makeup, because it has little effect on non-resource sectors. In a nutshell, the debate on natural resource abundance and economic growth is still of great interest to both researchers and policy makers. This study attempts to contribute to the existing literature by examining the specific case of Iran. Despite having abundant natural resources and slow economic growth, the recent literature on the subject ignores the most likely case of Iran under the 'resource curse hypothesis'. Moreover, the recent step of ending the long lasting economic sanctions on Iran further enhances the importance of this study and suggests concrete policy implications for the country's future resource and economic growth policies.

Iran is a country abundant in rich mineral resources. It possesses the 2nd largest substantiated natural gas and 4th largest oil reservoir in the world (EIA, 2014). Iran is also the 2nd largest country both in terms of area and population in the MENA[1] region. However, as shown in Fig. 1, the economic growth of Iran has been very slow, in fact negative in many periods. The average growth rate of the country during 1965–2011 was less than 3% and the linear trend has been downward sloping shown by the red and blue lines, respectively (see Fig. 1). Other macroeconomic indicators[2] also reflect unhealthy performance, e.g. income per capita (4769 US$ in nominal terms), inflation rate (18.2% in CPI) and unemployment (10.4%), population below poverty line (0.7%). The Iranian economy is highly dependent on the hydrocarbon sector, which has limited the country's ability and diversified its economy. In 2014, the share of natural resource rent accounted for 12% of GDP and contributed to 60% of government expenditures (IMF, 2014). Farzanegan (2013) argues that since the 1960s, the government has been using natural resource rent to influence its relationship with its population, by distributing the wealth derived from its natural resources in the shape of government subsidies, public employment and oppressing political antagonists. Thus, natural resource rent has had a significant influence on the economic, social and political landscape of Iran. Fig. 2 shows the breakdown of Iran's merchandise exports, where the fuels and mining products accounted for 73% of total exports with little contribution from manufacturing and agriculture sectors. Smith (2011) introduces a better measure for resource dependence called 'rent leverage' that compares the share of per capita oil revenues in GDP per capita terms. In the case of Iran, the rent leverage has been recorded to be more than 30%on average between 1965–2011.[3] In addition, Figs. 3 and 4 graphically represent the composition of Iran's GDP both by the sector of origin and end use. Furthermore, in both metrics the total output represents a significant share of the mining and fuels sectors.

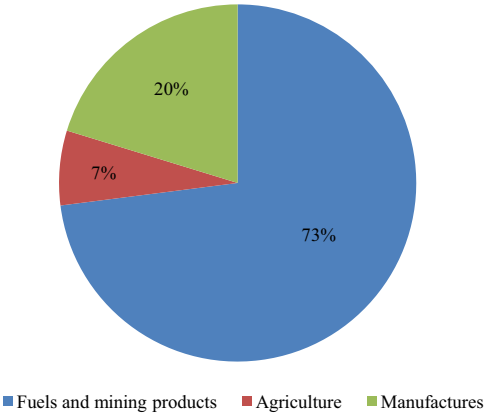

Fig. 2. Composition of merchandise exports.
Source: WTO (2014).

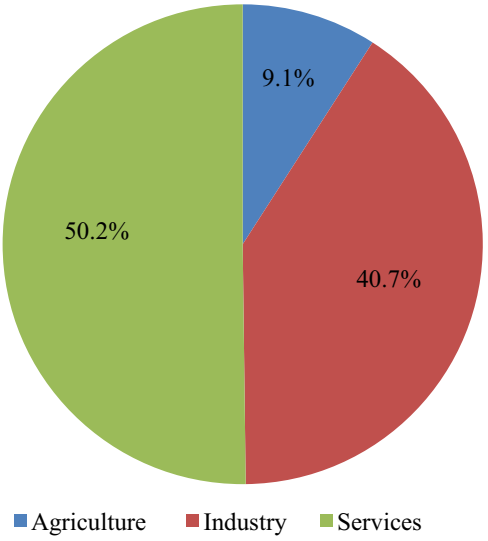

Fig. 3. GDP composition by sector of origin.
Source: World Bank (2014).

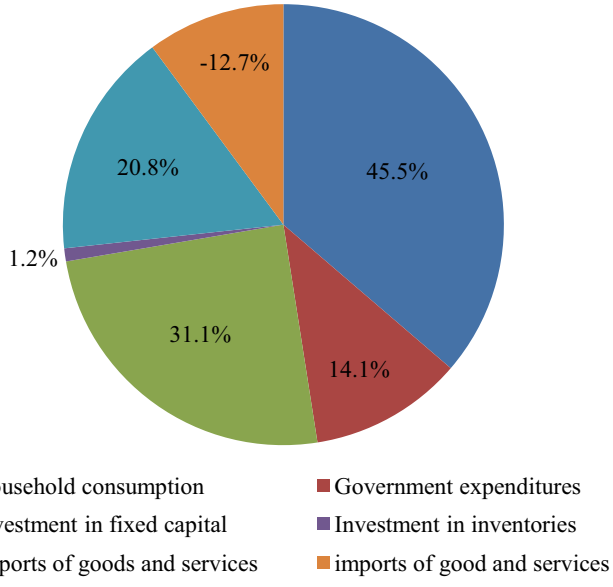

Fig. 4. GDP composition by end use.
Source: World Bank (2014).

[1] Middle East and North Africa (MENA)
[2] Source: World Bank (2014).
[3] For details see Farzanegan (2013).