

**THE ROLE OF POINT-SOURCE NATURAL RESOURCES IN  
DEVELOPMENT**

**By**

**Alejandra Perez-Pla**

**Economics Thesis**

**Presented to Professor Michael Dorsch of**

**The American University of Paris**

**Fall 2011**

## Table of Contents

<b>1. Introduction</b> .....	<b>3</b>
<b>2. Literature Review</b> .....	<b>5</b>
<b>3. Data</b> .....	<b>12</b>
3.1. Data Sources and Description.....	<b>13</b>
<b>4. Empirical Results</b> .....	<b>16</b>
4.1. Graph A.....	17
4.2. Graph B.....	17
4.3. Table 1. Impact of Total Crude Oil Reserves per Capita on Human Development controlling for Quality of Government Variable as a measure of Institutional Quality.....	18
4.4. Table 2. Impact of Total Crude Oil Reserves per Capita on Human Development controlling for Revised Polity Score as a measure of Institutional Quality.....	19
4.5. Table 3. Impact of Total Crude Oil Reserves per Capita on Human Development controlling for Functioning of Government as a measure of Institutional Quality.....	21
4.6. Table 4. Impact of Total Crude Oil Reserves per Capita on Inequality controlling for Quality of Government as a measure of Institutional Quality.....	22
4.6. Table 5. Impact of Total Crude Oil Reserves per Capita on Inequality controlling for the Revised Combined Polity Score as a measure of Institutional Quality.....	23
4.7. Table 6. Impact of Total Crude Oil Reserves per Capita on Inequality controlling for Functioning of Government as a measure of Institutional Quality.....	24
4.8. Table 7. Impact of Total Crude Oil Reserves per Capita on Literates as a % of population controlling for Quality of Government as a measure of Institutional Quality.....	25
4.9. Table 8. Impact of Total Crude Oil Reserves per Capita on Literates as a % of population controlling for the Revised Combined Polity Score as a measure of Institutional Quality.....	26
4.10. Table 9. Impact of Total Crude Oil Reserves per Capita on Literates as a % of population controlling for Functioning of Government as a measure of Institutional Quality.....	27
<b>5. Country Cases</b> .....	<b>28</b>
5.1. Blessed Nations.....	28
5.2. Cursed Nations.....	33
<b>6. Conclusion</b> .....	<b>39</b>
<b>7. References</b> .....	<b>42</b>
<b>Appendix A. Summary Statistics</b> .....	<b>46</b>
<b>Appendix B. Human Development Index and its components, UNDP, 2011</b> .....	<b>46</b>
<b>Appendix C. BP Statistical Review of World Energy, June 2011</b> .....	<b>51</b>

*'I call petroleum the devil's excrement. It brings trouble...Look at this locura—waste, corruption, consumption, our public services falling apart. And debt, debt we shall have for years.'*

(Juan Pablo Pérez Alfonso, founder of OPEC, 1975)

*'You give me \$18-a-barrel oil and I will give you political and economic reform from Algeria to Iran.'*

(Thomas Friedman, *New York Times*, January 30, 2005)

*'The meek shall inherit the Earth, but not the mineral rights'*

(Jean Paul Getty, US oil industrialist, (1892-1976))

## **1. Introduction**

The impact of natural resources on economic development has been of economic, social and political concern for centuries past, the Resource Paradox being amongst the most puzzling of them. Predominant explanations fall into one of three categories: cognitive explanations, which contend that resource booms produce a type of short sightedness among policymakers, societal explanations, which argue that resource exports tend to empower sectors classes or interest groups that favour growth-impeding policies; and state centred explanations contend that resource booms tend to weaken state institutions. It has been widely accepted that countries endowed with vast point-source natural resources such as oil are doomed to suffer the resource curse, impeding them from properly developing economically, politically and socially. Nevertheless the most recent literature on the subject presents

evidence that an abundance of does not directly hamper economic and social development, institutional quality and government stability being the main factors in determining whether a large oil endowment will result in a curse or a blessing for the endowed nation. Recently, a large body of scholars, including Cavalcanti et al (2009) and Brunnschweiler and Bulte (2008) have found the resource curse to be inexistent, further asserting that resource abundance positively affects growth, opposing Sachs' and Warner's (1995, 1997) theory that presents evidence of a negative statistical relationship between natural resource-based exports and growth rates during the period 1970-90, their thesis conclusion being the most widely disseminated and endorsed. In this paper, the latter and other literature is reviewed and new evidence between point-source natural resources, in particular oil, and economic and human development is presented.

This paper presents evidence that institutional quality and resource efficiency management, controlling for other important factors<sup>1</sup>, are the crucial elements in determining whether countries endowed with vast amount of wealth in the form of point-source natural resources, in this case oil, will benefit from it, or contrarily be cursed by it.. Nonetheless, its to be noted that the negative outcomes associated with resource-rich nations, such as The Dutch Disease, civil conflict and human rights abuse, among others, are highly are aggravated if the natural resource is a point-source resource, for instance oil, the case not being the same for diffuse resources alike rice or wheat. As a result, the basket of commodities is narrowed to oil as the Resource Paradox only holds for point-source resources and not diffuse resources.<sup>2</sup> Statistical evidence is found for oil abundance resulting in a curse or a blessing relying on the political and social context existing in the country at the time of oil discovery, particularly the regime type and institutional quality.

The results presented in this paper lead to the conclusion that countries rich in point-source natural resources are both growth and development looser and winners, the main

---

<sup>1</sup> Real GDP and regime type.

<sup>2</sup> Isham et al, 2005.

reason for these divergences relying on the quality of their institutions<sup>3</sup>, contrasting Sachs and Warner's assertion that institutions do not play a role. Furthermore, the growth effects of natural resource discoveries and anticorruption policies crucially depend on the economy's state of development.<sup>4</sup> Many resource-based economies have performed badly, not for overemphasizing the importance of minerals in their economies yet as a result of failing to develop their mineral potential through appropriate policies.

The aforementioned paper is structured as follows: Section 2 provides a review of the existing literature on the subject. A description of the data is provided in Section 3. The main regression results are presented in Section 4. Section 5 provides an in-depth analysis of selected cases. Section 6 concludes.

## 2. Literature Review

Prior to the late 1960s, cognitive approaches suggested that resource wealth caused a type of myopia among public and private actors. Such notion appears in the major works of Machiavelli, Montesquieu, Adam Smith and John Stuart Mill and is vividly exposed in *Six Books of a Commonwealth* by Bodin who exposes that:

*“Men of fat and fertile soil, are most commonly effeminate and cowards; whereas contrariwise a barren country makes men temperate by necessity, and by consequence careful, vigilant and industrious.”*

Afterwards, economists such as Walter Rostow (1961) stated that natural resource endowments would allow developing countries from underdevelopment to industrial 'take-off', using the United States and Australia as examples. Since the 1980s, influential literature contradicting these views has emerged suggesting that an abundance of particular types of natural resources increases the probability that countries will experience poor economic performance, low levels of democracy and civil war. Major international financial institutions such as the World Bank and International Monetary Fund, as well as many ngos, widely

---

<sup>3</sup> Mehlum et al., 2006.

<sup>4</sup> Leite and Weidmann.

accept the idea that natural resource abundance is negative for development. Considerable evidence in the field of ‘resource curse’ studies has brought forward various strains of reasoning, aspiring to explain the struggles that arise with the discovery of oil. Most of the literature chooses either a political or an economical approach to highlight potential reasons. The most recent literature emphasizes the role of institutions in determining whether an abundance of a natural resource will lead to a curse or a blessing<sup>5</sup>, narrowing the resource paradox to point-source natural resource endowments<sup>6</sup> and innovatively linking resource abundance with positive growth and institutional quality.<sup>7</sup>

Early studies considering the macroeconomic effects of resource abundance focused on the phenomenon experienced in the Netherlands after the large though short-lived discovery of gas in 1960’s, known as the “Dutch Disease”.<sup>8</sup> When a country is said to suffer from “Dutch Disease” they observe an increase in their real exchange rate followed by a decrease in output and employment of the non-resource traded goods sector as a result of an unexpected increase in foreign exchange revenues from the resource. The non-resource traded goods sector most commonly affected tends to be the manufacturing sector, in which case, if it’s subject to economies of scale or learning by doing, the loss of manufacturing capacity will be very costly to reverse. Nonetheless, once the revenues from the resource fall, unless there are major imperfections in the economy, the latter should re-adjust. Most macroeconomic analysis of oil revenues tend to take a short term perspective, focusing on the effects of oil revenues on the real exchange rate (Dutch Disease) and government budget expansion, failing to consider their effects on long run growth.<sup>9</sup>

Terry Lynn Karl’s book ‘The Paradox of Plenty’ presents state-centered explanations for the “resource paradox”, placing particular emphasis on countries that are heterogeneous in almost every aspect except oil, countries as dissimilar as Venezuela, Iran and Nigeria. Karl stresses that oil seems to be the common denominator which leads to a state’s fiscal

---

<sup>5</sup> Mehlum et al, 2006.

<sup>6</sup> Murshed, 2004.

<sup>7</sup> Brunnschweiler and Bulte, 2007.

<sup>8</sup> For further insight Krugman, 1987 and Van Wijnbergen, 1986.

<sup>9</sup> Esfahani et al., 2010.

dependence on petrodollars and public spending, at the expense of the statecraft. As a result, the oil booms of the 1970s and 1980s were highly treacherous as they created the illusion of development and prosperity when actually it destabilized the regimes of oil-rich countries by reinforcing oil-based interests and further weakening state capacities. Her central claim is:

*“Dependence on petroleum revenues produces a distinctive type of institutional setting, the petro-state, which encourages the political distribution of rents. Such a state is characterized by fiscal reliance on petrodollars, which expands state jurisdiction and weakens authority as other extractive capacities wither. As a result, when faced with competing pressures, state officials become habituated to relying on the progressive substitution of public spending for statecraft, thereby further weakening state capacity.” (p. 16)*

Of Karl’s four brief studies of Algeria, Iran, Indonesia, and Nigeria, her argument can be applied, for the purpose of this study, to Nigeria although not Venezuela. Of her five cases, Venezuela endured the largest “boom effect”, yet it outperformed the rest of Latin America in GNP growth, employment growth, infant mortality, life expectancy and education. In the past, discussions on rentier states have been predominantly led by Middle Eastern scholar and expert Hussein Mahdavy, who noted that petroleum revenues in Middle Eastern countries were an external source of rents directly captured by governments and thereby rendered unaccountable to citizens, and continued by researchers such as Hootan Shambayati, Hazem Beblawi, Douglas Yates and Gwenn Okruhlik. These scholars present rentier states in the light of countries that receive a majority of their revenues from the sales of a natural resource. The Comparative Politics Professor at The American University of Paris, Douglas A. Yates puts forward the argument that countries receiving substantial amounts of oil revenues from the outside world on a regular basis tend to become autocratic, autonomous from their societies and unaccountable to their citizens, leading to a rentier mentality that dooms a country’s economy and long-term prospects. This creates a situation in which the domestic industry will not perform to its best ability and throw away much of its potential. The rentier-

state, also referred to as the petro-state theory is used to explain why countries such as Nigeria, the Gulf States and many African States such as Gabon and Nigeria that are resource-rich, perform less well than their resource-poor counterparts. Nigeria's poor government performance and stagnating national industry prove Yates's theory. Additionally, as articulated by Paul Collier and Anne Hoeffler in 'Resource Rents, Governance, and Conflict', the indicated rents finance dysfunctional conflicts, witnessed in the continuous violence and human rights violations occurring in the Niger Delta.

Jeffery Sachs and Andrew Warner refer to the seventeenth century when resource-poor Netherlands eclipsed Spain, despite the overflow of gold and silver from Spanish colonies in the New World, to expose the similar situation that according to them suffer resource-rich countries today. In 'Natural Resource Abundance and Economic Growth' they take a societal approach, focusing on economical indicators to explain how countries with natural-resource-abundance have a slower growth rate than their natural resource poor counterparts. The study analyses countries with a high natural resource export ratio to GDP from 1970-1990, showing these to have suffered slower growth rates in the 20 year timeframe. Furthermore, the study explores how this negative relationship holds true even after controlling for variables found to be important for economic growth, such as, initial per capita income, trade policy, government efficiency and investment rates, among others. However, the empirical models Sachs and Warner use for case justification are, as they call it, only mildly supportive to endogenous growth effects and therefore a cautious approach for the use of their statistical data must be taken. Such approach makes sense for countries with a limited amount of oil reserves, but not for major oil exporting countries such as Iran or Saudi Arabia.

Diverging from Sachs' and Warner's narrow approach and turning closer towards institutional and governmental quality explanations, Michael L. Ross addresses the effect of an abundance in point-source natural resources in a country's transition to democracy by employing a statistical analysis of 113 states between 1971 and 1997 to analyse why oil exporting nations and democracies fail to collude. In 'Does Oil Hinder Democracy', Ross'

mathematical approach exposes how a surplus of oil resources hinders the growth of democracies, assisting in substantiating theories that question factors of development. Ross' study concludes that "a states reliance on either oil or mineral exports tends to make it less democratic; that this effect is not caused by other types of primary exports; that it is not limited to the Arabian Peninsula, to the Middle East, or to sub-Saharan Africa; and that it is not limited to small states". Interestingly enough, Ross advocates the concept of a "taxation-effect" in which oil rich governments manage to relieve social pressure, which could otherwise lead to demands for greater government accountability, through the use of oil generated revenues. Tsui (2010) provides further insight stating that discovering 100 billion barrels of oil (approximately the initial endowment of Iraq) pushes a country's democracy level almost 20 percentage points below trend after three decades, the estimated effect being larger for oilfields with higher-quality oil and lower exploration and extraction costs. Besides, Beblawi and Luciani (1987) aver that "The fact is that there is 'no representation without taxation' and there are no exceptions to this version of the rule."

Contrary to Ross' hypothesis, Herb (2005) states that an abundance of oil and mineral resources has no effect on democracy, pointing out that any argument about the impact of natural resource rents on regime types requires the specification of a counterfactual: what would a resource dependent country look like had it not found resources? Herb estimates how much poorer resource dependent countries would have been if they had not developed their natural resource sectors and estimates their level of democracy at such counterfactual levels of GDP, pointing out that the net, negative effect of resource dependence on democracy is negligible. Besides, Haber and Menaldo (2011) find that natural resource dependence does not undermine democracy, preclude democratic institutions, or protract democratic institutions. Likewise, they do not indicate that democratization is universally promoted by natural resource dependence. Nevertheless, the most recent and predominant consensus is exposed in the words of a recent World Bank publication (Harford and Klein 2005):

*“[Natural resource exports] can damage institutions (including governance and the legal system) indirectly-by removing incentives to reform, improve infrastructure, or even establish a well-functioning tax bureaucracy-as well as directly by provoking a fight to control resource rents. ...There is growing evidence that [this] effect is the most problematic.”*

In addition, a number of scholars have presented evidence that suggests that the main issue facing development outcomes in resource abundant countries is not natural abundance per se but an abundance of particular types of natural resources.<sup>10</sup> Isham et al. (2002) found that countries that are rich in ‘point-source’ natural resources, such as oil and minerals, grew much more slowly during 1980s and 1990s than countries that are rich in ‘diffuse’ natural resources, such as wheat and rice. Certain types of natural resources such as oil and minerals have a tendency to lead to production and revenue patterns that are concentrated, while revenue flows from other types of resources such as agriculture are more diffused throughout the economy (Murshed, 2004). Murshed (2004) affirms;

*“In conclusion, the stylised facts do point to the fact that developing countries with a rich endowment of mineral or point-source natural resources have performed worse in economic terms than countries less rich in point-source resources, at least in the last three decades...Our findings suggest that a point-source type natural resource endowment does retard democratic and institutional development which in turn hampers economic growth.”*

This suggests that abundance in point-source natural resources such as crude oil has an indirect negative impact on economic growth and development through institutional quality. Murshed goes further adding that an abundance in point-source natural resources such as crude oil not only has an indirect and negative effect on economic growth and development through its effect on institutional quality, additionally, the quality of existing institutions and the political and social climax present at the time oil is discovered, play a major role in addressing resource wealth as a blessing or a curse. Closer to Rostow’s decades old

---

<sup>10</sup> Rosser, 2006.

hypotheses, Brunnschweiler and Bulte (2008), Cavalcanti et al (2009) argue that the resource curse is inexistent, adding that while resource dependence does not affect growth, resource abundance positively affects growth. In ‘Cursing the Blessings? Natural Resource Abundance, Institutions, and Economic Growth’, Brunnschweiler finds a positive direct empirical relationship between natural resource abundance and economic growth. Besides, Cavalcanti et al (2011b) introduce the point that commodity price volatility rather than abundance *per se*, drives the “resource curse” paradox. As Friedman states in ‘The First Law of Petropolitics’, the pace of freedom really starts to decline as the price of oil really starts to take off. According to the “First Law of Petropolitics”, the higher the average crude oil price rises, the more free speech, free press, free and fair elections, an independent judiciary, the rule of law, and independent political parties are eroded.

### 3. Data

The argument from the Introduction suggests that countries rich in natural resources constitute both growth losers and winners, such experiences diverging in the quality of their institutions. The following dataset is assembled to test for the effect of Crude Oil Reserves per capita on development by testing its effect on Human Development, Inequality and Literates as a percentage of adult population.

The predominating existing literature does not give enough thoughtfulness to the concept of “resource abundance”, commonly regarding fuel exports as a percentage of total exports with “resource abundance”, leading to the contention that it is the counterfeit of a country’s given geological endowment. This conformity is an implicit assumption, previously unquestioned and that has recently received increased attention. Studies that use more appropriate measures of mineral abundance (such as reserves per capita or the level of natural resource exports per worker) do not find that these variables are negatively associated with growth rates<sup>11</sup>. Consequently, in this study, reserves per capita is employed as the measure of a country’s oil endowment, rendering the data used in this study less prone to the policy

---

<sup>11</sup> Wright and Czelusta, 2004.

endogeneity that afflicts export-based measures, such as the commonly used resource variable of Sachs and Warner, defined as the ratio of resource exports to GDP. Reserves per capita is used instead of total reserves as this study wants to measure the positive/negative welfare effect a large oil endowment has on a country's development and therefore on the life's of its citizens. As a result, this study considers that in the case of bad economic performance due to inappropriate policies as a result of a badly functioning government, they are entitled to an equal wealth they have inherited by origin and birth, measured as oil endowment per capita. All estimations are performed using a variety of alternative measures of welfare to confirm that the results are robust to different specifications. The alternative measures of welfare used in the following regressions include The Human Development Index, The Gini (Inequality) Index and Literates as a % of population.

### 3.1. Data Sources and Description

*Oil Reserves and Oil Reserves per capita Data.* Total Oil Reserves are obtained from the *OPEC's Annual Statistical Bulletin 2010/2011* and *BP's Statistical Review of World Energy June 2011*. For the purpose of this paper total oil reserves refers solely to the total crude oil proven reserves of oil producing nations for the year 2010. Non-producing nations are not assigned any value. To obtain the variable Total Oil Reserves per capita (*rsrvs\_cap*), total oil reserves for each country for the year 2010 is divided by each country's total population.

*Other Explanatory Variables.* Besides Total Crude Oil Reserves per capita, the other explanatory variables used in the following regressions to explain the impact of point-source natural resources in development are obtained from the Quality of Government Institute's Quality of Government Cross-Section Dataset (version 15 May 2008).

*Variables measuring Institutional Quality and Regime Type.* The ICRG indicator of Quality of Government (*icrg\_qog*) is the mean variable of the ICRG variables "Corruption", "Law and Order" and "Bureaucracy Quality", scaled 0-1, with higher values indicating a higher quality of government. The Revised Combined Polity Score is computed by subtracting the *p\_autoc* score from the *p\_democ* score; the resulting unified polity scale

ranges from +10 (strongly democratic) to -10 (strongly autocratic). The Economist Intelligent Unit-Index of Democracy's Functioning of Government variable (eiu\_fog) is based on indicators relating to factors such as the extent to which control over government is exercised by elected representatives, the capability of the civil service, and the pervasiveness of corruption. Hadenius, Teorell and Wahman's-Types of Authoritarian Regimes variable is based on a distinction between three modes of political power maintenance (probably the three most widely used throughout history): hereditary succession (lineage), corresponding to monarchies; the actual or threatened use of military force, corresponding to military regimes; and popular elections, designating electoral regimes.

*Resource Efficiency Variables.* The Bertelsmann's Transformation Index Resource Efficiency variable (bti\_re) measure to what extent the government makes efficient use of available economic and human resources; to what extent the government can coordinate conflicting objectives into a coherent policy; and to what extent government successfully contains corruption.

*Economic Growth Variables.* The Gleditsch-Expanded Trade and GDP Dataset's variable Real GDP per Capita (gle\_rgdp) is the estimate of real GDP per Capita in constant US dollars at the base year 2000.

*Dependent Variables.* All of the dependent variables used in the following regressions to explain the impact of point-source natural resources in development are obtained from the Quality of Government Institute's Quality of Government Cross-Section Dataset (version 15 May 2008). The UNDP's Human Development Index (undp\_hdi) is a composite index that measures the average achievements in a country in three basic dimensions of human development: a long and healthy life, as measured by life expectancy at birth; knowledge, as measured by the adult literacy rate and the combined gross enrolment ratio for primary, secondary and tertiary schools; and a decent standard of living, as measured by GDP per capita in purchasing power parity (PPP) US dollars. UNDP's Inequality Measure Gini Index (undp\_gini) measures the extent to which the distribution of income (or consumption) among

individuals or households within a country deviates from a perfectly equal distribution. A value of 0 represents perfect equality, a value of 100 perfect inequalities. Vanhanen's-Index of Power Resources Literates% (van\_literates) variable measures literates as a percentage of adult population.

#### 4. Empirical Results

For all of the following regressions, the dependent variable is a measure of development obtained from the QOG Dataset: Tables 1, 2 and 3 have the Human Development Index<sup>12</sup> as dependent variable, Tables 4, 5 and 6 have the Inequality Index as dependent variable and Tables 7, 8 and 9 have Literates as a % of population as dependent variable. Institutional quality measures vary from Quality of Government in the regressions included in Tables 1, 2 and 3, the Revised Combined Polity Score in those included in Tables 4, 5 and 6, and Functioning of Government in Tables 7, 8 and 9. The top row of the Table presents the coefficient on the reserves per capita variable I created using Opec's total crude oil reserves and BP's proved oil reserves for the year 2010. Total crude oil reserves were divided by each country's population, non-oil producing countries have missing values<sup>13</sup>. An interaction term between reserves per capita and the alternative institutional quality measurements is included in all of the regressions as existing literature shows strong evidence that these variables have an interactive effect. Variables such as Resource Efficiency and Real GDP per capita are controlled for<sup>14</sup>.

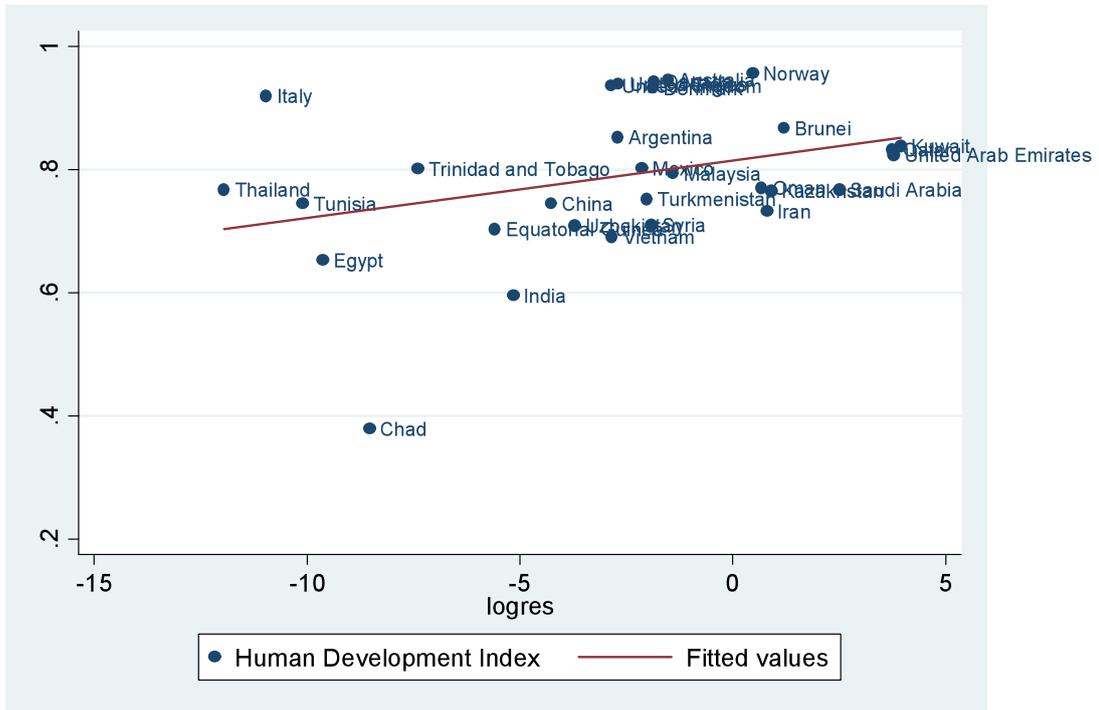
---

<sup>12</sup> Appendix A: *Human Development Index and its components*, UNDP, 2011.

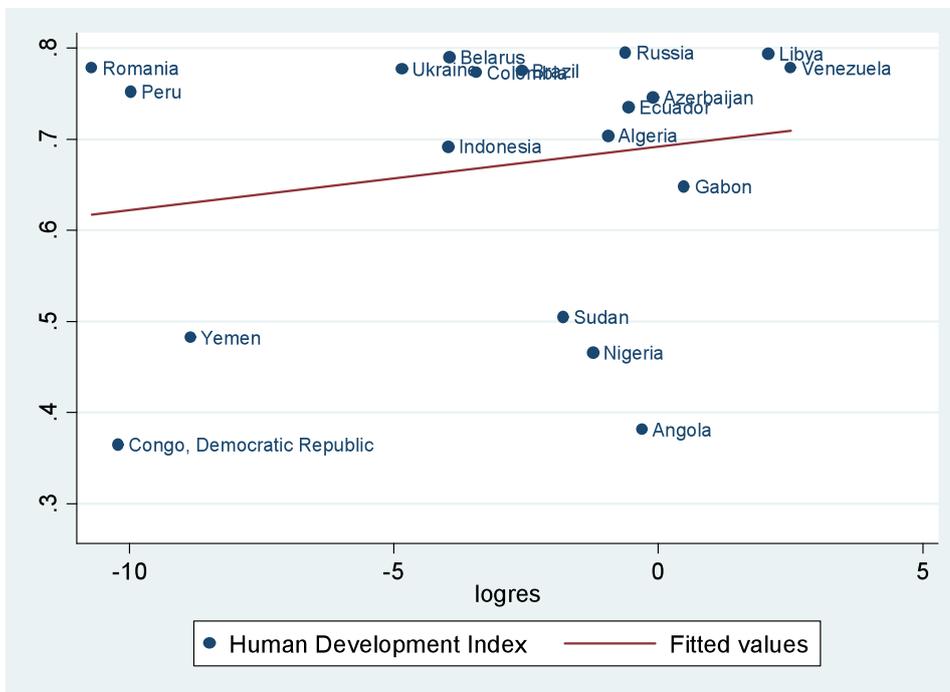
<sup>13</sup> Appendix B: *BP Statistical Review of World Energy*, June 2011.

<sup>14</sup> Appendix C: Summary Statistics.

4.1.  
Gra  
ph  
A.  
Oil  
end  
ow  
ed  
cou  
ntri



es above the Median Human Development Index.



4.2.

Oil endowed countries above the Median Human Development Index.

Graph B.

**4.3 Table 1. Impact of Total Crude Oil Reserves per Capita on Human Development controlling for Quality of Government as a measure of Institutional Quality**

VARIABLES	(1) Undp_hdi	(2) Undp_hdi	(3) Undp_hdi	(4) Undp_hdi	(5) Undp_hdi	(6) Undp_hdi
Rsrvs_cap	0.00340 (0.00222)	0.00264* (0.00155)	0.0381** (0.0182)	0.0438** (0.0209)	0.0326* (0.0176)	0.0363** (0.0167)
Icrg_qog		0.655*** (0.0531)	0.675*** (0.0534)	0.564*** (0.156)	0.240* (0.140)	0.270** (0.133)
Rsrvs_qog			-0.0628* (0.0321)	-0.0711* (0.0371)	-0.0758** (0.0311)	-0.0824*** (0.0294)
Bti_re				0.0193* (0.0112)	-0.00501 (0.0102)	-0.0231** (0.0110)
Gle_rgdp					2.36e-05*** (3.78e-06)	2.48e-05*** (3.59e-06)
Ht_regtype						0.000988*** (0.000290)
Constant	0.695*** (0.0138)	0.364*** (0.0303)	0.352*** (0.0306)	0.311*** (0.0493)	0.445*** (0.0465)	0.468*** (0.0445)
Observations	175	133	133	95	95	95
R-squared	0.013	0.545	0.558	0.395	0.580	0.629

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 1 reports the main regression results. Regression (1) shows that the effect of crude oil reserves per capita on human development is statistically insignificant, failing to reject the null hypotheses, which states that there is no relationship between the dependent and independent variables. In the following regressions, those determinants of Human

Development which could be causing omitted variable bias are included. The effect of crude oil reserves per capita on human development becomes statistically significant at the 10% level when controlling for Quality of Government, the latter being significant at a 1% level. When the interaction term reserves per capita-quality of government is included in the regression, the statistical significance of reserves per capita increases from 10% to 5%. The coefficient of reserves per capita appreciates from 0.00264 to 0.0381, reflecting a change due to the collinearity between the interacted terms. The interaction term is significant in all of the regressions, exposing a relationship between quality of government and reserves per capita, both simultaneously with The Human Development Index. This leads to the association between reserves per capita and The Human Development Index varying according to the value of quality of government and the association between quality of government and The Human Development Index varies according to a country's oil endowment per capita. Moreover, the reserves per capita-quality of government interaction term is always negative, implying that the positive impact of reserves per capita is larger the higher Quality of Government a country has. Indeed, since in all cases the magnitude of the coefficient of the interaction term is smaller than the reserves per capita coefficient, abundant reserves per capita may discourage further development for countries on the Medium Human Development Range, such as Equatorial Guinea. When resource efficiency is controlled for, one unit increase in reserves per capita leads to a four unit increase in the HDI, stressing the important role that resource efficiency, through good policies, plays in addressing a large oil endowment as a blessing not a curse. The size of the impact of an increase in one unit of crude oil reserves per capita is of a four unit increase in the Human Development Index for High Quality Government countries, though the story appears different for countries with a Low Quality Government. Through regressions (2)-(6) the coefficient of reserves per capita remains significant, reflecting a positive impact of oil reserves per capita on human development through government quality. Regression (6) is used as the main regressions for

the argument of this paper, with an R-squared of .629, thus explaining more than 60% in the variance of Human Development.

**4.4. Table 2. Impact of Total Crude Oil Reserves per Capita on Human Development controlling for the Combined Revised Polity Score as a measure of Institutional Quality**

VARIABLES	(1) Undp_hdi	(2) Undp_hdi	(3) Undp_hdi	(4) Undp_hdi	(5) Undp_hdi	(6) Undp_hdi
Rsrvs_cap	0.00340 (0.00222)	0.00744** *	0.00690 (0.00683)	0.0125* (0.00694)	-0.00185 (0.00567)	-0.000111 (0.00560)
P_polity2		0.0130*** (0.00217)	0.0131*** (0.00219)	-0.000700 (0.00277)	0.00356 (0.00222)	0.000546 (0.00251)
Rsrvs_polity2			-6.99e-05 (0.000831)	0.000946 (0.000876)	0.00126* (0.000684)	0.00151** (0.000677)
Bti_re				0.0499*** (0.00914)	-0.00731 (0.00988)	-0.0134 (0.0100)
Gle_rgdp					2.85e-05*** (3.41e-06)	2.83e-05*** (3.34e-06)
Ht_regtype						0.000795** (0.000334)
Constant	0.695*** (0.0138)	0.632*** (0.0159)	0.632*** (0.0160)	0.414*** (0.0411)	0.522*** (0.0345)	0.528*** (0.0339)
Observations	175	153	153	111	111	111
R-squared	0.013	0.207	0.207	0.292	0.575	0.597

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In Table 2 the Revised Combined polity Score is used to measure the impact of Total Crude Oil Reserves per capita on Human Development controlling for a country's level of democracy. The same dependent variable and other explanatory variables as in Table 1 are regressed, substituting *icrg\_qog* for *p\_polity2*. As in the previous Regressions, the effect of Oil endowment per capita only becomes statistically significant when a control variable for institutional quality is introduced, becoming statistically insignificant when the reserves per capita-revised combined polity score is introduced, the latter being statistically insignificant, while the revised combined polity score remains significant at the 1% level. The negative sign in the interaction term discloses that the effect of crude oil reserves per capita is lower for democratic governments. In regression (4), the Resource Efficiency variable is introduced proving statistically significant at the 1% level and rendering Reserves per capita statistically significant at the 10% level, shifting the coefficient of reserves per capita upwards from

0.00690 to 0.0125, establishing an efficient management of oil reserves positive for a country's development. Nevertheless, when other control variables such as Real GDP per capita and regime type are included in the regression, the sign in the interaction term turns positive and R-squared increases considerably, suggesting that when controlling for the aforementioned variables, the effect of reserves per capita becomes higher for democracies. Regression (6) explains almost 60% of the variance in the HDI and since the magnitude of the interaction term is larger than the reserves per capita coefficient, a large oil endowment may encourage further political liberalisation for semi-democratic governments.<sup>15</sup>

**4.5. Table 3. Impact of Total Crude Oil Reserves per Capita on Human Development controlling for Functioning of Government as a measure of Institutional Quality**

VARIABLES	(1) Undp_hdi	(2) Undp_hdi	(3) Undp_hdi	(4) Undp_hdi	(5) Undp_hdi	(6) Undp_hdi
Rsrvs_cap	0.00340 (0.00222)	0.00568*** (0.00179)	0.0219* (0.0119)	0.0356 (0.0278)	-0.00763 (0.0230)	-0.0108 (0.0228)
Eiu_fog		0.0469*** (0.00460)	0.0479*** (0.00464)	0.0123 (0.00915)	0.0138* (0.00734)	0.00730 (0.00801)
Rsrvs_fog			-0.00454 (0.00329)	-0.00962 (0.00912)	-0.000839 (0.00739)	0.000187 (0.00732)
Bti_re				0.0379*** (0.0109)	-0.0105 (0.0107)	-0.0154 (0.0109)
Gle_rgd					2.66e-05*** (3.42e-06)	2.72e-05*** (3.39e-06)
Ht_regtype						0.000625* (0.000327)
Constant	0.695*** (0.0138)	0.447*** (0.0263)	0.441*** (0.0265)	0.414*** (0.0384)	0.499*** (0.0326)	0.523*** (0.0345)
Observations	175	158	158	112	112	112
R-squared	0.013	0.411	0.418	0.298	0.553	0.568

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

As in the previous Tables, reserves per capita are significant at the 1% percent level when the control variable for institutional quality, Functioning of Government, is introduced, the latter being significant at the 1% level as seen in regression (2). When the interaction variable functioning of government-reserves per capita, the explanatory variable *eiu\_fog* remains significant at the 1% level while reserves per capita becomes significant at the 10% level.

<sup>15</sup> Similar conclusion is reached in Tsui, 2010.

Regression (3) with an r-squared of .42 implies that a one unit percent increase in reserves per capita increase a country's human development by 2 units. In regression (4) the only statistically significant explanatory variable is Resource efficiency, with 1% significance but a mere r-squared of .3, pointing to omitted variable bias. The interaction term being negative exposes that the impact of oil reserves per capita is lower for better functioning governments, confirming our previous results. Positive impact of reserves per capita is larger the better functioning government a country has. Nonetheless, when the control variables Real GDP per capita and regime type are introduced, the interaction term becomes positive, implying that the impact of a large endowment of oil reserves is larger for better functioning governments, supporting the fact that a large resource endowment is a blessing for well functioning governments, as was the case of the United States and is the case of Norway today. With an r-squared of .57, almost 60%, Real GDP per capita remains significant at the 1% level in all regressions and the regime type variable is so at the 1% level (regression (6)).

**4.5. Table 4. Impact of Total Crude Oil Reserves per Capita on Inequality controlling for Quality of Government as a measure of Institutional Quality**

VARIABLES	(1) Undp_gini	(2) Undp_gini	(3) Undp_gini	(4) Undp_gini	(5) Undp_gini	(6) Undp_gini
Rsrvs_cap	0.469 (0.817)	-0.00566 (0.703)	1.804 (2.459)	1.954 (4.877)	1.749 (4.926)	1.613 (4.939)
Icrg_qog		-24.67*** (4.170)	-23.94*** (4.284)	-33.20** (12.76)	-31.16** (13.67)	-30.72** (13.71)
Rsrvs_qog			-5.815 (7.571)	-6.150 (16.05)	-5.157 (16.30)	-4.539 (16.36)
Bti_re				1.080 (0.940)	1.283 (1.055)	0.883 (1.166)
Gle_rgdg					-0.000164 (0.000379)	-0.000142 (0.000380)
Ht_regtype						0.0226 (0.0277)
Constant	40.05*** (0.937)	53.64*** (2.431)	53.37*** (2.462)	52.29*** (4.186)	51.23*** (4.876)	51.81*** (4.939)
Observations	126	109	109	82	82	82
R-squared	0.003	0.250	0.255	0.104	0.106	0.114

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Reserves per capita remains insignificant through all the regressions, indicating no relationship between oil endowment and a country's Gini Index. The only variable significant



	Perez-Pla 22					
Rsrvs_cap	0.469 (0.817)	0.278 (0.807)	1.327 (3.765)	-10.66 (8.667)	-9.025 (8.761)	-9.299 (8.785)
Eiu_fog		-0.937** (0.378)	-0.903** (0.397)	0.505 (0.735)	0.539 (0.734)	0.265 (0.809)
Rsrvs_fog			-0.285 (0.999)	3.103 (2.408)	2.703 (2.427)	2.789 (2.434)
Bti_re				-0.750 (0.840)	-0.0581 (1.026)	-0.251 (1.055)
Gle_rgdg					-0.000404 (0.000345)	-0.000384 (0.000346)
Ht_regtype						0.0245 (0.0304)
Constant	40.05*** (0.937)	45.14*** (2.256)	44.97*** (2.340)	42.88*** (3.320)	41.42*** (3.538)	42.48*** (3.779)
Observations	126	125	125	95	95	95
R-squared	0.003	0.051	0.051	0.035	0.050	0.057

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Alike the previous two tables, in which the Gini Index and Total Crude Oil Reserves per capita are regressed, controlling for other variables, reserves per capita has no significance in any of the 6 regressions, corroborating the previously mentioned condition that reserves per capita and a country's inequality levels are not correlated. Contrary to Table 5, the variable controlling for institutional quality, in this case functioning of government, is significant in regressions (1) and (2) at the 5% level until other control variables, being Resource Efficiency, Real GDP per capita and Regime Type, are introduced, in which case none of the regress variables prove to have any significance. In this case functioning of government is statistically significant when no other variables are controlled for. From the six regressions, it's the only significant variable, being so at the 5% level, thus proving to be a major determinant in the Inequality Index. Despite this, R-squared explains a mere 6% of the variance in the Inequality Index. The reserves per capita-functioning of government interaction term is not significant in any of the regressions.

**4.8. Table 7. Impact of Total Crude Oil Reserves per Capita on Literates as a % of population controlling for Quality of Government as a measure of Institutional Quality**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Van_literates	Van_literates	Van_literates	Van_literates	Van_literates	Van_literates
Rsrvs_cap	-0.116 (0.300)	-0.200 (0.240)	3.451 (2.452)	4.383 (2.740)	3.031 (2.637)	3.098 (2.578)

					Perez-Pla	23
Icrg_qog		62.66*** (7.934)	65.39*** (8.106)	40.41* (23.47)	12.67 (23.83)	16.52 (23.36)
Rsrvs_qog			-6.487 (4.337)	-8.497* (4.891)	-8.281* (4.650)	-8.366* (4.547)
Bti_re				3.226* (1.681)	0.941 (1.740)	-1.111 (1.921)
Gle_rgdp					0.00209*** (0.000631)	0.00221*** (0.000619)
Ht_regtype						0.118** (0.0513)
Constant	73.85*** (1.892)	43.32*** (4.483)	41.63*** (4.604)	38.07*** (7.083)	49.86*** (7.612)	52.16*** (7.510)
Observations	171	137	137	99	99	99
R-squared	0.001	0.320	0.331	0.230	0.312	0.349

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Reserves per capita are shown to have no correlation with the percentage of literates in a country's population in any of the regressions. Quality of Government is statistically at the 1% level when not controlling for other variables, on the other hand, the interaction term becomes statistically significant when other explanatory variables are included. When the explanatory variables Resource Efficiency, Real GDP per capita and Regime Type are included in the regression, they prove significant at the 10%, 1% and 10% levels, respectively, with the variable controlling for institutional quality losing its significance and the interaction term remaining significant at the 10% level. The interaction term remaining negative in all regressions reflects that the impact of a large oil endowment per capita in the percentage of literates in a country's population will be narrower the higher quality of government a country has, as confirmed in the previous regressions. Regression (6) explains 35 percent of the variance in the percentage of literates in a country's population.

**4.9. Table 8. Impact of Total Crude Oil Reserves per Capita on Literates as a % of population controlling for the Revised Combined Polity Score as a measure of Institutional Quality**

VARIABLES	(1) Van_literates	(2) Van_literates	(3) Van_literates	(4) Van_literates	(5) Van_literates	(6) Van_literates
Rsrvs_cap	-0.116 (0.300)	0.457 (0.281)	0.438 (0.891)	0.926 (1.044)	-0.542 (0.989)	-0.409 (0.999)
P_polity2		1.853*** (0.277)	1.853*** (0.279)	0.406 (0.413)	0.849** (0.384)	0.636 (0.442)
Rsrvs_polity2			-0.00252 (0.108)	0.135 (0.132)	0.168 (0.119)	0.187 (0.121)

					Perez-Pla	24
Bti_re				4.389*** (1.315)	-1.651 (1.695)	-2.039 (1.741)
Gle_rgdg					0.00293*** (0.000585)	0.00291*** (0.000585)
Ht_regtype						0.0573 (0.0589)
Constant	73.85*** (1.892)	65.91*** (2.024)	65.91*** (2.031)	48.59*** (5.803)	60.14*** (5.738)	60.28*** (5.742)
Observations	171	156	156	115	115	115
R-squared	0.001	0.227	0.227	0.183	0.336	0.341

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Whether a country is a democracy or not is significant at the 1% level until Resource Efficiency is controlled for, in which case it is not. It gains significance at the 5% level when Real GDP per capita is controlled for alongside Resource Efficiency, though loses again significance when Regime Type is controlled for alongside the other explanatory variables (Regression (6)), explaining .34 of the variance in the percentage of literates in a country. The latter is probably due as Regime Type is a similar measure to The Revised Combined Polity Score, differentiating between different types of governments. Regression (4) elucidates us on the point that Resource Efficiency is statistically significant at the 1% level until Real GDP per capita and Regime Type are controlled for in which case loses all significance. Oil reserves per capita are not significant in any of the above regressions, while Real GDP per capita is significant at the 1% level in all of them.

**4.10. Table 9. Impact of Total Crude Oil Reserves per Capita on Literates as a % of population controlling for Functioning of Government as a measure of Institutional Quality**

VARIABLES	(1) Van literates	(2) Van literates	(3) Van literates	(4) Van literates	(5) Van literates	(6) Van literates
Rsrvs_cap	-0.116 (0.300)	0.138 (0.256)	0.624 (1.559)	1.078 (2.864)	-2.262 (2.735)	-2.785 (2.745)
Eiu_fog		5.122*** (0.640)	5.164*** (0.655)	1.801 (1.366)	2.042 (1.258)	1.211 (1.376)
Rsrvs_fog			-0.136 (0.430)	-0.392 (0.944)	0.170 (0.877)	0.338 (0.880)
Bti_re				3.345** (1.610)	-1.824 (1.866)	-2.475 (1.910)
Gle_rgdg					0.00266*** (0.000583)	0.00273*** (0.000582)
Ht_regtype						0.0829

					Perez-Pla	25
Constant	73.85*** (1.892)	47.53*** (3.637)	47.28*** (3.729)	46.93*** (5.635)	56.30*** (5.577)	(0.0571) 59.28*** (5.917)
Observations	171	159	159	114	114	114
R-squared	0.001	0.292	0.292	0.163	0.298	0.312

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 9 yields parallel, almost exact results as Table 8, confirming the statements in the above paragraphs.

## 5. Country Cases

Statistical evidence presented in the above results conjointly with existing literature are applied to selected countries to confirm the hypothesis that institutional quality and resource efficiency management, controlling for other important factors<sup>16</sup>, are the crucial elements in determining whether countries endowed with vast amount of wealth in the form of point-source natural resources, will experience a curse or a blessing.

The modern oil industry began in 1846 when the first oil well was drilled at Bibi-Aybat, near Baku, at the time part of the Russian Empire. A decade later, Edwin L. Drake struck oil in Pennsylvania. It wasn't until the 1960s that oil became the most important fossil fuel and commodity in the world, as a result generating international political and economic interest and with such, through the institutional quality of each country, blessing or cursing the citizens of the countries endowed with it. Until then, oil had only constituted a blessing as observed in the paths of nations such as The United States and Canada, now minor exporters of oil and with barely any reserves left, particularly in the case of the United States. Today, the story is one of blessings and curses, although the latter seem to predominate, pointing out to predominating low institutional quality in oil endowed countries, with factors such as having a colonial background having to be taken into consideration.

### 5.1. Resource blessed nations

<sup>16</sup> Real GDP and regime type.

Norway is a country that besides the wealth obtained from its seas, forests and petroleum, has based its economic and social success in reconciling its individualism, with the opposite extreme, a *nanny state* that takes care of its citizens through the most generous and un discriminatory social benefits in the globe. Military service is mandatory, and 95% of schools, public. Its VAT reaches 25% and good students receive loans from the government in order to enrol in the best universities. Since 30 years, it occupies the first place in the Human Development Index, with the highest income per capita in the planet, barely any unemployment and reaching a growth rate of 3% this year. Its sovereign debt is the most solid in the world, having absolute gender parity by law in both the public and private sectors. Norway has acquired an image of cold, trustworthy and efficient, allowing it to exert great international influence, as it occurred in 1993 with the Oslo Agreements at the FAFO headquarters, secretly held, between Arafat and Ranbin, with Bill Clinton as witness. Alongside, it was chief mediator in the conflict between the Sri Lanmkan government and the Tamil separatists from 2000 to 2009. It has become the most generous donor in international cooperation and the same days in which totalitarianism exploded in Europe, Norway abolished the death penalty and became the headquarters of the Nobel Prize.

The sea became its main industrial motor thanks to fishing and maritime transport, alongside electricity generation thanks to its great flow of fresh water. Norwegians specialized in the design of ships capable of affronting the worst conditions and in the construction of public works. Such dominion of engineering would be essential for the development of a national petroleum industry, instead of falling in the arms of multinationals. Norway's petroleum industry gained expertise at producing deepwater drilling platforms, designed to avoid production bottlenecks and becoming one of its export goods after proving useful in other oil endowed countries. Furthermore, the University of Oslo's Department of Geology developed a unique approach to exploration," known as the "Norwegian school of thought", which allows to the adjustment of reserves estimates and forecasts of depletion, allowing to extend Norway's and other country's estimated petroleum reserves. Today,

Norway, aside from petrol, exports knowledge and innovation in the field. Until the 23<sup>rd</sup> December 1969, when Norway found “The Christmas gift of 69”, petroleum, its economy had grown thanks to the sweat of its citizens. Two years later production started and despite them having no previous knowledge of the sector they learned fast; the management of its petroleum richness is considered an economic and social success. Petroleum has provided the country with 200.000 jobs and half of its exports, being the second largest gas exporter and third largest oil exporter in the world. Its citizens consider it a blessing, certainly not a curse. As soon as oil was discovered, Norway’s government established the ten commandments of the sector, including the following: petroleum is property of the Norwegian people, government will control and manage the operations related, the country had to build a proper oil industry, the sector has to respect the environment and that such discovery should provide the nation with an important role in international affairs. They have been fulfilled. Norway could have become a corrupt and lazy state, bribing its citizens with low taxes in order to buy their silence as witnesses of illegal wastes, with a lack of state transparency in the management of its earnings from black gold, as it has occurred in many other producing countries such as the Venezuela of Chavez, Russia under Putin, Gadafi’s Libya, Iran or Nigeria, among others.

A Governmental Pension Fund (known as The Petroleum Fund) was established in order for all the revenues from oil to be deposited in it and subsequently to be invested around the world, excluding unethical sectors such as the nuclear or armaments sectors. The fund, with offices in New York, London, Shanghai and Singapore, has 400.000 million Euros in assets and investments in more than 10.000 companies. Only a 4% of oil revenues are used by the government for public spending as a measure to counter inflation and save for the future generations. When the day in which their oil revenues stop flowing in, comes, they will have built something to substitute them and maintain their citizen’s welfare. With an unemployment rate of 3% in 2009, among the lowest in Europe, it was one of the few European countries not hit by the 2008 financial crisis. Norwegians are not faced with major

economic, political or social problems, notwithstanding the increasing number of immigrants, now at 13% of the population, benefitting from the immensely generous Norwegian social benefits, is causing them concern. Oil has proved a blessing for Norwegians, being an industrialised country at the time of discovery, it efficiently managed its vast endowment a very good functioning of its government and high quality of its institutions high quality of its institutions, preventing disrupting rent seeking and created a feeling of social contract that promised that everybody would eventually reap the benefits from oil. When looking at similar countries, such as Sweden, to see how the discovery of oil has shaped Norway's development, it's observed that Norway's GDP was lower than that of Sweden and Denmark prior to oil discovery, outperforming them once oil was discovered, proving how it is possible to grow fast based on natural resources.

### **5.1.2. Saudi Arabia, Qatar, Bahrain and Kuwait**

Though these three nations do not fall into the same spectrum, they are to be studied under the same category for the purpose of this paper. These four Middle Eastern countries all have monarchies, absolute and constitutional, respectively, being blessed with large amounts of oil per capita. Their governments engage in large scale distributive policies and generous expenditures on health and education, among others, which allows its citizens access to oil wealth on the mere grounds of citizenship. As one Saudi has recently stated in reference the recent Arab Spring:

““In these other countries, the government keeps all the money”, said Mr Mohammed, a civil servant paid \$4,300 a month. “Here, it is half and half.”” (Peel, December 16, 2011)

This contrasts with the distribution channels existing in Nigeria or Equatorial Guinea, in which only the elite benefit. Prior to oil discovery, Saudi Arabia was one of the poorest nations in the world, its main exports being dates, having a largely illiterate population, a preindustrial economy and minimal relations with the outside world. After discovering oil, it has become an essential player in international affairs and the only country that can truly influence the price of oil as the world's largest producer. Kuwait, Bahrain and Qatar relied on

their commerce of pearls and the latter was declining. All four countries rank High in the Human Development Index, Saudi and Qatari citizens do not enjoy the same freedom or modern infrastructure as their Bahranian and Kuwaiti neighbours, the case being even more so for Saudi Arabia. In the words of a Saudi citizen:

*“Oil has done nothing for this country that we couldn’t have done without oil”, Alim said. “I don’t believe that in this region there is a nation that received all this wealth and squandered and looted it the way it has been done in Saudi Arabia. Cairo has an underground transport system and fourteen different universities. Cairo is poor, it is struggling, but it has a well-developed media and academic structure. There are political parties, though Mubarak is an asshole. There are protests, and society is vibrant.”* (Mass, 2006)

This Saudi citizen refers to the lack of freedom of expression, among other things, in his country and the strict religious impositions imposed by the government. Nevertheless, this cannot be accrued to its oil riches, as they existed previously to them and it’s a delicate balance of power between the monarchy and the Wahabbists, a balance that has proved very difficult to break. Saudi Arabia’s government has historically relied on financial sweeteners to keep its citizens happy, as observed earlier this year when it announced an estimated \$130bn, including 500,000 new houses, unemployment benefits and a bonus equal to two moth’s wages for public sector workers. One thing is sure and that is that Saudi Arabia would have never enjoyed the position it holds today, one of great international importance, if it were not for its oil riches. The Paradox for Saudi Arabia is certainly not the “resource paradox” but one in which the recent Arab Spring and high oil prices, with their increased production despite discrepancies among Opec members, have made it richer than ever.

Time-invariant institutions differentiate countries such as Norway and Saudi Arabia; such institutions constrain the possible set of political institutions, and the possible set of economic sectors, that can emerge and be sustained. Thus, even thou the mentioned Middle Eastern countries do not share the same economic, political and social freedom as oil rich countries

like Norway or The United States, having in mind their religious and historical constraints, a large oil endowment has resulted in a blessing to them.

## 5.2. Cursed Nations

### 5.2.1. Venezuela

With the world's seventh largest oil endowment, most of Venezuela's 26 million citizens are exceedingly poor, proving to be a classic example of what economist Joseph Stiglitz defines as "rich countries with poor people". Its story is a controversial one. From 1920 and 1980, Venezuela was the fastest growing major Latin American country with a 6.4 percent per annum, having the lowest inflation rate of all the countries in the IMF's International Financial Statistics in the period 1950-1980. Considered 30 years ago as one of the most stable democracies in Latin America, today none of these facts are true. Revenues increased during the oil shocks of 1973 and 1979 and by 1982 oil revenues had declined, accompanied by a volatile exchange rate. Venezuela never recovered its previously enjoyed welfare status. This supports the evidence that a large oil endowment is a blessing if adequate policies are carried out and institutional quality remains stable. Venezuela democratised after developing its natural resource sector<sup>17</sup> and enjoyed sustained GDP growth until it failed to manage the economic, political and social context posterior to the oil booms. Since Hugo Chavez's Bolivarian socialist government took power in 1998, it has applied populist policies aiming at relieving the poor, including the nationalisation of PVDSA since 2006, Venezuela's national oil company. Like in most oil-rich countries, the energy sector has been dominated by US-owned firms. Critics postulate that his actions have damaged Venezuela's economic performance and encouraged growing inflation, standing at 25% by the end of 2009. Even though Venezuela experienced increased welfare after the discovery of oil and transitioned to democracy, it has failed to successfully develop its non-oil sectors, heavily relying on oil income and its once seemingly bright future darkened by mismanagement of its resources and incompetent policies and institutions. Despite Venezuela being ranked as High in the Human Development Index, it suffers from a staggering level of unemployment, large disparities

---

<sup>17</sup> Haber and Menaldo, 2011.

between the rich and the poor and more than 60% of households suffer from poverty. As a result, it is categorized in this paper as having been blessed as a result of its oil endowment up until the 1980s when it turned into a curse due to an incompetent government and its subsequent policies.

### 5.2.2. Nigeria

By the time oil was discovered in Nigeria by geologists working for the company Shell, the country had a growing industrial sector and a healthy farm economy. As it gained independence from Britain in 1960, significant oil extraction occurred in the Niger Delta, accelerating the existing process of national breakdown. Nigeria's population is the largest in Africa, composed of hundreds of ethnic groups divided into an even larger number of tribes with their own dialects and disputes, the latter were naive to believe those convincing them that the recently discovered black liquid would bring them prosperity. As the world's eighth-largest exporter of oil, Nigeria has earned in the recent decades more than \$400 billion from oil, yet its GDP per capita is one-fifth that of South Africa's, even Senegal, an exporter of nuts and fish, has a larger GDP per capita. Nine out of ten citizens live on less than \$2 a day and one out of five children dies before its fifth birthday. Facts about Nigeria like those exposed in Peter Mass' *Crude World* are common:

*“A few years the national police chief was convicted of stealing \$98 million, and the punch line was his sentence: six months in jail-one month for every \$16 million. As for the money that wasn't stolen, much was squandered on projects like the multibillion dollar Ajaokuta complex, which has not made a single slab of steel.”*

The World Bank estimates that 80 percent of Nigeria's oil wealth has gone to 1 percent of the population.<sup>18</sup> With a government that has historically lost funds to corruption and waste, the 30 million of unfortunate souls in the Niger Delta suffer the most with a predominating industry that is not labour intensive, that is destroying their environment to such an extent that one of the biggest biodiversities in the planet cannot provide with food its inhabitants, and

---

<sup>18</sup> Mass, 2009.

from which they don't reap any benefits, it's obvious why Nigerian's regard their large oil endowment as a curse. If the delta had been blessed, in this case, with no oil, it would probably now be a wildlife sanctuary for which Western tourist would pay fortunes to enjoy. Reality is very different for the once vibrant with life Niger Delta, in which flaring, banned in Nigeria in 1984, is allowed today by the government in order for the latter to be able to continue reaping oil profits. Flaring is banned in developed countries, where oil companies are obliged to invest in technology and infrastructure to reduce flaring to an almost inexistent amount, amounting to less than 1% of associated gas burned in the U.S. Illnesses caused by flaring include renal and cardiovascular failure, cancer, leukaemia, emphysema, bronchitis, immune system dysfunction and reproductive disorders.

Subsequent to the oil shock of the 1970s, it was observed that Nigeria's oil income was creating extraordinary opportunities for corruption. An article in *The Economist* (August 4, 1984) observed:

*“Oil and corruption go together. Nigeria's oil accounts for about 80% of government revenue. The official price of crude increased 17-fold in eight years from about \$2 a barrel in 1973-4 to \$34 by the end of 1981. Nigeria went on a construction and importing spree: Parties and party officials grew rich.”*

Worst of all, the Nigerian government and the foreign companies working in Nigerian soil have historically proceeded to protecting and benefitting each other, reaping all of the benefits from oil and leaving none to the Nigerian people. If Shell's operations were threatened at anytime, the government would take military action, killing its own people, while protecting the oil and its benefactors, which include them:

*“A cascade of reports over the years has shown that good-faith development efforts are overshadowed by day-to-day practices that have helped make the delta as violent as Chechnya and Colombia. One such report, entitled “Peace and Security in the Niger Delta”, noted that Shell's facilities and operations relied on the protection of law enforcement agencies that used “jungle justice”, which means murder and torture. Shell was also*

*criticized for engaging in bribery by awarding no-work contracts to front companies owned by local leaders. “The manner in which [Shell] operates and its staff behaves creates, feeds into or exacerbates conflict”, the report states. After over 50 years in Nigeria, it is therefore reasonable to say that [Shell] has become an integral part of the Niger Delta conflict system.”” (Mass, 78)*

Paul Collier, a former economist at the World Bank, co-authored a study titled *Greed and Grievance in Civil War*, which included 160 countries and 73 civil wars since 1960, its conclusions place the Niger Delta at a 100% risk of civil conflict, as has been proved in the past decades:

*“Dependence on primary commodities substantially increases the risk of conflict, unless the primary commodity is extremely plentiful, such as in the case of oil in Saudi Arabia. In a country with no primary exports at all, the risk is about one percent in a five-year period. In a country with high dependence on primary commodities, which means about 30 percent of its national income comes from primary commodities, the risk is around 23 percent.”*

This can be attributed to political maturity as countries like Norway, with an open and stable government and a sense of national identity have a high probability of resolving the disagreements over who owns the oil and how revenues should be distributed, yet Nigeria, like most oil endowed countries, lack those attributes.

Even though Nigeria is now a democracy, it has inherited 40 years of mismanagement under military rule and little improvement seems to appear under its current government, which continues to be plagued by grievance and corruption. Nigeria’s curse has been the curse of bad leadership.

### **5.2.3. Equatorial Guinea**

When oil was found in Equatorial Guinea, observers asked themselves if it would follow the resource cursed path of its brother, Nigeria. Today, it is being cited as a textbook case of the Resource Paradox. Oil has exacerbated already present pathologies in Equatorial Guinea’s political economy, paving the way for future problems of underdevelopment, instability and

authoritarian rule, problems that could be alleviated to some degree by changes in U.S foreign policy towards the region.<sup>19</sup> Nevertheless, oil makes countries politically and economically very appealing, attracting the interest of foreign companies and governments, placing the price of oil very high and increasing governments, such as the U.S government, conflict of interests. It is no coincidence that Africa's leading petro-states have the continent's longest serving heads of state as Bongo in Gabon and was the case of late Gaddafi in Libya. The oil boom has merely lead to an incorporation of oil rents into the existing power structures by placing key family and associates into positions where they can benefit from new riches.<sup>20</sup> The relationship between Equatorial Guinea's leader, Teodoro Obiang Nguema, and worldwide politicians, such as U.S President, Barack Obama, has been strengthened in the past decade, proving that oil wealth is what has given Equatorial Guinea legitimacy in the eyes of the West. Around 90 percent of the worldwide known stocks of oil and gas are controlled by national companies, nevertheless, as Karl affirms:

*"...because of the enormous capital and technological resources necessary to exploit minerals, foreign oil companies became the dominant internal actors in all oil exporters [...] The complexities of the international market, the continued need for foreign investment and technology, and their links to other powerful actors mean that these companies still retain significant power even after nationalization."* (Karl, 1997: p.55)

Notwithstanding, nationalisation of oil companies has proven detrimental in many cases as it decreases foreign direct investment, even though they retain control in many of its operations.

## **6. Conclusion**

Oil has always been an immense source of wealth for individuals, companies and nations. In 2002, the value of oil produced amounted to almost 700 billion dollars, double the value of natural gas and five times that of coal. Iron ore, being the most important non-fuel mineral,

---

<sup>19</sup> McSherry, 2006.

<sup>20</sup> Frynas, 2004.

only has a value of 4% that of oil, thus the historical interest and paradoxes induced by petroleum are paramount. Evidence presented in this paper concurs with Mehlum et al. (2006) assertion that the main divergence between development loser and winners are divergences in the quality of their respective institutions. Bad institutional quality and a malfunctioning government will lead a point-source resource-rich country to a doomed fate. Creating a Fund, like Norway's and Kuwait's has proven efficient for managing volatility and saving for future generations. Nonetheless, it would be inappropriate to invoke Norway as a model for Nigeria because Norway's oil discovery was made when its institutions were already highly developed.<sup>21</sup> From the countries analysis and empirical results, Venezuela proves to us that a country's economic performance after a resource boom relies on the policies followed by its government. No direct evidence is found between a large oil endowment and the hindering of democracy, though democracies are seen to develop better quality institutions than non-democracies and are more resource efficient, with the exceptions of democracies such as the one in Nigeria which is more of a military rule than any other type of government. Even when oil hinders democracy, it is not necessarily an economic curse, as an autocracy can be an economic success when it has the institutions to remove poorly-performing leaders from office, reinforcing the stated point that it is not the type of government, but institutional quality, that will define an endowment of a point-source natural resource as a curse or blessing.

Distributive channels have been found to play an important role in addressing resource endowment as a blessing or a curse, as seen in the differing cases of Saudi Arabia and Equatorial Guinea. Saudi citizens feel they benefit from an inherited right, in this case oil, through the distributive channels employed by its government, while Equatorial Guinea's citizens, with a minimum health and educational public spending, see none of what they are entitled to. Astonishingly, existing great poverty among its citizens, if oil revenues were spread evenly across the country, Equatorial Guinea would be among the richest in the world.

---

<sup>21</sup> Sala-i-Martin and Subramanian, 2003.

Cavalcanti et al (2011b) introduce the point that commodity price volatility rather than abundance *per se*, drives the “resource curse” paradox. As Friedman states in ‘The First Law of Petropolitics’, the pace of freedom really starts to decline as the price of oil really starts to take off. According to the “First Law of Petropolitics”, the higher the average crude oil price rises, the more free speech, free press, free and fair elections, an independent judiciary, the rule of law, and independent political parties are eroded. Wealth generated from oil resources depends crucially on the price of oil, so a lower oil price would limit the profits of oil-rich dictators. Tsui (2010) suggests that energy policy needs to be integrated into a comprehensive democracy-promotion strategy. Given that OPEC controls two thirds of the global reserves of conventional oil, its power is forecasted to rise and its most influential member on the price of oil<sup>22</sup>, Saudi Arabia, as of today, has no incentives to do so. A decrease in the price of oil would most probably result in a decrease in the corruption, conflict, social, political and environmental damage levels of many oil-rich nations, although objectively they would observe a decrease in wealth and they would find themselves stripped away from their main revenue. Besides, the price of oil is only forecasted to rise, by no means to fall, predicted to rise to unprecedented staggering heights in the near future.

The main conclusion achieved in this paper with the support of empirical results and countries analysis’ is that an abundance in point-source natural resources such as crude oil has an indirect negative/positive impact on development and economic growth through institutional quality and the functioning of their respective governments. As a result, three arrangements are proposed to direct a large endowment of point-source natural resources into a blessing and not a curse. The aforementioned include the creation of Oil Trust Funds, as in the case of Norway and Kuwait, and the adoption of the Extractives Industries Transparency Initiative and the Publish What You Pay Campaign. Third, and last, as an alternative to Fund creation, distributing resource revenues directly to the citizens, considered in this paper as

---

<sup>22</sup> Saudi Arabia has been proven to be the single country able to influence the price of oil, through its production quotas.

their true and legitimate owners and thus stripping away oil money from corrupt governments and thus eroding further incentives for corruption and greed.

## References

- Achen, C. (2000). 'Why Lagged Dependent Variables Suppress the Effects of Other Explanatory Variables', Paper presented at the annual meeting of the American Political Science Association, Los Angeles.
- Ades, A., Di Tella, R. (Sep 2009). 'Rents, Competition, and Corruption', *The American Economic Review*, vol.89, no.4: pp. 982-993.
- Ammann, D. (2009). *The King of Oil*, New York: St. Martin's Griffin.
- Auty, M. R. (July 1988). 'The Economic Stimulus from Resource-Based Industry in Developing Countries: Saudi Arabia and Bahrain', *Economic Geography*, vol.64, no.3: pp. 209-225.
- Badger, D., Belgrave, R. (1982). *Oil Supply and Price: What went right in 1980?*, London: Policy Studies Institute.
- Bakwena, M., Bodman, P. 'The Role of Financial Development in Natural Resource Abundant Economies: Does the Nature of the Resource Matter?', *Botswana Journal of Economics*, pp. 16-31.
- Barbier, B. E. (Oct 2002). 'The Role of Natural Resources in Economic Development', CIES Discussion Paper No.0227.
- Basedau, M., Wolfram, L. (April 2006). 'A Paradox of Plenty? Rent Distribution and Political Stability in Oil States', GIGA Working Papers No.21.
- Beblawi, H., Luciani, G. (1987). 'The Rentier State'. London: Croom Helm.
- BP. *BP Statistical Review of World Energy*. June 2011.
- Bravo-Ortega, C., De Gregorio, J. (Feb 2002). 'The Relative Richness of the Poor? Natural Resources, Human Capital and Economic Growth', Central Bank of Chile Working Papers No.139.
- Brunnschweiler, N. C., Bulte, H. E. (May 2008). 'Linking Natural Resources to Slow Growth and More Conflict', *Science*, vol.320.
- Brunnschweiler, N. C., Bulte, H. E. (May 2007). 'The Resource Curse Revisited and Revised: A Tale of Paradoxes and Red Herrings', CER-EHT Center of Economic Research.
- Brunnschweiler, N. C. (2008). 'Cursing the Blessings? Natural Resource Abundance, Institutions, and Economic Growth', *World Development*, vol.36, no.3: pp. 399-419.
- Clifford, C., Mouawad, J. 'Oil surges on growing threats to Gulf supplies', *International Herald Tribune*, March 3, 2011.
- Collier, P., Hoeffler, A. (Aug 2005). 'Resource Rents, Governance, and Conflict', *The Journal of Conflict Resolution*, vol.49, no.4: pp. 625-633.
- Crystal, J. (1989). 'Coalitions in Oil monarchies: Kuwait and Qatar', *Comparative Politics*, vol.21: pp. 427-43.
- Deaton, A. (2010) 'Understanding the Mechanisms of Economic Development', *Journal of Economic Perspectives*, vol.24, no.3: pp. 3\_16.
- De Santis, A. R. (Oct 2000). 'Crude Oil Price Fluctuations and Saudi Arabian Behaviour', Kiel Working Paper No.1014.
- Duruigbo, E. (2005). 'The World Bank, Multinational Oil Corporations, and the Resource curse in Africa', *U. Pa. J. Int'l Econ.* L. 26. 1.
- Economist. 'Nigeria: You're in the Army Now, or Nearly So', *The Economist*, August 4, 1984.
- Economist. 'The Devil's Excrement', *The Economist*, May 22, 2003.
- Economist. 'The devil in the deep-sea oil', *The Economist*, November 5, 2011.
- Economist. 'Filling up the future', *The Economist*, November 5, 2011.
- Economist. 'Supply side', *The Economist*, November 5, 2011
- Engerman, L. S., Solokoff, L.K. (1997). 'Factor Endowments, Institutions, and Differential Paths of Growth among New World Economies; A View from Economic Historians of the United States.' *In How Latin America Fell Behind*, edited by Stephen Haber, 260-304. Stanford University Press.

- Engerman, L. S., Solokoff, L. K. (Fall 2002). 'Factor Endowments, Inequality, and Paths of Development Among New World Economies', *Economia* 3: pp. 44-46, 56-64, 66-71.
- Esfahani, S. H., Mohaddes, K., Pesaran, H. M. (Dec 2010). 'Oil Exports and the Iranian Economy', *University of Illinois, University of Cambridge, USC*.
- Murshed, M. S. (2004). 'When does natural resource abundance lead to a natural resource curse?', Environmental Economics Programme, Discussion Paper 04-01.
- Friedman, L. T. (May/June 2006). 'The First Law of Petropolitics', *Foreign Policy*, Iss. 154; pp. 28-37.
- Financial Times. 'The humbling of a tsar', *The Financial Times*, December 10 and 11, 2011.
- Financial Times. 'Surge in shale oil output fuels US jobs bonanza', *The Financial Times*, November 15, 2011.
- Financial Times. 'Jordan and China pile pressure on Assad', *The Financial Times*, November 15, 2011.
- Financial Times. 'KKR looks for control of Samson as shale gas shake-up continues', *The Financial Times*, November 2, 2011.
- Financial Times. 'A tricky and bold move to lower oil prices', *The Financial Times*, June 15, 2011.
- Frynas, G. J. (2004). 'The oil boom in Equatorial Guinea', *African Affairs*, 103/413; pp. 527-546.
- Grasland, E. 'Petrole: Les Cours s'effondrent après l'intervention de L'AIE', *Les Echos*, June 24, 2011.
- Gylfason, T. (October 2000). 'Natural Resources, Education and Economic Development', CEPR Discussion Paper No.2594.
- Harford, T., Klein, M. (April 2005). 'How Can Aid Be Designed to Preserve Institutions?', The World Bank Group: Private Sector Development Presidency, Note No. 291.
- Herb, M. (April 2005). 'No Representation without Taxation?', *Comparative Politics*, vol.37, no.3: pp.297-316.
- Hook, L. 'Fall in Chinese demand hits petrochemicals prices', *The Financial Times*, December 12, 2011.
- Isham, J., Woolcock, M., Pritchett, L., Busby, G. (Sep.2005). 'The Varieties of Resource Experience: Natural Resource Export Structures and the Political Economy of Economic Growth', *The World Bank Economic Review*, vol.19, no.2: pp. 141-174.
- Karl, T. L. (1997). *The Paradox of Plenty: Oil Booms and Petro-States*, Berkeley: University of California Press.
- Lacey, R. (2009). *Inside the Kingdom*, London: Random House.
- Larsen, R. E. (Oct 2003). 'Are rich countries immune to the resource curse? Evidence from Norway's management of its oil riches', Statistics Norway Discussion Papers No. 362.
- Leite, C., Weidmann, J. (July 1999). 'Does Mother Nature Corrupt? Natural Resources, Corruption, and Economic Growth', IMF Working Paper 99/85.
- Maass, P. (2009). *Crude World: the violent twilight of oil*, London: Penguin Books.
- Maugeri, L. (2010). *Beyond the Age of Oil: The Myths, Realities and Future of Fossil Fuels and Their Alternatives*, Santa Barbara: ABC-CLIO.
- Mchale, R. T. (autumn, 1980). 'A Prospect of Saudi Arabia', *International Affairs*, vol.56, No.4; pp. 622-647.
- Mcherry, B. (Spring 2006). 'The Political Economy of Oil in Equatorial Guinea', *African Studies Quarterly*, vol. 8, Iss.3.
- Mehlum, H., Moene, K. And Torvik, R. (January 2006). 'Institutions and the Resource Curse', *The Economic Journal*, vol.116; pp. 1-20.
- Meier, M. G., Rauch, E. J. (2005). *Leading Issues in Economic Development*, Oxford: Oxford University Press.
- Meyer, G.. 'Brent heads higher following OPEC discord over output rises', *The Financial Times*, June 11, 2011.
- Murshed, M. S. (March 2004). 'When does natural resource abundance lead to a resource curse?', Environmental Economics Programme Discussion Paper 04-01.

- Okruhlik, G. (Apr.1999). 'Rentier Wealth, Unruly Law, and the Rise of Opposition: The political Economy of Oil States', *Comparative Politics*, vol. 32, No.3; pp. 295-315.
- OPEC. *OPEC Annual Statistical Bulletin*. 2010/2011.
- Peel, M. 'Arab turmoil focuses Saudi minds on the shape reform might take', *The Financial Times*, December 16, 2011.
- Pfeifer, S. 'China becomes leader user of energy', *The Financial Times*, June 9, 2011.
- Pfeifer, S. 'Europe's uncertain economic outlook forces Opec to focus on elusive unity', *The Financial Times*, December 12, 2011.
- Quality of Government Institute. *Quality of Government Institute Dataset*, May 15, 2008.
- Ramady, A. M. (2010). *The Saudi Arabian Economy: Policies, Achievements, and Challenges*, New York: Springer.
- Ray, D. (Summer 2010). 'Uneven Growth: A Framework for Research in Development Economics', *Journal of Economic Perspectives*, vol.24, no.3: pp. 45-60.
- Rodriguez, J. 'El Manual de la Buena Vida: viaje al pais que major funciona de Europa', *El País Semanal*, October 30, 2011.
- Rosser, A. (April 2006). 'The Political Economy of the Resource Curse: A Literature Survey', IDS Working Paper 268.
- Ross, L. M. (Jan 1999). 'The Political Economy of the Resource Curse', *World Politics*, vol. 51, No. 2; pp. 297-322.
- Sachs, D. W., Warner, M. A. (1995). 'Natural Resource Abundance and Economic Growth', Development Discussion Paper No.517a. Cambridge: Harvard Institute for International Development.
- Sala-i-Martin, X., Subramanian, A. (June 2003). 'Adressing the natural resource curse: an illustration from Nigeria', NBER Working Paper 9804.
- Shafer, D. M. (1994). *Winners and Losers: How Sectors Shape the Development Prospects of States*. New York: Cornell University Press.
- Shambayati, H. (Apr.1994). 'The Rentier State, Interest Groups, and the Paradox of Autonomy: State and Business in Turkey and Iran', *Comparative Politics*, vol.26, no.3: pp. 307-331.
- Simmons, R. M. (2005). *Twilight in the desert: the coming Saudi oil shock and the world economy*, New Jersey: John Wiley & Sons.
- Smith, L.J. (Summer 2009). 'World Oil: Market or Mayhem?', *Journal of Economic Perspectives*. Vol.23, no.3: pp.145-164.
- Todaro, P. M., Smith, C. S. (2009). *Economic Development*, Essex: Pearson Education Limited.
- Teorell, J., Charron, N., Samanni, M., Holmberg, S., Rothstein, B. (2011). The Quality of Government Dataset, version 6Apr11. University of Gothenburg: The Quality of Government Institute, <http://www.qog.pol.gu.se>
- Tsui, K. K. (March 2010). 'More oil, less democracy: evidence from worldwide crude oil discoveries', *The Economic Journal*, vol.121; pp. 89-115.
- Van Wijnbergen, S. (1984). 'The "Dutch disease": a disease after all?', *The Economic Journal*, vol.94, pp. 41-55.
- World Bank (1994). 'Expanding the measure of wealth: indicators of environmentally sustainable development', Environmentally sustainable studies and monographs series no.7.
- Wright, G., Czelusta, J. (March/April 2004). 'The Myth of the Resource Curse', *Challenge*, vol.47, no.2: pp.6-38.
- Yates, A. D. (1996). *The Rentier State in Africa*. New Jersey: Africa World Press. Zalik, A. (Sep. 2004). 'The Niger Delta: 'Petro Violence' and 'Partnership Development'', *Review of African Political Economy*, vol.31, No.101; pp. 401-424.



## Appendix A. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Undp_hdi	175	.69824	.18023	.273	.956
Rsrvs	47	28.71064	55.56373	.4	264.5
Rsrvs_cap	192	1.014057	5.881331	0	51.41844
lcrg_qog	140	.5231647	.2073764	.1111111	1
Bti_re	119	4.543417	1.905916	0	9.666667
Eiu_fog	165	4.992727	2.551453	0	10
Gle_rgdg	192	9089.818	9318.032	338.06	48589.14
Ht_regtype	188	51.56915	47.35203	1	100

## Appendix B. Human Development Index and its components, UNDP, 2011

## HDI rank

		Human Development Index (HDI)	Life expectancy at birth	Mean years of schooling	Expected years of schooling
		Value	(years)	(years)	(years)
		2011	2011	2011 <sup>a</sup>	2011 <sup>a</sup>
<b>VERY HIGH HUMAN DEVELOPMENT</b>					
1					
2					
3	Norway	0,943	81,1	12,6	17,3
4	Australia	0,929	81,9	12,0	18,0
5	Netherlands	0,910	80,7	11,6	16,8
6	United States	0,910	78,5	12,4	16,0
7	New Zealand	0,908	80,7	12,5	18,0
8	Canada	0,908	81,0	12,1	16,0
9	Ireland	0,908	80,6	11,6	18,0
10	Liechtenstein	0,905	79,6	10,3	14,7
11	Germany	0,905	80,4	12,2	15,9
12	Sweden	0,904	81,4	11,7	15,7
13	Switzerland	0,903	82,3	11,0	15,6
14	Japan	0,901	83,4	11,6	15,1
15	Hong Kong, China (SAR)	0,898	82,8	10,0	15,7
16	Iceland	0,898	81,8	10,4	18,0
17	Korea (Republic of)	0,897	80,6	11,6	16,9
18	Denmark	0,895	78,8	11,4	16,9
19	Israel	0,888	81,6	11,9	15,5
20	Belgium	0,886	80,0	10,9	16,1
21	Austria	0,885	80,9	10,8	15,3
22	France	0,884	81,5	10,6	16,1
23	Slovenia	0,884	79,3	11,6	16,9
24	Finland	0,882	80,0	10,3	16,8
25	Spain	0,878	81,4	10,4	16,6
26	Italy	0,874	81,9	10,1	16,3
27	Luxembourg	0,867	80,0	10,1	13,3
28	Singapore	0,866	81,1	8,8	14,4

29	Czech Republic	0,865	77,7	12,3	15,6
30	United Kingdom	0,863	80,2	9,3	16,1
31	Greece	0,861	79,9	10,1	16,5
32	United Arab Emirates	0,846	76,5	9,3	13,3
33	Cyprus	0,840	79,6	9,8	14,7
34	Andorra	0,838	80,9	10,4	11,5
35	Brunei Darussalam	0,838	78,0	8,6	14,1
36	Estonia	0,835	74,8	12,0	15,7
37	Slovakia	0,834	75,4	11,6	14,9
38	Malta	0,832	79,6	9,9	14,4
39	Qatar	0,831	78,4	7,3	12,0
40	Hungary	0,816	74,4	11,1	15,3
41	Poland	0,813	76,1	10,0	15,3
42	Lithuania	0,810	72,2	10,9	16,1
43	Portugal	0,809	79,5	7,7	15,9
44	Bahrain	0,806	75,1	9,4	13,4
45	Latvia	0,805	73,3	11,5	15,0
46	Chile	0,805	79,1	9,7	14,7
47	Argentina	0,797	75,9	9,3	15,8
<b>HIGH HUMAN DEVELOPMENT</b>	Croatia	0,796	76,6	9,8	13,9
48	Barbados	0,793	76,8	9,3	13,4
			49		
50	Uruguay	0,783	77,0	8,5	15,5
51	Palau	0,782	71,8	12,1	14,7
52	Romania	0,781	74,0	10,4	14,9
53	Cuba	0,776	79,1	9,9	17,5
54	Seychelles	0,773	73,6	9,4	13,3
55	Bahamas	0,771	75,6	8,5	12,0
56	Montenegro	0,771	74,6	10,6	13,7
57	Bulgaria	0,771	73,4	10,6	13,7
58	Saudi Arabia	0,770	73,9	7,8	13,7
59	Mexico	0,770	77,0	8,5	13,9
60	Panama	0,768	76,1	9,4	13,2
61	Serbia	0,766	74,5	10,2	13,7
62	Antigua and Barbuda	0,764	72,6	8,9	14,0
63	Malaysia	0,761	74,2	9,5	12,6
64	Trinidad and Tobago	0,760	70,1	9,2	12,3
65	Kuwait	0,760	74,6	6,1	12,3
66	Libyan Arab Jamahiriya	0,760	74,8	7,3	16,6
67	Belarus	0,756	70,3	9,3	14,6
68	Russian Federation	0,755	68,8	9,8	14,1
69	Grenada	0,748	76,0	8,6	16,0
70	Kazakhstan	0,745	67,0	10,4	15,1
71	Costa Rica	0,744	79,3	8,3	11,7
72	Albania	0,739	76,9	10,4	11,3
73	Lebanon	0,739	72,6	7,9	13,8
74	Saint Kitts and Nevis	0,735	73,1	8,4	12,9
75	Venezuela (Bolivarian Republic of)	0,735	74,4	7,6	14,2
76	Bosnia and Herzegovina	0,733	75,7	8,7	13,6
77	Georgia	0,733	73,7	12,1	13,1

78	Ukraine	0,729	68,5	11,3	14,7
79	Mauritius	0,728	73,4	7,2	13,6
80	The former Yugoslav Republic of Macedonia	0,728	74,8	8,2	13,3
81	Jamaica	0,727	73,1	9,6	13,8
82	Peru	0,725	74,0	8,7	12,9
83	Dominica	0,724	77,5	7,7	13,2
84	Saint Lucia	0,723	74,6	8,3	13,1
85	Ecuador	0,720	75,6	7,6	14,0
86	Brazil	0,718	73,5	7,2	13,8
87	Saint Vincent and the Grenadines	0,717	72,3	8,6	13,2
88	Armenia	0,716	74,2	10,8	12,0
89	Colombia	0,710	73,7	7,3	13,6
90	Iran (Islamic Republic of)	0,707	73,0	7,3	12,7
91	Oman	0,705	73,0	5,5	11,8
92	Tonga	0,704	72,3	10,3	13,7
93	Azerbaijan	0,700	70,7	8,6	11,8
94	Turkey	0,699	74,0	6,5	11,8
	<b>MEDIUM HUMAN DEVELOPMENT</b>				
95	Belize	0,699	76,1	8,0	12,4
	Tunisia	0,698	74,5	6,5	14,5
			96		
97	Jordan	0,698	73,4	8,6	13,1
98	Algeria	0,698	73,1	7,0	13,6
99	Sri Lanka	0,691	74,9	8,2	12,7
100	Dominican Republic	0,689	73,4	7,2	11,9
101	Samoa	0,688	72,4	10,3	12,3
102	Fiji	0,688	69,2	10,7	13,0
103	China	0,687	73,5	7,5	11,6
104	Turkmenistan	0,686	65,0	9,9	12,5
105	Thailand	0,682	74,1	6,6	12,3
106	Suriname	0,680	70,6	7,2	12,6
107	El Salvador	0,674	72,2	7,5	12,1
108	Gabon	0,674	62,7	7,5	13,1
109	Paraguay	0,665	72,5	7,7	12,1
110	Bolivia (Plurinational State of)	0,663	66,6	9,2	13,7
111	Maldives	0,661	76,8	5,8	12,4
112	Mongolia	0,653	68,5	8,3	14,1
113	Moldova (Republic of)	0,649	69,3	9,7	11,9
114	Philippines	0,644	68,7	8,9	11,9
115	Egypt	0,644	73,2	6,4	11,0
116	Occupied Palestinian Territory	0,641	72,8	8,0	12,7
117	Uzbekistan	0,641	68,3	10,0	11,4
118	Micronesia (Federated States of)	0,636	69,0	8,8	12,1
119	Guyana	0,633	69,9	8,0	11,9
120	Botswana	0,633	53,2	8,9	12,2
121	Syrian Arab Republic	0,632	75,9	5,7	11,3
122	Namibia	0,625	62,5	7,4	11,6
123	Honduras	0,625	73,1	6,5	11,4
124	Kiribati	0,624	68,1	7,8	12,1
125	South Africa	0,619	52,8	8,5	13,1
126	Indonesia	0,617	69,4	5,8	13,2

			Perez-Pla	45	
127	Vanuatu	0,617	71,0	6,7	10,4
128	Kyrgyzstan	0,615	67,7	9,3	12,5
129	Tajikistan	0,607	67,5	9,8	11,4
130	Viet Nam	0,593	75,2	5,5	10,4
131	Nicaragua	0,589	74,0	5,8	10,8
132	Morocco	0,582	72,2	4,4	10,3
133	Guatemala	0,574	71,2	4,1	10,6
134	Iraq	0,573	69,0	5,6	9,8
135	Cape Verde	0,568	74,2	3,5	11,6
136	India	0,547	65,4	4,4	10,3
137	Ghana	0,541	64,2	7,1	10,5
138	Equatorial Guinea	0,537	51,1	5,4	7,7
139	Congo	0,533	57,4	5,9	10,5
140	Lao People's Democratic Republic	0,524	67,5	4,6	9,2
141	Cambodia	0,523	63,1	5,8	9,8
<b>LOW HUMAN DEVELOPMENT</b>	Swaziland	0,522	48,7	7,1	10,6
142	Bhutan	0,522	67,2	2,3	11,0
			143		
144	Solomon Islands	0,510	67,9	4,5	9,1
145	Kenya	0,509	57,1	7,0	11,0
146	Sao Tome and Principe	0,509	64,7	4,2	10,8
147	Pakistan	0,504	65,4	4,9	6,9
148	Bangladesh	0,500	68,9	4,8	8,1
149	Timor-Leste	0,495	62,5	2,8	11,2
150	Angola	0,486	51,1	4,4	9,1
151	Myanmar	0,483	65,2	4,0	9,2
152	Cameroon	0,482	51,6	5,9	10,3
153	Madagascar	0,480	66,7	5,2	10,7
154	Tanzania (United Republic of)	0,466	58,2	5,1	9,1
155	Papua New Guinea	0,466	62,8	4,3	5,8
156	Yemen	0,462	65,5	2,5	8,6
157	Senegal	0,459	59,3	4,5	7,5
158	Nigeria	0,459	51,9	5,0	8,9
159	Nepal	0,458	68,8	3,2	8,8
160	Haiti	0,454	62,1	4,9	7,6
161	Mauritania	0,453	58,6	3,7	8,1
162	Lesotho	0,450	48,2	5,9	9,9
163	Uganda	0,446	54,1	4,7	10,8
164	Togo	0,435	57,1	5,3	9,6
165	Comoros	0,433	61,1	2,8	10,7
166	Zambia	0,430	49,0	6,5	7,9
167	Djibouti	0,430	57,9	3,8	5,1
168	Rwanda	0,429	55,4	3,3	11,1
169	Benin	0,427	56,1	3,3	9,2
170	Gambia	0,420	58,5	2,8	9,0
171	Sudan	0,408	61,5	3,1	4,4
172	Côte d'Ivoire	0,400	55,4	3,3	6,3
173	Malawi	0,400	54,2	4,2	8,9
174	Afghanistan	0,398	48,7	3,3	9,1
175	Zimbabwe	0,376	51,4	7,2	9,9

			Perez-Pla	46	
176	Ethiopia	0,363	59,3	1,5	8,5
177	Mali	0,359	51,4	2,0	8,3
178	Guinea-Bissau	0,353	48,1	2,3	9,1
179	Eritrea	0,349	61,6	3,4	4,8
180	Guinea	0,344	54,1	1,6	8,6
181	Central African Republic	0,343	48,4	3,5	6,6
182	Sierra Leone	0,336	47,8	2,9	7,2
183	Burkina Faso	0,331	55,4	1,3	6,3
184	Liberia	0,329	56,8	3,9	11,0
185	Chad	0,328	49,6	1,5	7,2
186	Mozambique	0,322	50,2	1,2	9,2
187	Burundi	0,316	50,4	2,7	10,5
<b>OTHER COUNTRIES OR TERRITORIES</b>					
	Niger	0,295	54,7	1,4	4,9
..	Congo (Democratic Republic of the)	0,286	48,4	3,5	8,2
..	Korea (Democratic People's Rep. Of)	..	68,8	..	..
..	Marshall Islands	..	72,0	9,8	10,8
..	Monaco	..	82,2	..	17,5
..	Nauru	..	79,9	..	9,3
..	San Marino	..	81,8	..	..
	Somalia	..	51,2	..	2,4
	Tuvalu	..	67,2	..	10,8

## Appendix C. BP Statistical Review of World Energy, June 2011



### Oil

#### Proved reserves

	At end 1990	At end 2000	At end 2009	At end 2010			
	Thousand Million Barrels	Thousand Million Barrels	Thousand Million Barrels	Thousand Million Tonnes	Thousand Million Barrels	Share Of total	F
							Re
US	33,8	30,4	30,9	3,7	30,9	2,2%	11
Canada	11,2	18,3	32,1	5,0	32,1	2,3%	26
Mexico	51,3	20,2	11,7	1,6	11,4	0,8%	10
<b>Total North America</b>	<b>96,3</b>	<b>68,9</b>	<b>74,6</b>	<b>10,3</b>	<b>74,3</b>	<b>5,4%</b>	<b>14</b>
Argentina	1,6	3,0	2,5	0,3	2,5	0,2%	10
Brazil	4,5	8,5	12,9	2,0	14,2	1,0%	18
Colombia	2,0	2,0	1,4	0,3	1,9	0,1%	6
Ecuador	1,4	4,6	6,3	0,9	6,2	0,4%	34
Peru	0,8	0,9	1,1	0,2	1,2	0,1%	21
Trinidad & Tobago	0,6	0,9	0,8	0,1	0,8	0,1%	18
Venezuela	60,1	76,8	211,2	30,4	211,2	15,3%	
Other S. & Cent. America	0,6	1,3	1,4	0,2	1,4	0,1%	28

Total S. & Cent. America	71,5	97,9	237,6	34,3	239,4	17,3%	9%
Azerbaijan	N/a	1,2	7,0	1,0	7,0	0,5%	1%
Denmark	0,6	1,1	0,9	0,1	0,9	0,1%	0%
Italy	0,8	0,9	1,0	0,1	1,0	0,1%	2%
Kazakhstan	N/a	25,0	39,8	5,5	39,8	2,9%	6%
Norway	8,6	11,4	7,1	0,8	6,7	0,5%	0%
Romania	1,5	1,2	0,5	0,1	0,5	♦	1%
Russian Federation	N/a	59,0	76,7	10,6	77,4	5,6%	2%
Turkmenistan	N/a	0,5	0,6	0,1	0,6	♦	7%
United Kingdom	4,0	4,7	2,8	0,4	2,8	0,2%	0%
Uzbekistan	N/a	0,6	0,6	0,1	0,6	♦	1%
Other Europe & Eurasia	65,3	2,3	2,3	0,3	2,4	0,2%	1%
<b>Total Europe &amp; Eurasia</b>	<b>80,8</b>	<b>107,9</b>	<b>139,2</b>	<b>19,0</b>	<b>139,7</b>	<b>10,1%</b>	<b>2%</b>
Iran	92,9	99,5	137,0	18,8	137,0	9,9%	8%
Iraq	100,0	112,5	115,0	15,5	115,0	8,3%	0%
Kuwait	97,0	96,5	101,5	14,0	101,5	7,3%	0%
Oman	4,4	5,8	5,5	0,7	5,5	0,4%	1%
Qatar	3,0	16,9	25,9	2,7	25,9	1,9%	4%
Saudi Arabia	260,3	262,8	264,6	36,3	264,5	19,1%	7%
Syria	1,9	2,3	2,5	0,3	2,5	0,2%	1%
United Arab Emirates	98,1	97,8	97,8	13,0	97,8	7,1%	9%
Yemen	2,0	2,4	2,7	0,3	2,7	0,2%	2%
Other Middle East	0,1	0,2	0,1	†	0,1	♦	0%
<b>Total Middle East</b>	<b>659,6</b>	<b>696,7</b>	<b>752,6</b>	<b>101,8</b>	<b>752,5</b>	<b>54,4%</b>	<b>8%</b>
Algeria	9,2	11,3	12,2	1,5	12,2	0,9%	1%
Angola	1,6	6,0	13,5	1,8	13,5	1,0%	2%
Chad	–	0,9	1,5	0,2	1,5	0,1%	3%
Republic of Congo (Brazzaville)	0,8	1,7	1,9	0,3	1,9	0,1%	1%
Egypt	3,5	3,6	4,4	0,6	4,5	0,3%	1%
Equatorial Guinea	–	0,8	1,7	0,2	1,7	0,1%	1%
Gabon	0,9	2,4	3,7	0,5	3,7	0,3%	4%
Libya	22,8	36,0	46,4	6,0	46,4	3,4%	7%
Nigeria	17,1	29,0	37,2	5,0	37,2	2,7%	4%
Sudan	0,3	0,6	6,7	0,9	6,7	0,5%	3%
Tunisia	1,7	0,4	0,4	0,1	0,4	♦	1%
Other Africa	0,9	0,7	0,7	0,2	2,3	0,2%	4%
<b>Total Africa</b>	<b>58,7</b>	<b>93,4</b>	<b>130,3</b>	<b>17,4</b>	<b>132,1</b>	<b>9,5%</b>	<b>3%</b>
Australia	3,2	4,9	4,1	0,4	4,1	0,3%	1%
Brunei	1,1	1,2	1,1	0,1	1,1	0,1%	1%
China	16,0	15,2	14,8	2,0	14,8	1,1%	0%
India	5,6	5,3	5,8	1,2	9,0	0,7%	3%
Indonesia	5,4	5,1	4,3	0,6	4,2	0,3%	1%
Malaysia	3,6	4,5	5,8	0,8	5,8	0,4%	2%
Thailand	0,3	0,5	0,4	0,1	0,4	♦	0%
Vietnam	0,2	2,0	4,5	0,6	4,4	0,3%	3%
Other Asia Pacific	1,0	1,3	1,3	0,2	1,3	0,1%	1%
<b>Total Asia Pacific</b>	<b>42,2</b>	<b>42,2</b>	<b>42,2</b>	<b>6,0</b>	<b>45,2</b>	<b>3,3%</b>	<b>1%</b>

	36,3	40,1					14
<b>Total World</b>	<b>1003,2</b>	<b>1104,9</b>	<b>1376,6</b>	<b>188,8</b>	<b>1383,2</b>	<b>100,0%</b>	<b>46</b>
Of which: OECD	115,4	93,3	92,0	<b>12,4</b>	<b>91,4</b>	6,6%	13
OPEC	763,4	849,7	1068,6	<b>146,0</b>	<b>1068,4</b>	77,2%	85
Non-OPEC‡	176,5	168,2	182,6	<b>25,5</b>	<b>188,7</b>	13,6%	15
European Union #	8,1	8,8	6,2	<b>0,8</b>	<b>6,3</b>	0,5%	ε
Former Soviet Union	63,3	87,1	125,4	<b>17,3</b>	<b>126,1</b>	9,1%	25
Canadian oil sands*	N/a	163,3	143,1	<b>23,3</b>	<b>143,1</b>		
<b>Proved reserves and oil sands</b>	N/a	1268,2	1519,6	<b>212,0</b>	<b>1526,3</b>		

















