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New Evidence on Natural Resource Curse for OIC and Non OIC Countries

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ABSTRACT

This paper looks deeper into the resource curse hypothesis and focuses on the types of natural resources such as minerals, oil, natural gas, forestry and coal. This study argues that natural resources are not a curse to real income but that the type of natural resources and human capital that a country is endowed with are the reason why some resource-rich countries are successful while others are not. Unlike most of the previous studies which emphasize growth, this study emphasizes real income. This study also aimed to determine the type of natural resource that may act as a driving force or as an obstacle to a country. Additionally, human capital and institutions are examined as key factors in determining whether a country's rich natural resources are a "blessing" or a "curse".This study provided an empirical analysis of the period between 1981 and 2010 by using panel data which was analyzed using GMM (Generalized Method of Moments), a technique that has not been widely used in research related to natural resources. In order to measure the wealth of natural resources, this study employed the data of natural resource rents in relation to the type of natural resources. The data were collected from the World Bank. The study also used a number of control variables to measure human capital. The findings showed that natural resource wealth in OIC and non-OIC countries can be a curse or a blessing depending on the type of natural resource assets. This is evident from the findings that showed that the correlation between the type of natural resources and incomes is mixed; i.e. there are some positive and some negative correlations. Interestingly, the findings consistently demonstrated that human capital and quality of institution both encourages the increase in real income. The

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abundance of natural resource is indeed a blessing for high quality human capital.

Keywords: Natural Resource, human capital, economic growth

INTRODUCTION

The negative relationship between natural resources and economic growth is still widely debated. Countries with the fastest economic growth in the last few decades like Hong Kong, Singapore, Taiwan and Korea have limited natural resources compared to Angola, Sierra Leone and Democratic Republic of the Congo which have an abundance of resources (Boschini et al., 2007). Many past studies related to natural resources have demonstrated a negative correlation between natural resource and economic growth and have coined this relationship as the 'curse of resources' or the 'resource curse'. Countries with a greater endowment of natural resources relative to the rest of the world are subjected to the "winner's curse". While Norway has become the world's richest economy through its oil endowment, oil appears to be the cause of recurring problems in countries like Venezuela and Ecuador. Meanwhile, being endowed with diamonds has arguably been disastrous for the development of Liberia. In the case of Nigeria, despite being the eighth largest producer of oil in the world, the sixth country with the largest reserve of natural gas and the largest bitumen deposit in the world, the country remains poor (Ploeg, 2011).

The aim of this study is to examine the relationship between types of natural resources, human capital and real income in the countries of OIC (Organization of Islamic Country) and non-OIC. In addition, the quality of institutions as a factor affecting natural resource curse is considered. More precisely, this study attempts to demonstrate that the effect of resources is not determined by resource endowment alone, but rather by the types of resources, human capital and the quality of institutions of a country. The issue of this study is that there are countries that are rich in natural resources and have a steady economic growth, such as Australia, Botswana, Chile, Norway, the United States, and Canada but there are also countries that are not doing well despite having an abundance of natural resources such as Nigeria, Venezuela, Syria, and Libya. The key question addressed in this study is why resource-rich economies, such as Botswana or Norway are more successful, while others perform badly despite their immense natural wealth. This study is particularly interested in exploring this question by emphasizing that countries which are rich in natural resources cannot directly be classified as cursed, as is done in most past studies of natural resources Instead, this study emphasizes that natural resources, such as oil, minerals, natural gas, coal and forests, should be individually identified and considered along with human capital for their impact on the real income of a country. Human capital and corruption are jointly determined and depend on the endowment of natural resources. Natural

resources affect the incentives to invest in education and rent-seeking that in turn affect growth. Whether natural resources stimulate growth or induce a poverty-trap crucially depends on inequality in access to education and political participation (Wadho, 2011). Furthermore, this study also attempts to avoid the results of ongoing studies that are insignificant and confusing. This is because there are studies that have included various kinds of natural resources and resulted in mixed and inaccurate results (see Pendergast, Clarke, et al.,2008).

More interestingly, this research is conducted on OIC and non OIC countries. Most of the OIC countries are among the least developed countries, despite being major oil producers. In fact, the OIC countries are yet to discover ways to reduce poverty and hunger (Abdulai & Sivar, 2011). According to the World Bank report in 2007, OIC countries were extremely weak in terms of economic growth compared to non-OIC countries. The OIC countries recorded a GDP totaling US$7,748 billion, while the United States recorded a GDP of US$14,582 billion, i.e. three times the performance of the OIC countries combined. Meanwhile, China recorded a GDP of US$7,055 billion, which is equivalent to the GDP of OIC countries combined, Japan recorded a GDP of US$4,283 billion, Germany a GDP of US$3,317 billion and France a GDP of US$2,772 billion (Jirsah & Sarmidi, 2015). This is a major issue for the OIC countries and is the focus of this study. Furthermore, as seen from many previous studies , most of the countries which are rich in natural resources but poor in economic growth are of OIC countries, even if this is not directly mentioned. The study by Omodadepo (2013) stated that natural resources are 'meat' in Norway, but 'poison' in Nigeria. Furthermore, research shows that most countries with low economic growth in 1970-1998 were of the Middle East and North Africa (Murshed, 2004). Indirectly it shows that the OIC countries are more exposed to the curse of resources compared to non-OIC countries. As such, this has motivated this study to focus on OIC and non-OIC countries; moreover, this has not been studied by previous studies of natural resources.

The contentious issue in this study is human capital. The presence of natural resources itself may not be a determining factor for real income, rather as the transmission channel. This study focused on human capital and institutions as the transmission channel of natural resources for real income. Human capital is a key issue of economic development in resource–rich countries and resource-scarce countries. Education can increase the effectiveness of the labor force to foster democracy and facilitate the adoption of essential technologies of leading countries. The effects of technological adoption are important in secondary and higher education (Barro, 1997). Stinjs (2004) stressed that human capital is essential to the creation of good government in improving the health and quality of governance and institutions. Although it has been proven that a country can be developed by having quality human

capital, education has not been given a priority in the OIC countries. Tunisia is one of the countries that has a total education spending of 7.2% of GDP, higher than the spending on education by Israel (6.3%), France (5.7%) and the United Kingdom (5.5%). Meanwhile, the majority of other OIC countries spend lesser than the non-Muslim countries such as Pakistan (2.6%), Bangladesh (2.5%), Niger (3.4%), Egypt (3.6%) and Iran (5.1%). Tunisia spent 7.2% of its GDP for education which is equivalent to USD5.9 billion. Meanwhile, France spent 22 times more on education in comparison to Tunisia and other OIC countries. Statistics show that the OIC countries are seen as not giving priority to education spending and educational investment. The situation is more deleterious in OIC countries such as Pakistan, Bangladesh, Niger and others (Amjad Ali, 2012). There are also OIC countries which are rich in natural resources and have achieved commendable economic growth such as Malaysia, Brunei, Saudi Arabia, United Arab Emirates, Kuwait and Bahrain (Driouchi, 2014). Could these countries successfully distribute their income to education and escape from the curse of resources?

This study is divided into five sections. The section two of the discussion focuses on literature review on the relationship between natural resources, human capital, Institution and economic growth. The next section discusses on model specification and methodology. Section four is related to the findings obtained; and the final section focuses on the formulation and policy implications.

LITERATURE REVIEW

It is important to consider the issue of natural resource wealth in economic development. There is strong evidence that countries which are rich in natural resources have low economic growth and this phenomenon is called "natural resource curse". Many studies have tried to understand why natural resources, which are a "blessing" can turn into a "curse" for a country. Many observers have their own opinions regarding the factors that lead to the deterioration of natural resource wealth in stimulating economic growth and this starts with the study by Sachs and Warner(1995). Generally, everyone has a similar opinion but there is a conflict due to differences in economic background, different approaches and indicators in their studies.

Boschini et al. (2007) examined whether natural resources are a curse or a blessing to a country's economic growth. Their study highlights the importance of a country's institutions and various types of natural resource wealth in determining the curse of natural resources for economic growth. This study used the interaction between natural resources and institutions to identify the types of natural resources and whether they are a blessing or a curse for economic growth. The study found that a good institution can change a country's natural resource wealth into an asset, i.e. from a curse to a blessing. The negative effects of poor institutions are much more severe in countries that are rich in problematic resources, as compared to those rich in other natural resources. The results also showed that mineral resources

have a positive impact on economic growth. Another study that examined the relationship between natural resources and economic growth was conducted by Murshed (2004). This study is similar to the above study whereby it also emphasized that natural resource wealth can be a blessing or a curse depending on the country's type of natural resource wealth and power of the country's institutions. Data were analyzed using a random effects model and FGLS. The study found that a point source type natural resource endowment retards democratic and institutional development, which in turn hampers economic growth. Institutions and institutional functioning are the crucial link between resource endowment, geography and policies, as well as economic outcomes. The study also found that the manufacturing sector is the best in stimulating the economy.

In addition, there are studies questioning why some countries which are rich in natural resources are successful , while others are not. A study by Torvik (2009) also emphasized that success is not due to the natural resource wealth but the type of natural resources of the country. This study used panel data that was analysed using a fixed effect. The study found several factors that affect natural resources in economic growth. Among these factors was the type of state-owned natural resources, savings of natural resource revenues, quality of institutions, administration, industry and politics of the country. A study by Mavrotas (2011) examined the type of dependence on natural resources (resource dependence) and economic growth in developing countries. The study investigated a total of 56 developing countries between 1970 and 2000. For each country, two types of exports of UNCTAD were identified and categorized as a point source, diffuse source, coffee or cocoa and manufacturing. Data were analyzed using FGLS and GMM. Mavrotas' study also looked at the importance of institutions in a country. The results showed that both point source and diffuse source negatively affect economic growth.

There are also studies that have examined the relationship between natural resources, human capital and economic growth. A study by Adebiyi (2013) compared Nigeria (which is among the eight largest producers of oil in the world, the sixth country rich in natural gas and the richest country in the world for bitumen) with Norway (which is one of the richest countries in the world and the third largest exporter of oil after Saudi Arabia and Russia). This study used data from the years 1970-2007 and analyses were conducted using a VAR model. The study found that the relationship between natural resources, namely oil, and economic growth in Nigeria and Norway is positive. Oil wealth leads to improvement in human capital in Norway but to negative human capital in Nigeria. Although economic growth in Nigeria is positively correlated (this suggests that the resource curse does not really exist), human capital development stands as the transmission channel. In Norway, all the variables are positively signed, suggesting that the country has escaped the curse. A study by Stijns (2004) also examined the relationship between natural resources,

human capital and growth. Stijns found that previous studies have failed to accurately measure the natural resources and human capital before concluding that a country's wealth of natural resources of the country rewind. This study suggests that researchers need to isolate the specific sectors in natural resources before concluding that the natural resources are negatively related to natural resources and growth. The classification category of natural resources is an important natural such as minerals and oil have a different relationship with human capital as compared to other sectors. However, this study still uses OLS method as in other previous studies. Another study similar to the studies by Stijns (2004) is the study by Philipot (2010) which examined the relationship between natural resource wealth of human capital, where this research used some researchers like Gylfason (2001) and Stinjs (2006) to get strong results. Philippot (2010) also isolated the types of natural resources to examine their effect on natural resources and growth. The study uses empirical studies for the year 1990-2003 period using the fixed effects. The most important results obtained in the study of natural resource wealth was tat it was negatively related to government spending on education and school participation rates. This negative effect is more pronounced for mining than farming, followed by natural resources such as wheat and corn. This study used natural resource rent to assess natural resource wealth where the resource rent is better used to measure the wealth of natural resources compared to the export of natural resources such as proxy found in most studies of natural resources.

SPECIFICATIONS MODEL AND METHODOLOGY

This section discusses the types of data used in analyzing the relationship between natural resource wealth, human capital and real income. The selected countries in this study were 149 countries consisting of 35 Muslim countries and 114 non-Muslim countries. The data period was from 1981 to 2010, that is, after the increase in the oil cartel (OPEC) in 1970, the beginning of the history of the resource market (Amr & Marshall, 2008). The variables used were similar to the ones used by Behbudi et al. (2010). The data used in this study were obtained from the World Development Indicators (WDI), Penn World Tables, International Country Risk Guide (ICRG), and the data market.

The model in this study is based on models used in previous studies in the field of growth (growth) which includes studies (cross country) by Barro (1991), Barro and Sala I Martin (1995), as well as studies on the economic and natural resources by Auty (1990, 2001). The model is very useful in empirical studies as carried out by Sachs and Warner (1995), Gylfason (2001), Sala-i-Martin and Subramanian (2003), Ortego and Gregorio (2005) and Behbudi, Mamipour and Karami (2010).

$$git = \beta_1 + \beta_2 \ln(GDP_0) + \beta_3 Z + \varepsilon_{it} \quad (1)$$

In this study, the growth model is as follows:

$$g_{it} = \beta_1 g_{i,t-1} + \beta_2 LNIGDP_{i0} + \beta_3 OPEN_{it} + \beta_4 H_{it} + \beta_5 N_{it} + \beta_6 TOT_{it} + \beta_7 KG_{it} + \beta_8 INST_{it} + \varepsilon_{it} \quad (2)$$

g_{it} : GDP per capita

$\beta_1 g_{i,t-1}$: Lagged GDP per capita

$\beta_2 LNIGDP_{i0}$: Initial GDP per capita

$\beta_3 OPEN_{it}$: Openness (measured by the difference in the export and import / GDP)

$\beta_4 H_{it}$: Human capital

$\beta_5 N_{it}$: Type of natural resource rent

$\beta_6 TOT_{it}$: Term of Trade

$\beta_7 KG_{it}$: Government expenses

$\beta_8 INST_{it}$: Institution

i = Country

t = Time

There are several control variables for human capital in excess of the H1 model as the number of physicians representing the professional work force in a country, H2 as life expectancy at birth represent health indicator and H3 as Gross Intake Ratio In First Grade Primary Education represent education. Control variables used to see the changes in dependent variable and may see which controls may be changing the result in this model. The institutions dataset employed is from the International Country Risk Guide (ICRG), a monthly publication of Political Risk Services (PRS). In this study, a PRS indicator of corruption was used to measure the institution. Lower score indicates high corruption. The comprehensive good governance indicators provided by the World Bank (Kaufmann et al. 2009) are available only since 1996, which is hardly sufficient for a panel analysis over time. The most detailed set of governance indicators for a longer period of time is compiled by Political Risk Services Group. It is considered to be of high quality and is often used in the empirical literature. ICRG components that are highly relevant for an assessment of the influence of natural resource on governance.

This study used the gross domestic product (GDP) per capita as a proxy for real income by using panel data with an observation period of six years. The use of GDP per capita as the dependent variable in measuring real income is supported by numerous studies on natural resources such as the study by Isham, Pritchett and Woolcock (2004). GDP per capita is the real measurement of welfare compared to growth, as used in a study conducted by Bravo and Gregario (2005).

This study used the data of rents of natural resources (resource rent) to measure the wealth of natural resources. It differs from previous studies by Sachs and Warner (1995) and other researchers such as Behbudi, Mamipour and Karami (2010), which previously used natural resource exports in GDP as a measure of natural resources. However, researchers such as Brunnschweiler (2008) and Philipot (2010)

argued that the export of natural resources is the indicator of dependence on natural resources (resource dependence), which is different from resource abundant. As such, this study used the resource rent (resource rent) as a measure of a country's wealth in natural resources in which the data were obtained from the World Bank. Resource rent is the difference between world prices and domestic production costs (cost of local production/extraction) and the estimated share of the country's GDP. Rental of natural resources is a more accurate measurement compared to exports of natural resources in measuring a country's natural resource wealth for the accrued rent, which is the rent received by the government, political elite and the lobby members (Philipot, 2010). This study used oil, mineral, natural gas, forestry and coal as the natural resource wealth. All the data were obtained from World Bank.

The independent variables for human capital were obtained from World Development Indicators (World Bank). They encompass the number of physicians, the gross intake ratio in first grade of secondary education and life expectancy at birth. The indicators are commonly used in the studies of human capital, for example in the study conducted by Jerry, Hassan and Ismail (2011). The human capital variables are control variables.

In analyzing the relationship between these variables, GMM (generalized method of moments) was used. In recent years, ordinary least square (OLS) has been the most common estimation technique for both time series and panel data. However, this technique has been considered to exhibit bias behaviour and endogeneity problems, thus, recent empirical analysts tend not to base their policy recommendations on OLS results only. Hence, this research employed a more sophisticated technique: the generalised method of moments which was initially proposed by Holtz-Eakin et al. (1988) and later developed by Arellano and Bover (1995) and Blundell and Bond (1998). Based on previous studies, issues such as independent variables endogeneity in human capital should be considered in order to avoid the issue of simultaneity bias. The trained dependent variables were used as independent variables in establishing a correlation between the variables with the term error (Roodman, 2006). There is a probability of the presence of specific effects of each of the countries; in which there is heteroskedasticity between countries. Based on the above characteristics, GMM is suitable for overcoming these problems (Mileva, 2009). The first-differenced GMM estimators applied to panel data models address the problem of the potential endogeneity of all explanatory variables, measurement errors and omitted variables. The basic idea of the first-differenced GMM is to take first differences to remove unobserved time invariant country specific effects, and then apply instruments to the right hand-side variables in the first-differenced equations using levels of the series lagged one period or more, under the assumption that the time varying disturbances in the original levels equations are not serially correlated (Bond et al., 2001)

RESULTS AND DISCUSSION

The study is divided into two parts, namely the relationship of natural resource wealth, human capital, and real income in the Organization of Islamic Cooperation (OIC), and Non Organization of Islamic Cooperation (non- OIC) countries. Tables 3-7 show the estimated model for OIC countries using the Generalized System Method of Moments (GMM). Table 3 shows the correlation between oil and real income. For Table 3, the P value of AR (2) and the P value of the Sargan and Hansen's test for all models (1) to (3) are very high, exceeding the 10% significance level. The model (1) and model (3) of the variables N (oil rent) are significant at confidence levels of 1%. Model (1) and (2) are positively correlated to real income. This suggests that oil is positively correlated with real income in OIC countries; that is, when oil rent increased by 1 percent, the real income will increase by 0.012 percent when combined with human capital variables, namely H1. This positive correlation remains despite the changes in the variables of human capital, i.e. replaced with H2. The coefficient of natural resources remains positive to real income even when replaced with other human capital variables, with an improvement from 0.012 to 0.013 percent. In the models (1), the variables of human capital are significant at confidence level 10% and the coefficient shows a positive effect on real income. INST which is an important variable in this studies has a negative coefficient from -0.045 to -0.025. Other independent variables such as GDP (-) has positive coefficients of between 0.156 to 0.361 and significant at confident level 1%. OPEN has a positive coefficient from 0.136 to 0.210 with 1% of confident level. TOT also has positive coefficients of between 0.455 and 0.372. Meanwhile, KG also has positive coefficients of between 0.032 and 0.074.

Table 4 shows the correlation between mineral resources, human capital and real income in OIC countries. Models (1) and (2) show that the relationship of minerals to real income is positive except for Model (3) which is between 0.012 to -0.001. It is significant at confidence levels of 5%. Thus, it shows that there is a positive relationship between mineral and real income. However, human capital is also significant at confidence level 10% and positive in relation to real income, i.e. between 0.055 and 0.838 except in model (3) which has a negative coefficient of -0.093. For the other variables, INST has negative coefficients between -0.070 and -0.045 and is significant at a confidence level of 5% in model (1) while a negative correlation in model (3) at 0.004, GDP(-1) has positive coefficients between 0.130 and 0.349, OPEN also has positive coefficients ranging between 0.033 and 0.082, KG has negative coefficients of between -0.030 and -0.066 and TOT has positive coefficients of between 0.626 and 0.548. Table 5 shows the relationship between forestry resources and human capital to real income in OIC countries. Models (1) to (3) show that the relationship between forestry and economic growth has a negative coefficient ranging between -0.026 and -0.019. Thus, it shows

that forestry is negatively correlated to real income in OIC countries. Meanwhile, human capital is correlated positively in Models (2) and (3) at 0.365 and 0.052, respectively; while Model (1) is negatively correlated at -0.001. For other variables, INST has correlated negatively between -0.041 to -0.073. GDP(-1) has a positive coefficient in Models (1) to (3) ranging from 0.206 to 0.419. The KG has negative coefficients ranging from -0.031 to -0.029. OPEN has coefficients ranging between 0.097 and 0.133. TOT has positive coefficients ranging between 0.065 to 0.351.

Table 6 shows the correlation of coal with human capital and real income in OIC countries. Models (1) to (3) show that the correlation to real income is positive and between 0.001 and 0.004. Human capital also has a positive coefficient in Models (1) to (3) ranging between 0.030 to 0.115. INST also has positive coefficients in model (1) to (3) ranging between 0.043 to 0.069. GDP(-1) is positive between 0.113 and 0.095. , OPEN and KG also have positive coefficients. Table 7 shows the correlation between the natural resource rent of natural gas on human capital and real income in OIC countries. Models (1) and (2) show that the relationship of natural gas to real income is negative, i.e. -0.087 and -0.034 respectively, meanwhile positively correlated in model (3), i.e 0.073. Human capital has positive coefficients of 0.091 and 0.089 in model (1) and (2) respectively, while negatively correlated in model (3) which is -0.485. INST is negatively correlated for model (1) to (3) ranging from -0.107 to -0.077. In addition, TOT, OPEN, KG and GDP(-) also have positive correlations.

Tables 8 to 12 show the estimates for non-OIC countries. Table 8 shows the relationship between oil, and human capital and real income in non-OIC countries beside looking at the relation of Institution also. Models (1) to (3) found that the relationship between oil is negative to real income in non-OIC countries, with coefficients ranging between -0.002 and -0.006. Meanwhile, the human capital relationship, H1 and H3 have positive coefficients with real income of 0.014 and 0.100. As for the model (2), the H2 has a negative coefficient of -0.364. INST has a negative coefficient for model (1) to (3) ranging from -0.111 to -0.007. Other variables such as GDP(1), OPEN and TOT are positive, but KG is negatively correlated to real income. Table 9 shows the relationship between the type of mineral, human capital and real income in non-OIC countries. For Models (1) to (3), the mineral resource is negatively correlated to real income in non-OIC countries, ranging between -0.003 and -0.004 and significant at a confidence level of 1% in model (2). Meanwhile, the relationship of H1 and H3 of human capital to real income is positive, i.e. 0.019 and 0.035 while the H2 is negatively correlated to real income which is -0.438. Other variables such as INST is positively correlated to real income in model (1) and model (2) ranging between 0.088 and 0.033 while negatively correlated in model (3) which is – 0.009. GDP(-1), OPEN and TOT have positive coefficients, while KG has negative coefficients in model (2) and

(3) except for model (1) it has a positive correlation.

Table 10 shows the relationship of forestry resources with human capital, Institution and real income in non-OIC countries. For Models (1) and (3), there is a positive relationship between forestry and real income in non-OIC countries of 0.019 and 0.004 respectively, and is significant at a confidence level of 1% in model (1) while it has a negative correlation in model (2) of -0.001. The relationship for H1 and H3 is also positive for Models (1) and (3), with coefficients of 0.026 and 0.005 respectively while negative correlation is seen in model (2) which is -0.483. INST has positive correlations for model (1) to model (3) ranging from 0.005 and 0.001. Other variables such as GDP(-1), OPEN and TOT have positive coefficients for real income, while KG is negatively correlated. Table 11 shows the relationship between natural resource rents (coal) on human capital and real income in non-OIC countries. For Models (1) and (2), the relationship between natural resources is positive with the real income in non-OIC countries, with coefficients ranging between 0.001 and 0.002 while negative in model (3) of -0.001. Meanwhile, the relationship between human capital H1 to H3 is negative, with coefficients of -0.008 and -0.040 and significant at a confidence level of 1% in model (1) and also model (2). INST has positive correlations in model (1) and (2) which range between 0.001 and 0.023 while negative in model (3) which is -0.035. GDP(-1), TOT and OPEN are similar to Tables 8 to 10 with positive coefficients. Meanwhile, KG is negatively correlated. In Table 12, the relationship between natural gas is positive to the economic growth in non-OIC countries, ranging between 0.004 and 0.012 with a confidence level of 1% for models (1) to (3). Meanwhile, human capital is also negatively correlated for H2 and H3 at -0.982 and -0.018, respectively and H1 has a positive coefficient of 0.002. INST has positive coefficients for models (2) and (3) at 0.013 and 0.022 at a significance level of 5% in model (3) while being correlated negatively in model (1) at -0.007. Other variables such as TOT, OPEN and GDP(-1) are positively correlated and significant at a confidence level of 1%, while KG is negatively correlated to real income.

In general, this study found that oil is a blessing in OIC countries inconcordance with the study by Alaxeev and Conrad (2009) and Brooks and Kurtz (2013). Human capital in OIC countries is positively correlated to real income and oil. However, the Institution is negatively correlated to the real income and oil or in other words, corruption is still high in OIC countries but the oil sector is not affected because human capital is positively correlated. These findings are the same as those found in the study conducted by Omodadepo (2013) which found that oil is positively related to real income in Nigeria, which is also an OIC country and the development of human capital is a channel of the growth. Meanwhile, this study found that oil is a curse in non-OIC countries, a result that is the same as that reported in previous studies

which found oil to be a curse (Althammer & Schneider, 2013, Hong, 2014). Human capital in non-OIC countries are positively correlated to real income and oil, while Institution is negatively correlated to real income as was found in OIC countries. Oil in non-OIC countries are negatively correlated to the real income compared to OIC countries because non-OIC countries do not rely entirely on natural resources as compared to OIC countries. OIC countries are concentrated with the natural resource sector mainly for point source such as oil and mineral. Therefore, non-OIC countries devote their resources to manufacturing and services. Manufacturing demands the development of human capital, which in turn, benefits the entire economy, whereas primary production does not require high levels of human capital (Behbudi, Mamipour & Karami, 2010). This situation differs in OIC countries where there is a lack of skilled workers at diversifying these natural resource sectors to other income generating sectors like in non-OIC countries. The oil sector in non- OIC countries is also affected because of the weak institution in non-OIC showing that corruption is high in non-OIC. This is due to the rent-seeking activities from the oil sector as has been shown in previous studies (e.g. Wadho, 2011).

Minerals are a blessing in OIC countries while a curse in non OIC countries. Human capital in both OIC and non-OIC countries are positively correlated to real income and minerals. Institutions are negatively correlated in OIC countries while positively correlated to the real income in non-OIC countries. Minerals have been found in many previous studies to be a curse for economic growth.. In their study, Butkiewiez and Yanikkaya (2010) found that the owner of mineral resources will use their political power to minimize the country's investment in education in order to reduce labor costs. If the country practices openness in foreign trade, institutional weaknesses will lead to a decline in real income. Furthermore, certain resources are more likely to invoke certain behavior due to their physical and economic characteristics. Resources that are highly valuable, such as minerals (e.g. diamond and precious metal), are easily stored, transported (or smuggled) and sold and thus, are more attractive to anyone interested in illegitimate gains (Boschini, Pettersson, et al., 2007).

Oil and minerals in non-OIC countries negatively correlated to real income, but in terms of growth, non-OICcountries have higher growth compared to OIC countries has been shown in many previous studies. Economic growth is derived from the combined contributions of the natural resources sector and other sectors, while real income is derived fully from the contribution of natural resources. This is because non-OIC countries are not entirely dependent on the natural resource sectors such as in the case for OIC countries.Non-OIC countries diversify the sector to manufacturing and services sectors. The process of converting raw materials to automobile extract more value added from the raw material solely (Brunnscheiler, 2006).

Forestry is a blessing to non-OIC countries, while a curse to OIC countries. Human capital in OIC countries is positively

related to real income in both OIC and non-OIC countries. Meanwhile, the institution is negatively related in OIC and positively related in non-OIC countries. This suggests that the weak institutions in OIC countries negatively impact on real income in OIC countries. The Forestry rent is a curse to OIC countries because the source of forestry may be given to the rent seekers. The income from forestry rent is very small after considering the cost of planting and the maturity period of the plants. Furthermore, deforestation occurs after considering the rental incurred in harvesting. That is, the land is more valuable for agricultural activities compared to forestry. These situations can result in devastation, as in widespread illegal logging in some countries due to the large profit gained; for example in countries such as Malaysia, Indonesia and Ukraine (Pendergast, Clarke, et al., 2008). This condition is more prevalent in OIC countries compared to non-OIC countries and is due to the lack of democracy, corruption and weak institutions compared to non-OIC countries (Aras et al., 2012).

Looking at the wealth of natural gas, it is found that natural gas in the OIC countries is a curse and a blessing in the non-OIC countries. This is because in the non-OIC countries, they are more advanced in exploring natural gas resources, while the OIC countries derived their income from the rental of this gas. This is evident when looking at the institutions in the OIC countries where Institutions are negatively correlated while Institutions in non-OIC countries are positively related to real income and natural gas rent. Human capital in non-OIC countries is low or negatively correlated with real income and natural gas. This might be due to the overspending of non-OIC countries of their income derived from the rental of gas on social spending rather than managing it properly for human capital investments and financial assets. This is clear in the study by Althammer and Schneider (2013) in which they also found that many countries such as Kuwait, Oman, Algeria and another eight OIC countries which are rich in natural gas have lower economic growth than countries with natural gas, namely good economic growth in Trinidad, Tobago and Ecuador, i.e. the non-OIC countries.

Coal rent positively correlated to real income and institution in OIC countries while human capital in OIC countries is positive compared to human capital in non-OIC which is negatively related to real income and coal. Coal mining has a long legacy of providing needed jobs in isolated communities but it is also associated with places that suffer from high poverty and weaker long term economic growth, such in OIC countries in this study while the industry has greatly changed in recent decades. Technological change has reduced labor demand and has led to relatively new mining practices and perhaps this technological change affected the human capital in non-OIC countries having negatively related to the coal rent and real income (Betz, Farren et.al, 2014).

CONCLUSION

The study examines in detail the impact of the different types of rich natural resources such as oil, minerals, coal, forestry and natural gas on human capital and institution and real income in OIC and non-OIC countries using the generalized method of moments (GMM), which is not widely used in the study of natural resources.. Many questions have been asked regarding natural resources being a curse to those countries with rich natural resources in past studies. The question is why is it that for some countries, their natural resource wealth is a blessing, while for other countries it is a curse. In this study, there are many OIC countries that are being blessed with natural resources but do not have good real income compared to non-OIC countries.

However, there are also OIC countries that are rich in natural resources with high economic growth, such as Kuwait, Qatar, Malaysia and Brunei. As such, the purpose of this study was to examine the various types of natural resources that affect a country's economic growth. This is necessary in order to avoid the results reported in ongoing studies that are insignificant and confusing. This can happen if all kinds of natural resources are lumped and studied together leading to mixed results and inaccurate conclusions.

The results of the present study showed that oil and minerals are a blessing to OIC countries and a curse in non-OIC countries. Meanwhile, Natural gas and forestry are a curse to the OIC countries and a blessing to non-OIC countries. Coal is a blessing to both OIC and non-OIC countries. This study found that different types of resources impact both the OIC and non-OIC countries differently, including natural gas and forestry. It can be concluded that this effect varies according to how a country manages the assets of their natural resources in ways that are efficient, especially in terms of human capital investment. This is because human capital is the foundation and the main wealth of a country. Capital and natural resources are passive factors of production. Human capital is the agency that collects the capital, explores natural resources and creates social, political, economic and national development (Olaniyan & Okemakinde, 2008). If a country's human capital is stronger than the problem of corruption, and institutional weaknesses could be addressed, these could help the countries to generate state revenue through natural resources. However, developing growth factors such as education alone would not be successful without the stable institutional environment. Institutions and human capital investments are equally important and, when pursued together, it leads to economic prosperity (Mamoon & Murshed (2009).

REFERENCES

Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economics Studies 58*(2), 227-297.

Adebiyi, O., & Olomola, P.A. (2013). Oil Wealth; Meat in Norway, Poison in Nigeria: An Analysis of Human Capital as a Transmision of Resource

Curse. *Journal of World Economic Research. 2*(3), 39-44.

Auty, R. M. (1997), Natural Resource Endowment, The State and Development Strategy. *Journal of International Development, 9*(4), 651-663.

Amr, H., & Marshall, K. (2008). *Human Development In the Muslim World*. Doha Discussion Paper. Retrieved from https://www.brookings.edu/research/human-development-in-the-muslim-world/

Arellano, M., & Bover, O. (1995), Another Look at the Instrumental Variable Estimation of Error-components Model. *Journal of Econometrics, 68*(1), 29-51.

Althammer, W., & Schneider, M. (2013). *Does oil and Gas Wealth Eat Up Total Wealth? Analysing the Resource Curse With Measures of Sustainable wealth*. HHL Graduates School of Management.

Aras, N. O., Suleymanov, E., & Zeynalov, A. (2012). *Does Oil Income Impede Democratization in Muslim-Majority Countries?. Munich Personal Repec Archive*. Retrieved from http://mpra.ub.uni-muenchen.de/52236/.

Alaxeev, M., & Conrad, R. (2009). The Elusive Curse of Oil. *The Review of Economics and Statistics, August 2009, 91*(3), 586-598.

Abdulai, A. M., & Siwar, C. (2011). Linking sustainable livelihoods to natural resources and governance in OIC countries: Prospects and challenges. *Journal of Economic Cooperation and Development, 32*(2), 97-123.

Amjad, A. (2012). Are The Muslim Countries Doing Enough To Prepare The New Generation For Tomorrow?. *Academic Research International, 3*(2), 320.

Barro, R. J., & Lee, J. W. (1991). *Data set for a Panel of 138 Countries*. CID, Harvard University.

Boschini, D. A., Pettersson, J., & Roine, J. (2007). Resource Curse or Not: A Question of Appropriability. *Scandinavian Journal of Economics, 109*(3), 593-617.

Brunnschweiler, N. C., & Bulte, H. E. (2006). *The Resource Curse Revisited and Revised: A Tale of Paradoxes and Red Herrings*. Economics Working Paper Series, Center of Economic Research at ETH Zurich.

Barro, R. J., & Lee, J. W. (1991). *Data set for a Panel of 138 Countries.* CID, Harvard University.

Behbudi, D., Mamipour, S., & Karami, A. (2010). Natural Resource Abundance, Human Capital and Economic Growth In The Petroleum Exporting Countries. *Journal of Economic Development, 35*(3), 81-100.

Betz, M., Farren, M., Laboa, L., & Patridge, D. M. (2014). *Coal Mining, Economic Development, and the Natural Resource Curse*. Munich Personal RePEc Archive.

Butkiewiez, L. J., & Yanikkaya, H. (2010). Minerals, Institutions, Openness and Growth:An Empirical Analysis. *Land Economics, 86*(2), 313-328.

Brooks, S. M., & Kurtz, J. M. (2013). *Oil and Democracy: Endogenous Natural Resources and the Political "Resource Curse"*. Department of Political Science, Ohio State University.

Brunnschweiler, N. C., & Bulte, H. E. (2006). T*he Resource Curse Revisited and Revised: A Tale of Paradoxes and Red Herrings*. Economics Working Paper Series, Center of Economic Research at ETH Zurich.

Driouchi, A. (2014). *Testing of natural Resources as a Blessing or Curse to the Knowledge Economy in Arab Countries*. Munich Personal Repec Archive. IEAPS, Al Akhawayn University, Ifrane, Morocco.

Gylfason, T. (1999). A Mixed Blessing, Natural Resources and Economic Growth. *Macroeconomic Dynamics*, *3*(2), 204-225.

Gylfason, T. (2001). Natural resources, education, and economic development. *European economic review, 45*(4), 847-859.

Hong, Y. J. (2014). *Does Oil Hinder Social Spending? Evidence from Dictatorships, 1972-2008*. Retrieved from https://jiyeonhong.files.wordpress.com/2013/05/oil_socialspending_workingpaper.pdf

Isham, J., Pritchett, L.,Woolcock, M. (2002). *The Varieties of The Resource Experience: How Natural Resource Export Sructures Affect The Political Economy of Economic Growth*. Department Of Economics, Middlebury College.

Ivan, M., & Garcia, C. (2008). Education, Corruption and the Natural Resource Curse*, Halshs 00340997, Version 1-24 Nov 2008.* Retrieved from https://halshs.archives-ouvertes.fr/halshs-00340997/

Jerry, O., Hassan, S., & Ismail, R. (2011). Human Capital Develoment In Nigeria: A Granger Causality Model. Prodiding Perkem VI, Jilid 1, 1-13.

Jirsah, A. B., Sarmidi. (2015), Natural Resource Curse and Human Capital: A Revisit. *Jurnal Ekonomi Malaysia, 49*(1), 83 – 92.

Sachs, J. D., & Warner, A. M. (1995). Natural Resource Abundance and Economic Growth*, National Bureau of Economic Research, paper 5398*. The National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w5398

Jerry, O., Hassan, S., & Ismail, R. (2011), Human Capital Develoment In Nigeria: A Granger Causality Model: *Prodiding Perkem VI, Jilid 1*, 1-13.

Jirsah, A. B., Sarmidi. (2015), Natural Resource Curse and Human Capital: A Revisit. *Jurnal Ekonomi Malaysia, 49*(1)*,* 83 – 92.

Mileva, E. (2009). *Using Arellano-Bond Dynamic Panel GMM Estimators in stata Economics*. Economics Department, Fordham University, pp.1-10.

Mavrotas, G., Murshed, S. M., & dan Torres, S. (2011). Natural Resource Dependence and Economic Performance in the 1970-2000 Period*, Reviev of Development Economics, 15*(1), 124-138.

Murshed, S. M. (2004). When Does Natural resource Abundance Lead To A Resource Curse?. *Environtal Economics Programme, Discussion Paper 04-01.*

Mamoon, D., & Murshed, S.M. (2009). Want Economic Growth with Good Quality Institutions? Spend on Education. *Education Economics, 17*(4), 445-468.

Olaniyan, D. A., & Okemakinde, T. (2008). Human Capital Theory: Implications for Educational Development. *European Journal of Scientific Research, 24*(2), 157-162. Retrieved from http://www.eurojournals.com/ejsr.htm.

Omodadepo, A. O., & Akanni, O. P. (2013). Oil Wealth: Meat In Norway, Poison in Nigeria: An Analysis of Human Capital As a Transmission Channel of Resource Curse. *Journal of World Economic Research, 2*(3), 39-44.

Ortego, B., & Gregorio, J. (2005). *The Relative Richness of The poor? Natural Resources, Human Capital and Economic Growth*. Department of Economics. University of Chile.

Pendergast, M. S., Clarke, A. J., & Kooten, V. C. G. (2008). *Corruption and The Curse of Natural Resources.* Department of Economics, University of Victoria.

Philippot, M. P. (2010). *Are Natural Resources a Curse for Human Accumulation?*. Version-may 2010. Retrieved from http://cerdi.org/uploads/sfCmsContent/html/333/Philippot.pdf

Philippot, M. P. (2010). *Natural Resources and Economic Development in Transition Economics*. Pres de Clermout University.

Ploeg, F. V. D. (2011). Natural Resources: Curse or Blessing? *Journal of Economic Literature, 49*(2), 366-420.

Roodman, D. (2006). *How To Do Xtabond2: An Introduction To Difference and System GMM In Stata*. Working Paper For Center Global Development.

Schwalje, A. S. (2011). *Knowledge based Economic Development as a Unifying Vision in a Post awakening Arab World*. Working Paper. London School of Economics.

Sachs, J. D., & Warner, A. M. (1995). *Natural Resource Abundance and Economic Growth, National Bureau of Economic Research, paper 5398*. The National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w5398

Sala-i-Martin, X., & Arvind, S. (2003). *Addressing the Natural Resource Curse: An Illustration from Nigeria*. NBER Working Paper, 9804.

Stijns, P. J. (2004). *Natural Resource Abundance and Human Capital Accumulation.* Department of Economics, University of California at Berkeley.

Torvik, R. (2009). Why Do Some Resource Abundance Countries Succeed While Others Do Not?. *Oxford Review of Economic Policy, 25*(2), 241-256.

World Bank. (2012). *World Development Indicator, CD-ROM*. World Data market dataset (2012).

APPENDIX

Table 1
List of the Organisation of Islamic Cooperation (OIC)

Organization of Islamic Cooperation (OIC) Countries N: 35		
Albania	Egypt	Maldives
Bahrain	Oman	Mauritania
Bangladesh	Suriname	Morocco
Algeria	Saudi Arabia	Niger
Brunei Darussalam	Gambia	Nigeria
Burkina Faso	Indonesia	Syrian
Kuwait	Turkey	Pakistan
Chad	United Arab Emirates	Tunisia
Djibouti	Guinea	Senegal
Malaysia	Iran	Sierra Leone
Qatar	Jordan	Sudan
Comoros	Mali	

Table 2
List of Non-Organization Islamic Countries (NON OIC)

Non Organization of Islamic Cooperation (OIC) Countries N: 114		
Angola	Ghana	Panama
Antigua and Barbuda	Greece	Papua New Guinea
Argentina	Greenland	Paraguay
Australia	Guatemala	Peru
Austria	Guinea-Bissau	Philippines
Bahamas, The	Guyana	Poland
Barbados	Haiti	Portugal
Belgium	Honduras	Puerto Rico
Belize	Hong Kong SAR, China	Romania
Benin	Hungary	Rwanda
Bermuda	Iceland	Sao Tome and Principe
Bhutan	India	Seychelles
Bolivia	Ireland	Singapore
Botswana	Israel	South Africa
Brazil	Italy	Spain
Bulgaria	Jamaica	Sri Lanka
Burundi	Japan	St. Kitts and Nevis
Cameroon	Kenya	St. Lucia
Canada	Kiribati	St. Vincent and the Grenadines
Cape Verde	Korea, Rep.	Ethiopia
Central African Republic	Lesotho	Swaziland
Chile	Liberia	Sweden
China	Luxembourg	Switzerland
Colombia	Macao SAR, China	Tanzania
Congo, Rep.	Madagascar	Thailand
Costa Rica	Malawi	Togo
Cote d'Ivoire	Malta	Tonga
Cyprus	Marshall Islands	Trinidad and Tobago
Denmark	Mauritius	Uganda

Table 2 (*continue*)

Non Organization of Islamic Cooperation (OIC) Countries N: 114		
Dominica	Mexico	United Kingdom
Dominican Republic	Mongolia	United States
Ecuador	Mozambique	Uruguay
El Salvador	Namibia	Venezuela, RB
Equatorial Guinea	Nepal	Vietnam
Fiji	Netherlands	Zambia
Finland	New Zealand	Zimbabwe
France	Nicaragua	Cuba
Gabon	Norway	Germany

Table 3
Oil rent OIC

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
GDP(-1)	0.156*** (4.57)	0.633*** (5.08)	0.361*** (4.62)
OPEN	0.136*** (4.56)	0.176** (3.11)	0.210*** (4.21)
TOT	0.455*** (5.76)	0.342** (3.72)	0.372*** (5.61)
KG	0.032 (1.47)	0.107*** (4.30)	0.074 (2.31)
INST	-0.045 -(1.74)	-0.053* -(3.38)	-0.025 -(1.53)
N	0.012*** (4.18)	0.013 (1.11)	-0.109*** -(4.26)
H1	0.078* (2.90)		
H2		-1.234 -(2.07)	
H3			0.091 (0.63)
AR(1): p-value	0.416	0.476	0.904
AR(2): p-value	0.779	0.427	0.012
Hansen Test: p value	0.902	0.307	0.371
No of Observation	74	77	58
No of Countries	22	22	21

*Significant 10%; **significant 5%; ***significant 1%. Value in () referred to t-statistic

Table 4
Mineral rent OIC

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
GDP(-1)	0.130 (2.65)	0.107 (1.28)	0.349 (2.47)
OPEN	0.033* (2.96)	-0.019 -(1.08)	0.082 (1.10)
TOT	0.626*** (15.56)	0.632*** (15.10)	0.548** (3.85)
KG	-0.030 -(2.27)	-0.066** -(3.72)	0.016 (0.43)
INST	-0.070** -(3.75)	-0.045 -(2.84)	0.004 (0.10)
N	0.012** (3.79)	0.010** (4.08)	-0.001 -(0.02)
H1	0.055* (3.10)		
H2		0.838*** (5.73)	
H3			-0.093 -(0.99)
AR(1): p-value	0.112	0.072	0.214
AR(2): p-value	0.049	0.386	0.011
Hansen Test: p value	0.191	0.242	0.574
No of Observation	65	67	50
No of Countries	20	20	19

*Significant 10%; **significant 5%; ***significant 1%. Value in () referred to t-statistic

Table 5
Forest Rent OIC

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
GDP(-1)	0.206	0.328***	0.419***
	(1.40)	(4.71)	(4.28)
OPEN	0.097	0.068**	0.133**
	(2.00)	(3.93)	(3.29)
TOT	0.605**	0.563***	0.351**
	(2.89)	(10.44)	(3.39)
KG	-0.031	-0.031	-0.029
	-(0.62)	-(1.00)	-(1.05)
INST	-0.041	-0.025	-0.073
	-(0.71)	-(1.65)	-(2.32)
N	-0.026	-0.011	-0.019
	-(0.70)	-(1.42)	-(0.92)
H1	-0.001		
	-(0.02)		
H2		0.365**	
		(3.35)	
H3			0.052
			(2.08)
AR(1): p-value	0.172	0.684	0.603
AR(2): p-value	0.055	0.014	0.015
Hansen Test: p value	0.944	0.982	0.972
No of Observation	77	82	62
No of Countries	22	22	20

*Significant 10%; **significant 5%; ***significant 1%. Value in () referred to t-statistic

Table 6
Coal Rent OIC

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
GDP(-1)	0.113	0.048	0.095
	(2.27)	(1.09)	(2.89)
OPEN	0.075	0.052	0.069
	(2.79)	(1.48)	(1.20)
TOT	0.794***	0.812***	0.819***
	(11.12)	(18.59)	(9.33)
KG	0.027	0.026	0.059**
	(2.14)	(2.05)	(4.90)
INST	0.043	0.042	0.069
	(1.60)	(1.70)	(2.49)

Table 6 (*continue*)

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
N	0.001 (0.18)	0.003 (1.72)	0.004 (0.69)
H1	0.030 (0.71)		
H2		0.418 (1.77)	
H3			0.115 (1.35)
AR(1): p-value	0.959	0.586	0.901
AR(2): p-value	0.190	0.154	0.189
Hansen Test: p value	0.990	1.000	0.976
No of Observation	34	34	23
No of Countries	11	11	10

*Significant 10%; **significant 5%; ***significant 1%. Value in () referred to t-statistic

Table 7
Natural Gas Rent OIC

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
GDP(-1)	0.375 (10.41)	0.392*** (6.18)	0.222*** (4.22)
OPEN	0.141** (3.45)	0.134 (2.41)	0.049*** (0.67)
TOT	0.377*** (5.88)	0.420*** (6.80)	0.401*** (5.63)
KG	0.158** (3.23)	0.067 (2.67)	0.085 (0.014)
N	-0.087*** -(5.68)	-0.034** -(3.49)	0.073*** (4.50)
COR	-0.107* (0.004)	-0.047** -(3.19)	-0.077 -(2.29)
H1	0.091* (2.92)		
H2		0.089 (0.27)	
H3			-0.485** -(3.04)
AR(1): p-value	0.866	0.903	0.475
AR(2): p-value	0.430	0.625	0.108
Hansen Test: p value	1.000	0.965	0.854

Table 7 (*continue*)

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
No of Observation	73	76	58
No of Countries	21	21	20

Table 8
Oil rent non OIC

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
GDP(-1)	0.148*** (11.34)	0.341*** (12.72)	0.301*** (12.57)
OPEN	0.018*** (4.20)	0.012 (1.26)	0.030** (0.002)
TOT	0.806*** (80.93)	0.678*** (39.34)	0.677*** (38.91)
KG	-0.035*** -(4.51)	-0.115*** -(5.94)	-0.097*** -(6.23)
INST	-0.011*** -(3.95)	-0.006 -(0.93)	-0.007 -(0.87)
N	-0.002 -(2.40)	-0.008** -(3.02)	-0.006** -(3.32)
H1	0.014 (3.98)		
H2		-0.364 -(2.22)	
H3			0.100*** (6.65)
AR(1): p-value AR(2): p-value	0.869 0.058	0.155 0.768	0.158 0.635
Hansen Test: p value	0.371	0.288	0.151
No of Observation	155	170	127
No of Countries	45	45	42

*Significant 10%; **significant 5%; ***significant 1%. Value in () referred to t-statistic

Table 9
Mineral rent NON OIC

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
GDP(-1)	0.055	0.190***	0.124***
	(1.31)	(5.15)	(4.06)
OPEN	0.208*	0.050***	0.041**
	(2.71)	(3.77)	(3.40)
TOT	0.905***	0.830	0.828***
	(22.02)	(22.85)	(35.12)
KG	0.001	-0.052	-0.018
	(0.04)	-(4.58)	-(1.38)
INST	0.008	0.033***	-0.009
	(1.09)	(5.49)	-(0.90)
N	-0.003	-0.001***	-0.004
	-(1.75)	-(0.50)	-(2.26)
H1	0.019		
	(0.98)		
H2		-0.438**	
		-(3.16)	
H3			0.035
			(1.93)
AR(1): p-value	0.935	0.180	0.506
AR(2): p-value	0.034	0.981	0.995
Hansen Test: p value	0.448	0.214	0.578
No of Observation	198	230	177
No of Countries	61	61	57

*Significant 10%; **significant 5%; ***significant 1%. Value in () referred to t-statistic

Table 10
Forest Rent NON OIC

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
GDP(-1)	0.061***	0.112***	0.143
	(3.03)	(4.28)	(2.04)
OPEN	0.007	0.048***	0.028
	(0.61)	(4.26)	(1.63)
TOT	0.925***	0.882***	0.828***
	(36.22)	(42.71)	(14.35)
KG	-0.032*	-0.046**	-0.047
	-(2.80)	-(2.96)	-(1.75)
INST	0.005	0.012	0.001
	(1.29)	(1.53)	(0.08)

Table 10 (*continue*)

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
N	0.019** (3.23)	-0.001 -(0.79)	0.004 (0.26)
H1	0.026 (1.66)		
H2		-0.483** -(3.31)	
H3			0.005 (0.07)
AR(1): p-value	0.999	0.467	0.751
AR(2): p-value	0.067	0.668	0.964
Hansen Test: p value	0.513	0.547	0.278
No of Observation	252	292	224
No of Countries	74	74	70

*Significant 10%; **significant 5%; ***significant 1%. Value in () referred to t-statistic

Table 11
Coal Rent NON OIC

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
GDP(-1)	0.024*** (12.64)	0.185*** (18.12)	0.181*** (17.72)
OPEN	0.045*** (14.29)	0.056*** (22.91)	0.082*** (12.03)
TOT	0.931*** (257.64)	0.820*** (103.38)	0.732*** (150.20)
KG	0.044*** (15.12)	-0.006 -(0.73)	-0.027*** -(10.00)
INST	0.001 (0.28)	0.023*** (16.53)	-0.035*** -(10.14)
N	0.001 (1.98)	0.002 (0.89)	-0.001*** -(4.40)
H1	-0.008*** -(4.22)		
H2		-0.414*** -(5.53)	
H3			-0.040 -(2.40)
AR(1): p-value	0.341	0.266	0.410
AR(2): p-value	0.353	0.199	0.624
Hansen Test: p value	0.372	0.204	0.345

Table 11 (*continue*)

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
No of Observation	120	130	89
No of Countries	40	40	34

*Significant 10%; **significant 5%; ***significant 1%. Value in () referred to t-statistic

Table 12
Natural Gas Rent NON OIC

Dependent variable: Per capita GDP			
Independent variable	(1)	(2)	(3)
GDP(-1)	0.213*** (11.18)	0.008*** (35.90)	0.255*** (12.22)
OPEN	0.018* (2.76)	0.035** (3.26)	0.028*** (3.89)
TOT	0.757*** (61.86)	0.675*** (49.16)	0.715*** (36.84)
KG	-0.064*** -(4.94)	-0.145*** -(10.83)	-0.098*** -(7.15)
N	0.004** (3.32)	0.008*** (5.99)	0.012*** (8.32)
INST	-0.007 -(0.92)	0.013 (1.86)	0.022** (3.64)
H1	0.002 (0.36)		
H2		-0.982*** -(7.77)	
H3			-0.018 -(1.40)
AR(1): p-value	0.594	0.251	0.272
AR(2): p-value	0.119	0.606	0.985
Hansen Test: p value	0.368	0.481	0.521
No of Observation	147	162	120
No of Countries	44	44	42