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Oil Wealth and Economic Growth in Developing Countries: The Role of Economic Norms in Avoiding the Resource Curse

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Abstract

This paper investigates how economic norms shape the relation between oil wealth and economic growth based on a dynamic model that accounts for endogeneity problems. To achieve that, we apply a system-GMM dynamic approach in 103 developing countries classified by their level of contract intensity, over the period 1970–2010. We find that controlling for contract intensity, is important in rendering the direction of the detrimental effects of oil wealth on economic growth. When economies are characterised by a low degree of contract intensity, oil wealth is not growth-enhancing. And when economies achieve a certain level or threshold of contract intensity, then they may become immune to the economic resource curse. In this connection we make an important contribution, by identifying a threshold level of contract intensity, above which the resource curse vanishes. Overall, our paper demonstrates that the oil related economic curse is not inevitable. The presence of contract intensive economic norms can alter a curse into a blessing, and we identify the point at which the switch takes place. This has important implications for policy design in managing resource rents in developing countries; promoting contractual norms in the marketplace is growth enhancing.

Keywords: Economic Growth; Oil Wealth; Economic Norms; Resource Curse; System-GMM

1. Introduction

The purpose of this paper is to shed more light on the economic resource curse for oil endowed economies by employing a novel institutional mechanism that influences growth prospects. That mechanism is the degree of contract intensity in the economy. By doing so we hope to contribute to the resource curse literature. The expression, resource curse, refers to the stylized fact that developing countries richly endowed with, or heavily dependent on, natural resource based economic activities[1] on the whole consistently under-performed compared to resource 'poor' developing countries (Auty, 1993). The literature on the resource curse can be further sub-divided into its economic and political dimensions. The former is to do mainly with macroeconomic issues emanating from resource price booms or discoveries, and the latter is mainly concerned with the impact of resource rents on democratic development and governance (mainly corruption). We need to bridge the economic and political resource curse literature because of the importance of well-functioning institutions in determining growth prospects; see, Acemoglu, Johnson and Robinson (2005) for example.[2] With regard to institutions, we need to distinguish between those which are outcome based, focussing mainly on governance, and those that refer to institutional process, usually the political system of a nation.

In the growth and resource curse literature the importance of institutions is both well recognized and incorporated, as is indicated below in section 2. There is, however, no consensus in the literature as to whether resource abundance or dependence actually retards growth even after various institutional quality variables are factored in. This suggests that further avenues of research need to be pursued. One institutional aspect, the norms that govern market interactions, has been largely ignored in the economic literature although it has been applied in the political resource literature; see Aytaç, Mousseau and Örsün (2016). Economic norms pertain to the nature of economic interactions between economic agents within the market. If these interactions are personalised or based on patronage they can be denoted as 'clientelist', or if governed more by impersonal rules they can be described as contractual economic norms. In more contractual economies individuals normally obtain their goods and services from strangers in the marketplace in the form of contracts dependent on the credibility of third-party enforcement. Clientelist economies in contrast, are contract poor: individuals are dependent on personal relationships and favours exchanged among friends and family linked with groups (Mousseau, 2013). Clientelist economic interactions can be associated with a greater risk of corruption and autocracy, which may harm growth, by undermining the rule of law's universal application to contract enforcement and property rights. We will test the relative importance of clientelist and contractual norms in determining growth, when there is a potential resource curse looming. Furthermore, we aim to examine the extent to which contractual economic norms mitigate existing resource curse effects on growth. Following Aytaç, Mousseau and Örsün (2016) we operationalise economic norms by the prevalence of life insurance contracts in an economy. When life insurance contracts are more widespread, it indicates a strong and credible commitment to contracts that are enforceable in law, and is a good proxy for contract intensity. It may be argued that contract intensity merely serves to reflect good governance indicators, such as the rule of the law. But governance measures such as the quality of the rule of law are also processes that do not necessarily reflect outcomes, as may

[1] The resource curse literature is mainly concerned with mineral and fuel endowments, rather than agricultural or water based resources. Sometimes, the expression point-sourced is utilised to denote the former because of their concentrated origin, and the term diffuse is used to describe the latter type.

[2] They emphasize the importance of institutions enabling contract enforcement and guaranteeing property rights.

be the case with data on the extent the degree of impersonal market based interactions between agents, as opposed to patronage based norms.

Our empirical focus will be on the oil resource curse, as an oil endowment brings with it the greatest risk of clientelism, as oil rents are arguably the most capturable of all types of resource rents, along with drugs and alluvial diamonds (Ross, 2006). The rest of the paper is organised as follows: section 2 presents a brief literature review on growth and the resource curse, section 3 presents our empirical methodology and data description, section 4 contains our results, finally section 5 concludes.

2. Growth and Oil (Resource) Rents

Capturable resource rents can lead to rent seeking behaviour; revenues and royalties from especially oil or mineral resources (point-sourced) are much more readily appropriable when compared to the income flows from agricultural (diffuse) commodities. This may generate contests, even war, over resource rents that are harmful to the economy; see, Baland and Francois (2000), Hodler (2006) and Torvik (2002). It also constitutes a diversion of talent away from production to predation and corruption, as analysed in Murphy, Shleifer and Vishny (1991). This decision is a function of the relative returns to these two activities; predation may be more attractive when there is a wealth of natural resource rents. Increases in the availability of resource rents following a boom in their world prices can increase the appetite for resource rents amongst certain individuals or groups within society, as analysed via a voracity effect, Lane and Tornell (1996). Resource booms and windfalls increase the appetite for transfers within these powerful coalitions by a factor that is more than proportionate to the size of the boom. All of these features hamper and retard growth prospects.

In Mavrotas, Murshed and Torres (2011), corruption or rent-seeking not only detracts from normal production, but can even diminish the availability of productive capital over time, and a lower capital stock is what causes the eventual decline in growth. A rent seeking game is modelled, and there can be increasing returns to scale in rent seeking related to institutional quality. This means the returns to rent seeking in certain institutional environments is huge. The worse the quality of institutions and the poorer the governance the more profitable it is to engage in rent seeking. Eventually this causes a growth collapse. The important point that corruption, rent seeking, voracity effects and the misallocation of talent all occur in an environment of poor institutional constraints. Contractulist economic norms could be just the right type of institutional constraint.

Nearly every cross-country econometric study on the effect of resource rents on growth allows for a mediating role for institutions, either by interacting resource rents with institutional quality or by first estimating the effect of natural resources on institutions, then looking at the effect of the estimated institutions on growth..

Mehlum, Moene and Torvik (2006) find that when they interact natural resource abundance with the quality of institutions in a growth regression, the resultant coefficient is significant. This means that natural resource abundance has adverse effects *only* in the presence of poor institutions. Their analysis, however, is purely cross-sectional, and they do not take into account the potential reverse causality between institutional quality and growth (both of which have a causal effect on the other). Also, in a purely cross-sectional econometric analysis, Isham, Woolcock, Pritchett and Busby (2005) find that point-sourced economies identified as exporters of oil, mineral and plantation based crops have lower growth rates compared to diffuse (agricultural) and

manufactured exporters in the 1975-97 period because of the poorer governance (based on the Kaufmann indicators of good governance mentioned above) engendered by a fuel, mineral or plantation dependent economy.

Brunnschweiler and Bulte (2008) in a cross-sectional analysis differentiate between resource dependence and resource abundance. Their measure of resource dependence is resource exports to GDP and mineral exports to GDP; the per capita value of natural resource and sub-soil asset stocks is their resource abundance variable. It is important to make a distinction between resource abundance and dependence. A resource abundant nation may not be very resource dependent, if it has wisely chosen to, and has had time to diversify its production structure through economic growth, which also raises the living standards of the citizenry. Indeed, resource dependence may be a reflection of the failure to grow and develop good economic and political institutions, along with the associated poverty, inequality and poor human development outcomes. They find that resource *dependence* has no significant effect on growth (although the sign is still negative), contrary to many earlier findings regarding the resource curse. By contrast, they find that resource *abundance* has significantly positive effects on growth either *directly* in a growth regression or *indirectly* through institutional improvements (measured by the rule of law and government effectiveness). Their results were criticised by van der Ploeg and Poelhekke (2010) on the grounds that the resource abundance variable is not truly exogenous, but endogenous to resource dependence (exports of primary goods), and for other potentially important missing independent variables

The Mavrotas, Murshed and Torres (2011) estimation was one of the earlier panel data econometric analyses in this connection, including the use of dynamic panel data methods, involving GMM (generalised method of moments) estimations. Their results suggest that both point-source and diffuse type natural resource endowments retard the development of democracy (measured by POLITY which gives a hybrid measure of both autocracy and democracy) and good governance (from the economic freedom index, EFI database), which in turn hampers economic growth. So there is a more widespread resource curse, valid for both endowment types. Point sourced economies have a worse impact on governance, and governance is more important for growth compared to democracy. A similar result is found by Kolstad (2009), who finds that the rule of law matters more than democracy.

Murshed and Serino (2011) employ disaggregated trade data sets to elaborate sophisticated measures of trade specialization that distinguish between unprocessed and manufactured natural resource products and are informative about the countries' trade diversification experience, their link to world demand trends and involvement in intra-industry trade. Using panel data (GMM) methods they find that it is mainly specialization in natural resource products with little or no processing that slows down economic growth, as it impedes the emergence of more dynamic patterns of trade specialization. These findings imply that the key to escaping the so-called resource curse is economic diversification, which can be initiated by increasing the degree of natural resource processing. Their results hold true after controlling for institutional quality (POLITY and the rule of law).

Collier and Goderis (2007) use an error correction panel data regression model, which is both dynamic and addresses reverse causality, to differentiate long-run and short-run effects of commodity price booms on economic growth. They find that commodity booms have a positive short-term effect on output, but adverse long-term effects. The long-term effects are confined to "high-rent", non-agricultural commodities, by differentiating commodity prices between

agricultural (diffuse) and non-agricultural (point) goods. Within the latter group, they also find that the resource curse is avoided by countries with sufficiently good institutions.

Boschini, Petterson and Roine (2013) in their taxonomic study distinguish between different types of institutions and also use recent innovations in panel data econometrics to gauge whether good institutions can reverse the natural resource curse on growth. They allow for the endogeneity of institutions in some instances, try out different measures of resource dependence including rents, exports, export share in GDP, as well as differentiating between different types of natural resources. Similar to the study by Metcalfe (2007), the resource curse seems to get weaker in recent years, and the results for the effect of different institutions (chiefly POLITY and ICRG or the international country risk guide which gives us various governance measures) are not always robust to different specifications, periods and samples, except for the ICRG governance type institutions for metals and ores (but not fuel) exporters. Kim and Lin (2017) using heterogeneous panel cointegration techniques do find evidence for a growth resource curse, but one that is mediated by the quality of institutions. Sarmidi, Law and Jafari (2014) find an institutional quality threshold effect in the natural resource and economic growth relationship. In other words, natural resources meaningfully impact on growth only after a certain threshold of institutional quality is arrived at. Interestingly, there is evidence of a reversal of the institutional decline engendered by resource dependence in the recent post-cold war era in line with the findings of Metcalfe (2007) and Boschini, Petterson and Roine (2013). Apergis and Payne (2014) find that for the countries of the Middle East and North Africa (MENA) there were negative effects of oil revenues on growth in the period 1990-2003, but this effect moderates afterwards.

When applying the meta-analysis technique to the natural resource-growth nexus literature, Havránek, Horváth and Zeynalov (2016)[3] discover a taxonomic and non-consensual literature after they correct for publication biases. Some 40% find a negative effect of resource rents, about 20% obtain positive effects, with the remaining 40% get no significant effect. Thus, the matter remains unresolved. The paper concludes that the emphasis must lie in the importance of institutions as a mediating factor in this process, and with improved institutions the resource curse is largely absent. The search for the right institutional mechanism goes on. We now turn to the role of a new type of institutional link in this connection, the intensity of contracts in the economy, which help to shape economic norms to shed light on this unresolved issue.

3. Empirical Approach

3.1. Econometric Model

In the analysis, we investigate the relationship between two measures of oil wealth (oil abundance/dependence) and economic growth via contract intensity. We proceed by testing the effect of each of the oil wealth measures on economic growth. We regress economic growth on oil abundance, oil dependence and a series of other covariates over the period 1970–2010 (based on a five-year moving average), by using a two-step system generalized method of moments (GMM) in a global sample of 103 developing countries. Precisely, we estimate the following two models:

$$\text{growth}_{i,t} = \alpha\, growth_{i,t-1} + A_{oil\ abund}\left(oil\ abund\right)_{i,t-1} + \upsilon\, Z_{i,t-1} + \delta_i + \omega_t + \mu_{i,t} \quad \text{.....(1)}$$

[3] The authors examine 402 econometric estimates in 33 separate studies.

$$growth_{i,t} = \alpha\ growth_{i,t-1} + \beta_{oil\ depend}\left(oil\ depend\right)_{i,t-1} + \vartheta\ Z_{i,t-1} + \gamma_i + \partial_t + \varepsilon_{it} \ldots\ldots(2)$$

Where $growth_{i,t-1}$ is the growth of GDP per capita of a country i at year t, $\left(oil\ abund\right)_{i,t-1}$: is oil abundance (the log of oil value per capita), $\left(oil\ depend\right)_{i,t-1}$: oil dependence (oil value as % of GDP), $Z_{i,t-1}$ is a vector of control variables: initial level of per capita GDP, human capital which refers to the average years of schooling of the population aged 15, investment as a ratio of GDP[4], $\delta\ and\ \gamma$ denote country-fixed effects that capture unobservable time-invariant country characteristics, ω and ∂ are time-fixed effects that capture common shocks to economic growth for all countries. The error terms μ_{it} and ε_{it} capture all other omitted factors and are clustered at the country level –hence, they may be arbitrarily serially correlated within countries.

To situate the place of contract intensity on the oil-growth nexus, we proceed with the following specification:

$$growth_{i,t} = \alpha\ growth_{i,t-1} + A_{cie}\ cie_{i,t-1} + A_{oil\ abund}\left(oil\ abund\right)_{i,t-1} + \upsilon\ Z_{i,t-1} + \delta_i + \omega_t + \mu_{i,t} \ldots\ldots(3)$$

$$growth_{i,t} = \alpha\ growth_{i,t-1} + \beta_{cie}\ cie_{i,t-1} + \beta_{oil\ depend}\left(oil\ depend\right)_{i,t-1} + \vartheta\ Z_{i,t-1} + \gamma_i + \partial_t + \varepsilon_{it} \ldots\ldots(4)$$

Where $cie_{i,t-1}$ is contract intensity, which refers to the life insurance contracts in force (in constant US dollars). Equations (3) and (4) expand Eqs. (1) and (2) by including the $cie_{i,t-1}$ term . The objective is to determine the effect of oil on growth, after controlling for contract intensity. Equations (3) and (4) only capture the direct effect of both contract intensity and oil wealth on growth. The influence, however, of oil wealth on growth can be both direct and indirect. In other words, contract intensity can also act as a conditioning variable, mitigating resource curse effects of oil wealth that are already present on growth. These could be the negative effects of other growth retarding institutional aspects such as autocracy. Therefore, in order to gauge whether contract intensity complements oil wealth or assists as a mitigating factor in the oil–growth relationship, we extend equations (3) and (4) by including an interaction term between the contract intensity and oil wealth in both previous models in order to understand the role of contract intensity in the growth impact of oil wealth. We use life insurance contracts in force as an indicator of contract intensity (cie). Accordingly, the new estimation models are:

$$growth_{i,t} = \alpha\ growth_{i,t-1} + A_{cie}\ cie_{i,t-1} + A_{oil\ abund}\left(oil\ abund\right)_{i,t-1} + \delta\left(cie_{i,t-1} * oil\ abund_{i,t-1}\right) + \upsilon\ Z_{i,t-1} + \delta_i + \omega_t + \mu_{i,t} \ldots\ldots(5)$$

$$growth_{i,t} = \alpha\ growth_{i,t-1} + \beta_{cie}\ cie_{i,t-1} + \beta_{oil\ depend}\left(oil\ depend\right)_{i,t-1} + \theta\left(cie_{i,t-1} * oil\ depend_{i,t-1}\right) + \vartheta\ Z_{i,t-1} + \gamma_i + \partial_t + \varepsilon_{it} \ldots\ldots(6)$$

Where δ and θ capture the effect of the interaction between oil abundance and oil dependence respectively and contract intensity on growth.

Our use of the System-GMM technique also allows us to cope with the endogeneity between contract intensity and growth, as contract intensity may promote growth, but a higher standard of living also accelerates contract intensity.

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[4] All variables are taken as averages over five-year periods and lagged by one five-year period in the 1970-2010 panel. Thus, there are nine 5-year periods.

3.2. Data

In order to empirically test the effects of oil wealth and contract intensity on economic growth we construct a balanced panel of 103 developing countries over the period 1970–2010. Similar to Mavrotas, Murshed and Torres (2011) the data are used in five-year intervals. Data for the growth of real GDP per capita were sourced from National Accounts Main Aggregates Database (UN Statistics, 2020).

Data on contract intensity, represented by the natural log of life insurance contracting U.S. dollars per capita, were sourced from contract intensity of national economies (CINE b2019). This new continuous measure for contract-intensive economy (CIE) is based on life insurance contracts in force. Life insurance contracting is an ideal measure of CIE because, unlike other contracts, life insurance contracts must rely on third-party enforcement, since the delivery of service is expected only after the death of the policy holder. CIE data covers 172 countries from 1920 to 2010. The minimum value is 0. 046; the maximum is 8.748. Higher values represent greater reliance on contracting in the economy. Lower values represent greater reliance on clientelism within the economy (Mousseau, 2019)

We use two main measures of oil wealth (oil abundance/oil dependence) rather than just one. To capture oil abundance, we used the quantity of extracted oil and gas multiplied by the per-unit world price and then divided by population size (oil and gas value per capita). For oil dependence, we use the quantity of oil and gas extracted in a given year multiplied by the per-unit world price divided by GDP (the share of oil and gas value in GDP). The data on oil and gas value is obtained from the dataset of Ross and Mahdavi (2015).

We also use additional controls, as is standard in growth regressions: initial income per-capita (log of GDP per capita at the starting year, 1970) and investment as a ratio of GDP were sourced from National Accounts Main Aggregates Database (UN Statistics, 2020). Human capital which refers to the average years of schooling of the population aged 15 were sourced from Barro-Lee Dataset.

4. Estimation and Results

In Table 1, we present some descriptive statistics for our panel data set for the full sample, and for each group individually. Column 1 reports the observations, mean and standard deviation for the whole sample. In the last two Columns, the full sample is classified into two groups, contract-median, corresponding to the median of the sample and contract-poor economies with scores well below the median. Table 1 indicates that contract-median economies are associated with a higher mean score in economic growth, contract intensity, oil abundance - oil value per capita-, human capital, and investment than contract-poor economies. Remarkably, contract-poor economies are characterized by a greater oil dependence - oil value as % of GDP- than contract-median economies. Contract-poor economies tend to depend more on oil than upper contract-median economies countries

Table 1: Summary statistics

	Full Sample (1)			Contract-median economies (2)			Contract-poor economies (3)		
Variable	Obs.	Mean	Std.Dev.	Obs.	Mean	Std.Dev.	Obs.	Mean	Std.Dev.
Economic Growth	1085	1.722	1.81	532	2.271	4.434	553	1.194	4.828
Contract economy	1062	2.365	1.97	511	2.914	1.159	551	1.855	.191
Oil Abundance	1094	2.628	0.55	329	5.45	2.666	243	4.452	2.503
Oil Dependence	1071	8.986	0.86	317	16.906	24.672	241	17.698	22.578
Initial Income	1085	7.407	7.32	532	8.053	1.174	553	6.785	1.005
Human Capital	860	5.508	5.32	425	6.518	2.51	435	4.521	2.897
Investment	1076	21.1	19.03	532	22.792	9.953	544	19.445	12.176

Figure 1 illustrates the correlation of country averages of contract intensity, oil abundance and oil dependence with economic growth over the time period 1970–2010. In Panel (a) of Figure 1 shows the expected positive correlation between economic growth and contract intensity, while Panel (b) shows the corresponding relationship between economic growth and oil abundance. There is no clear correlation pattern. In Panel (c) the data patterns suggest a negative correlation between economic growth and oil dependence. For now, at least, Figure 1 provides a first indication that oil dependence in developing countries has inhibited economic growth.

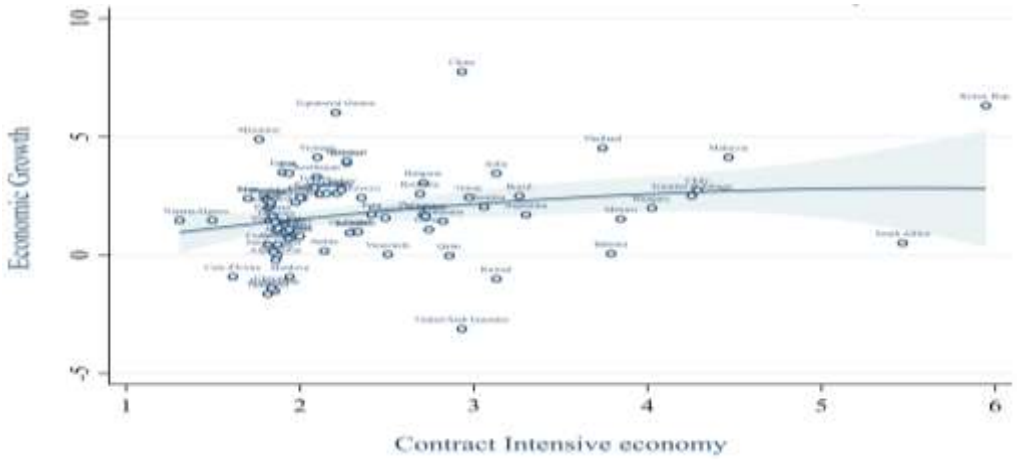
4.2. Dynamic panel estimation results

4.2.1 Effect of Oil Wealth on Growth

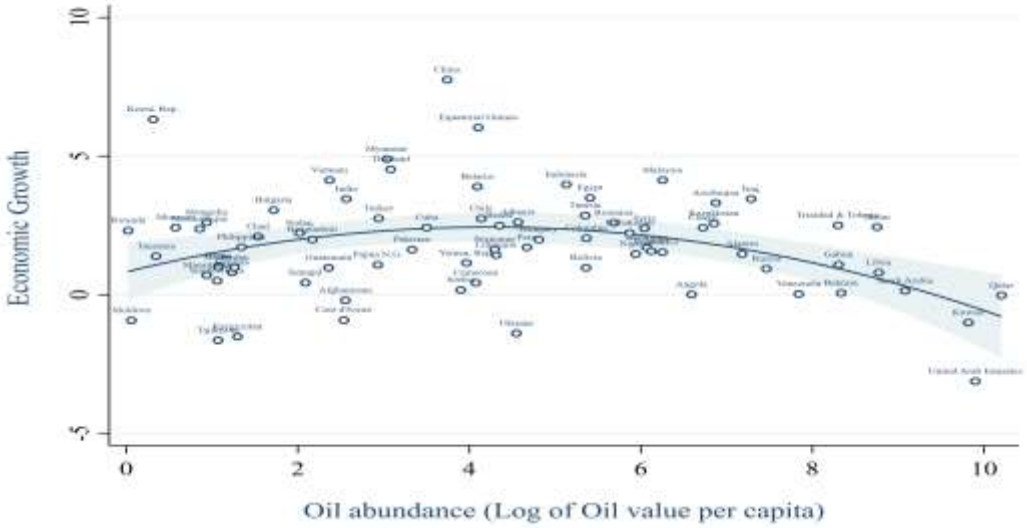
We now begin our empirical investigation of the economic growth effects of oil abundance and oil dependence. Tables 2-4 present the main system-GMM results for the full sample of 103 developing countries and for each of the country groups. In each table, we categorized the analysis per type of oil wealth (abundance/dependence) measure to compare their effects on economic growth. Columns (1–3) present the results of the effects of oil abundance, while Columns (4–6) summarizes the results of the effects of oil dependence.

Fig 1. Relationship of contract intensity, oil abundance and oil dependence with economic growth

(a) Cross-Country Correlations: Economic growth and contract intensity



(b) Cross-Country Correlations: Economic growth and oil abundance



(c) Cross-Country Correlations: Economic growth and oil dependence

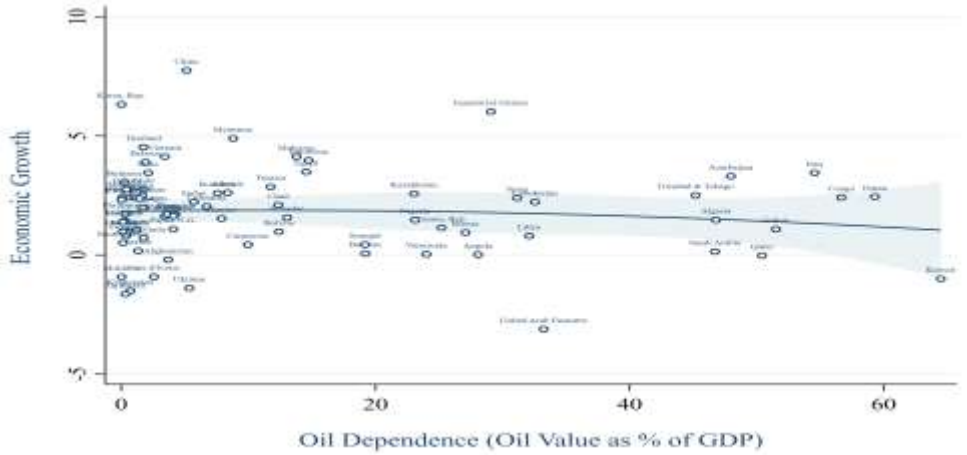


Table 2 presents the results from model (1) and (2) applying panel system GMM. A cursory look at the results provides strong evidence that oil abundance hinders economic growth over time for the full sample. According to System GMM estimates shown in Column (1) of Table (2), a 1 % increase in oil value per capita reduces economic growth by 0.085%. This tendency is also shared with oil dependence as well (Column 4). For now, at least, we obtain *prima facie* evidence that oil abundance and oil dependence generate a resource curse, retarding economic growth in the full sample for the reasons outlined in section 2 associated with rent seeking and corruption.

Table 2. Effect of Oil Wealth and Contract Intensive Economic on Economic Growth. Oil Abundance vs Oil Dependence (1970–2010, Five-Year Average)

	Oil Abundance (Oil Value per capita)			**Oil Dependence (Oil Value as % of GDP)**		
	Full Sample (1)	Contract-median (2)	Contract-poor (3)	Full Sample (4)	Contract-median (5)	Contract-Poor (6)
Growth t-1	0.080***	0.252***	-0.064***	0.083***	0.256***	-0.064***
	(0.026)	(0.011)	(0.017)	(0.025)	(0.010)	(0.018)
Oil Abundance t-1	-0.085*	0.105***	-0.147***	/	/	/
	(0.044)	(0.027)	(0.051)	/	/	/
Oil Dependence t-1	/	/	/	-0.011**	0.008**	-0.005*
	/	/	/	(0.005)	(0.004)	(0.003)
Initial Income	-0.642***	-1.090***	-0.674***	-0.681***	-0.977***	-0.903***
	(0.106)	(0.090)	(0.185)	(0.083)	(0.083)	(0.105)
Human Capital t-1	0.280***	0.195***	0.326***	0.265***	0.180***	0.323***
	(0.054)	(0.048)	(0.040)	(0.055)	(0.051)	(0.045)
Investment t-1	-0.006	-0.038***	0.066***	-0.009	-0.034***	0.059***
	(0.014)	(0.006)	(0.009)	(0.014)	(0.005)	(0.011)
Observations	746	374	372	746	374	372
No. of countries included	103	51	52	103	51	52
Hansen J: P-value	0.0869	0.483	0.572	0.106	0.531	0.623
AR(1): P-value	0.0360	0.00122	0.0875	0.0363	0.00128	0.0917
AR(2): P-value	0.396	0.191	0.480	0.391	0.186	0.483

Note: Time periods are five-year intervals. Year dummies are included but not presented to save space. Standard errors are in brackets. *p < 0.10, **p < 0.05, ***p < 0.01. All regressions were carried out using dynamic System-GMM methodology. Hansen overidentification p values greater than 0.05 for almost all of the specifications, this imply that we cannot reject the null hypothesis which states that instruments used are valid.

To test whether economic norms are important in understanding the relationship between oil wealth and growth, we calculate the median of average contract intensity (2) for the full sample period 1970–2010, and then we define this value (2) as a threshold level to determine whether contract type is of a poor or median category. Accordingly, we divide our sample into two groups: contract-median and contract-poor economies based on being above or below this threshold (2). As can be seen from table 2, once we classify developing countries into contract-median and contract-poor economies. we consistently find a positive relationship between the two measures of oil wealth (column 2 and 5) and economic growth in contract-median economies, whilst there is negative relationship in contract-poor economies (column 3 and 6). This evidence indicates that nations with contract-median economies appear immune to the economic oil resource curse; once again a higher degree of contract intensity obviates from rent seeking and corruption.

4.2.2 Effect of Oil Wealth and Contract Intensity Economic on Growth

Table 3 shows the results of the impact of oil wealth on per capita GDP growth from Eq. (3) and (4) when the contract intensity (cie) indicator is controlled for. On the one hand, the system GMM results for the full sample and contract-poor economies (column 1 and 3 of table 3) show that oil abundance parameters have a positive significant effect on economic growth, which is inconsistent with the previous result in table 2, when contract intensity was not included in the regression. For contract-median economies (column 2 of table 3), oil abundance maintains its positive and significant effect on economic growth. On the other hand, oil dependence continues to have its negative and positive effect in the full sample and contract-median economies respectively, while there is no significant relationship for contract-poor economies (column 6 of table 3), which is at variance with the previous result in table 2 when contract intensity was not included. Moreover, the estimation results of table 3 clearly implies that controlling for contract intensity changes the direction of the detrimental effects of oil wealth on economic growth in the full sample and contract-poor economies.

Table 3. Effect of Oil Wealth and Contract Intensity Economic on Growth.
(Sample Period: 1970–2010, Five-Year Average)

	Oil Abundance (Oil Value per capita)			**Oil Dependence (Oil Value as % of GDP)**		
	Full Sample	Contract-Middle	Contract-poor	Full Sample	Contract-Middle	Contract-Poor
	(1)	(2)	(3)	(4)	(5)	(6)
Growth t-1	0.115***	0.272***	-0.035	0.066***	0.278***	-0.063***
	(0.029)	(0.022)	(0.026)	(0.021)	(0.013)	(0.019)
Contract intensity t-1	0.284**	0.262***	0.891	0.112	0.220***	-0.183
	(0.114)	(0.096)	(0.933)	(0.095)	(0.071)	(1.025)
Oil Abundance t-1	0.063*	0.104***	0.131**	/	/	/
	(0.038)	(0.027)	(0.051)	/	/	/
Oil Dependence t-1	/	/	/	-0.011***	0.010**	-0.003
	/	/	/	(0.004)	(0.004)	(0.003)
Initial Income	-0.922***	-1.071***	-1.217***	-0.705***	-0.990***	-0.922***
	(0.122)	(0.081)	(0.183)	(0.077)	(0.087)	(0.100)
Human Capital t-1	0.425***	0.362***	0.302***	0.371***	0.155***	0.324***
	(0.071)	(0.056)	(0.068)	(0.051)	(0.056)	(0.044)
Investment t-1	-0.038**	-0.047***	0.041***	-0.018	-0.050***	0.063***
	(0.016)	(0.007)	(0.015)	(0.012)	(0.005)	(0.011)
Observations	738	366	372	738	366	372
No. of countries included	103	51	52	103	51	52
Hansen J: P-value	0.0875	0.764	0.580	0.132	0.926	0.946
AR(1): P-value	0.0379	0.00203	0.0891	0.0407	0.00104	0.0926
AR(2): P-value	0.352	0.202	0.433	0.418	0.275	0.479

Note: Time periods are five-year intervals. Year dummies are included but not presented to save space. Standard errors are in brackets. *p < 0.10, **p < 0.05, ***p < 0.01. All regressions were carried out using dynamic System-GMM methodology. Hansen overidentification p values greater than 0.05 for almost all of the specifications, this imply that we cannot reject the null hypothesis which states that instruments used are valid.

4.2.3 Interactive Effects of Oil Wealth and Contract Intensity on Economic Growth

Table 4 shows the results of interactive effects of oil wealth and contract intensity on economic growth from Eq. (5) and Eq. (6). The interaction term is important to the model specification because it provides evidence on how contract intensity mitigates *already present* resource curse effects on economic growth. The results of the interaction effects turn out to be fairly impressive. For the full sample and the two country groups, we observe a switch in sign, as the negative or insignificant effect of oil wealth becomes positive when we interact it with contract intensity.

Estimates for the system GMM models report that, when considering oil abundance, the interaction effects of oil wealth and contract intensity are positive for the full sample (Column.1),

contract-median economies (Column.2), and contract-poor economies (Column.3). Moving on to oil dependence as a measure of oil wealth, results for the system GMM also suggest a positive and significant effect for the full sample and the two country groups (Column 4 – Column 6). This indicates that contract intensity mitigates the negative relationship between oil wealth and economic growth emanating from other growth retarding factors, and it serves to halt the overall resource curse of an oil endowment. It also suggests the crucial role of economic norms when it comes to designing policy to enhance oil wealth management and its effect on economic growth.

Table 4. Interactive Effects of Oil Wealth and Contract Economy on Growth.
(Sample Period: 1970–2010, Five-Year Average)

	Oil Abundance (Oil Value per capita)			**Oil Dependence (Oil Value as % of GDP)**		
	Full Sample (1)	Contract-median (2)	Contract-poor (3)	Full Sample (4)	Contract-median (5)	Contract-Poor (6)
Growth t-1	0.093***	0.244***	-0.087***	0.037***	0.240***	0.021
	(0.020)	(0.022)	(0.018)	(0.009)	(0.016)	(0.024)
Contract Intensity t-1	0.058	0.121	-6.771*	0.043	0.144	-3.105**
	(0.115)	(0.193)	(3.816)	(0.080)	(0.127)	(1.490)
Oil Abundance t-1	-0.108*	-0.018	-2.379**	/	/	/
	(0.063)	(0.081)	(1.182)	/	/	/
(Contract economy *Oil Abundance) t-1	0.061***	0.049*	1.383**	/	/	/
	(0.021)	(0.027)	(0.612)	/	/	/
Oil Dependence t-1	/	/	/	-0.024***	0.000	-0.199***
	/	/	/	(0.004)	(0.007)	(0.053)
(Contract economy *Oil Dependence) t-1	/	/	/	0.008***	0.003*	0.107***
	/	/	/	(0.002)	(0.002)	(0.029)
Initial Income t-1	-0.847***	-1.056***	-1.009**	-0.796***	-0.967***	-0.857***
	(0.090)	(0.132)	(0.485)	(0.033)	(0.109)	(0.091)
Human Capital t-1	0.371***	0.322***	0.144	0.394***	0.188***	0.301***
	(0.054)	(0.094)	(0.175)	(0.033)	(0.071)	(0.041)
Investment t-1	-0.008	-0.027***	-0.034***	-0.007	-0.048***	0.042***
	(0.012)	(0.006)	(0.011)	(0.006)	(0.005)	(0.008)
Observations	738	366	372	738	366	372
No. of countries included	103	51	52	103	51	52
Hansen J: P-value	0.108	0.973	1	0.194	0.996	0.976
AR(1): P-value	0.0393	0.00282	0.0860	0.0461	0.00124	0.0736
AR(2): P-value	0.385	0.136	0.537	0.469	0.200	0.349

Note: Time periods are five-year intervals. Year dummies are included but not presented to save space. Standard errors are in brackets. *p < 0.10, **p < 0.05, ***p < 0.01. All regressions were carried out using dynamic System-GMM methodology. Hansen overidentification p values greater than 0.05 for almost all of the specifications, this imply that we cannot reject the null hypothesis which states that instruments used are valid.

Nevertheless, to get a better understanding of how a country's level of contract intensity mediates the effect of oil wealth on economic growth, we compute the conditional marginal effects (CME) of oil wealth on economic growth by differentiating Eq. (5) and Eq. (6) as follows:

$$CME_{i,t}^{(oil\ abund)} = \frac{\partial growth}{\partial oil\ abund} = \hat{A}_{oil\ abund} + \hat{\delta}\ cie_{i,t-1} \ldots\ldots\ldots\ldots (a)$$

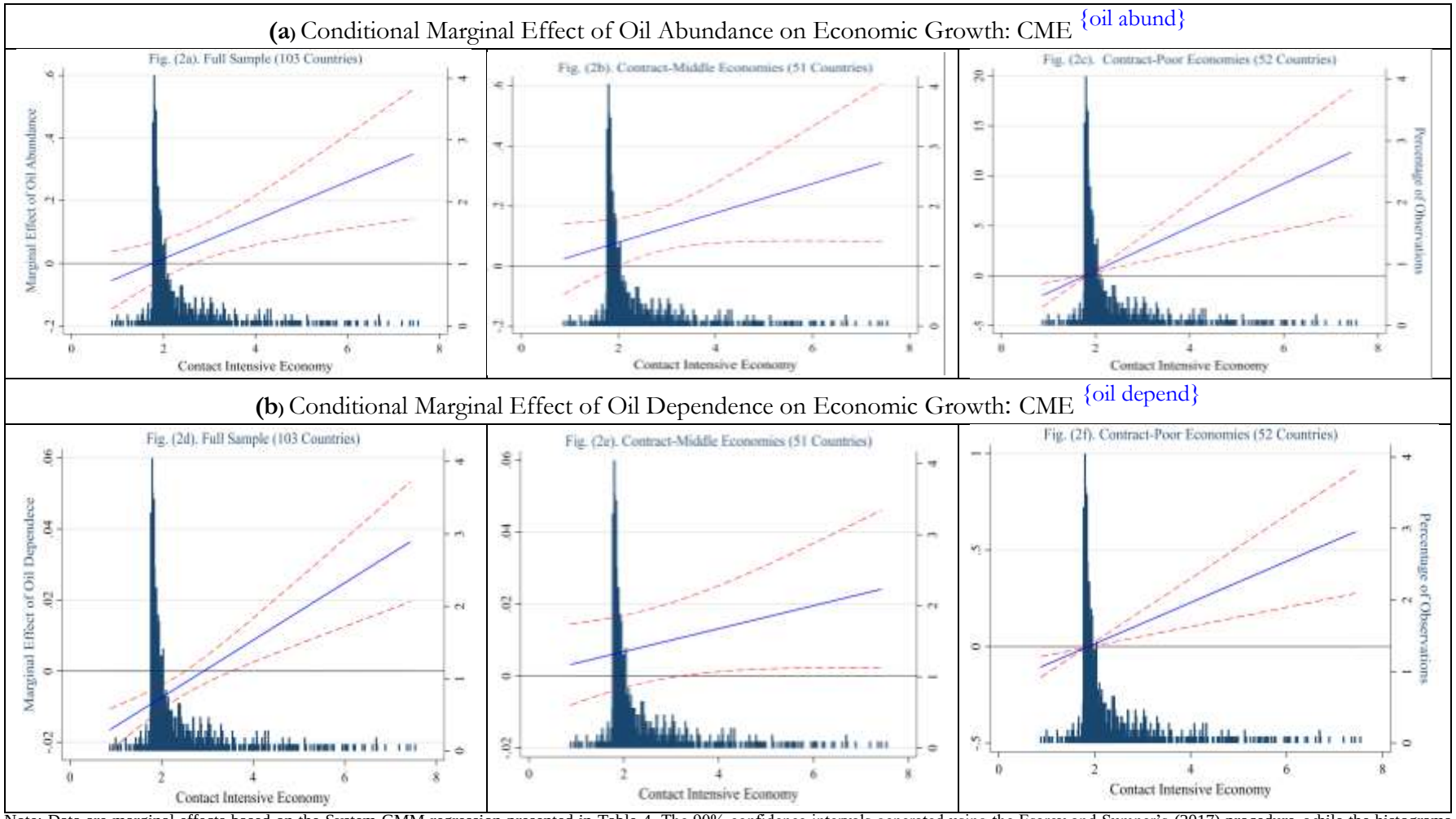
$$CME_{i,t}^{(oil\ depend)} = \frac{\partial growth}{\partial oil\ depend} = \hat{B}_{oil\ depend} + \hat{\theta}\ cie_{i,t-1} \ldots\ldots\ldots\ldots (b)$$

Equation (a) represents the conditional marginal effect of oil abundance on economic growth in model (5), Whilst equation (b) represents the conditional marginal effect of oil dependence on economic growth in model (6).

Figure 2 presents a set of plots of the estimated conditional marginal effects of oil wealth on economic growth at each level of contract intensity based on Table 4. Figs. (2a), (2b) and (2c) present the marginal effects (solid line) of oil abundance on economic growth for varying levels of contract intensity that correspond to Column. (1), (2) and (3) of Table 4. Figs. (2d) -(2f) illustrate the marginal effects of oil dependence on economic growth for varying levels of contract intensity that correspond to Column. (4), (5) and (6) of Table 4. The histograms at the bottom of the figures shows the frequency distribution of contract intensity along the x-axis. The right-hand y-axis indicating the percentage of observations. The dashed red lines around the marginal effects line represent 90 percent confidence intervals and calculated using Esarey and Sumner's (2017) procedure.

All marginal effects plots consistently demonstrate the significant moderating effect of contract intensity, which serve to increase growth as the oil endowment increases. With higher levels of contract intensity, the positive contribution of oil abundance and dependence to economic growth increase in magnitude. For the full sample and contract-poor economies (fig. (2a) and fig. (2c)), the marginal effect of rising oil abundance on economic growth in nations with low values of contract intensity is negative. This effect becomes positive once contract intensity reaches the threshold value of 2. This means that the marginal effect of increased oil abundance is negative in contract-poor economies, and becomes positive in contract-median economies. Similarly, fig 2 illustrates that, when we consider oil dependence (fig. (2d) and fig. (2f)), the marginal effect of oil dependence on economic growth in full sample and contract-poor economies is negative at low values of contract intensity, but when contract intensity surpasses roughly the values of 2.9 and 2.1 respectively in the full sample and contract poor economies, we begin to see positive marginal effects of rising oil dependence on economic growth. Taken together, we can conclude, however, that the effect of increasing oil wealth on economic growth is conditional on a country's level of contract intensity. In this connection we have made an important contribution, by identifying a threshold level of contract intensity, above which the resource curse vanishes.

Fig. 2. *Margins plots of the conditional effects of oil abundance and oil dependence on economic growth, 1970-2010.*



Note: Data are marginal effects based on the System GMM regression presented in Table 4. The 90% confidence intervals generated using the Esarey and Sumner's (2017) procedure, while the histograms present the distribution of observations.

5 Conclusions

Ever since the 1980s there has been a growing literature on the resource curse, especially related to the deleterious impact of an oil abundance and dependence on a variety of outcomes. One of the important economic outcomes for developing countries endowed with or dependent on oil is its effect on growth. As we have seen in section 2 above there is no consensus in the cross-country empirical literature on this subject. What is agreed, however, is that institutions matter, and well-functioning institutions can serve to moderate the economic resource curse. A variety of institutional variables have been experimented with in the literature. These range from political institutions such as the degree of democracy and autocracy, to governance features such as the extent of the rule of law, the control of corruption and so on. There is some evidence that governance may matter more in promoting good economic performance, relative to the degree of democracy, in resource or oil endowed developing countries. In terms of policy design for managing oil or natural resource wealth, the right type of institutional framework is important in promoting the chances of a good growth record, and moderating resource mismanagement. The theoretical underpinnings of this process suggest that the type of institutions that prevent rent seeking and corruption are of paramount importance. A variety of institutional variables may fit the bill, and a literature review suggests a non-consensual literature, indicating that the search must go on.

This paper has attempted to gauge the effects of contract intensity governing market relations in the economy. First and foremost, this institutional variable remains untried in the economic resource curse literature, particularly pertaining to its impact on growth. Secondly, a high contract intensity refers to impersonal and contractual market relations between economic agents, diminishing the harmful effects of highly personalized economic interaction: collusion, corruption and rent seeking all of which are harmful to growth. In this manner it serves to reflect a vector of good governance indicators, reflecting the *outcome* of the application of the rule of the rule of law, control of corruption and bureaucratic quality.

Our results suggest that a more contract intensive economy moderates the growth retarding effect of oil abundance, but not necessarily in an oil dependent economy, unless the degree of contract intensity is already above a certain threshold. An economy highly dependent on oil is a country that has not succeeded in diversifying its economic structure, so we would expect worse outcomes there. But contract intensity may serve to fulfill a further function. It may mitigate already present growth retarding factors. These could include purely economic factors such as capital constraints, the dearth of financial or fiscal institutional capacity in terms of economic governance, or other characteristics such as authoritarian government. The higher the degree of contract intensity, the greater the positive effect of oil abundance or dependence on growth. In this connection we make an important contribution, by identifying a threshold level of contract intensity, above which the resource curse vanishes.

In short, our paper demonstrates that the oil related economic curse is not inevitable. The presence of contract intensive economic norms can alter a curse into a blessing, and we identify the point at which the switch takes place. This has important implications for policy design in managing resource rents in developing countries; promoting contractual norms in the marketplace is growth enhancing.

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Appendix

Table A.1: List of countries

Albania	Egypt	Liberia	Romania
Algeria	Eritrea	Libya	Russia
Argentina	Ethiopia	Lithuania	Rwanda
Armenia	Fiji	Malawi	Saudi Arabia
Bahrain	Gabon	Malaysia	Senegal
Bangladesh	Georgia	Mali	Sierra Leone
Benin	Ghana	Mauritania	South Africa
Bolivia	Guinea-Bissau	Mauritius	Sri Lanka
Brazil	Guyana	Mexico	Sudan
Bulgaria	Haiti	Moldova	Swaziland
Burundi	Honduras	Mongolia	Syria
Cambodia	Hungary	Morocco	Tajikistan
Cameroon	India	Mozambique	Tanzania
Central African Rep	Indonesia	Myanmar	Thailand
Chile	Iraq	Namibia	Togo
China	Jamaica	Nepal	Trinidad & Tobago
Colombia	Jordan	Nicaragua	Tunisia
Congo	Kazakhstan	Niger	Turkey
Costa Rica	Kenya	Pakistan	Uganda
Cote d'Ivoire	Korea, Rep.	Panama	Ukraine
Cuba	Kuwait	Papua N.G.	United Arab Emirates
Cyprus	Kyrgyzstan	Paraguay	Uruguay
Djibouti	Laos	Peru	Venezuela
Dominican Rep.	Latvia	Philippines	Vietnam
Ecuador	Lesotho	Qatar	Yemen, Rep.
			Zambia
			Zimbabwe

Table A2: List of Variables, Definitions and Sources

Name and Definition	Source
Growth: Growth Rate of Per Capita GDP at constant 2015 prices in US Dollars	National Accounts Main Aggregates Database https://unstats.un.org/unsd/snaama/Downloads
Initial Income: the natural log of Per Capita GDP at constant 2015 prices in US Dollars in the first period of the panel	
Investment: Percentage share of gross fixed capital formation in GDP	
Contract intensity economic: the natural log of life insurance contracting U.S. dollars per capita,	contract intensity of national economies (CINE b2019). https://doi.org/10.7910/DVN/8RPC9E
Human Capital: Mean years of schooling for the population aged above 15 years.	Available at http://www.barrolee.com/
Oil Abunadance: Where oil and gas value are the quantity of oil and gas extracted in a given year multiplied by the per-unit world price divided by population.	Constructed based on Ross Mahdavi (2015), Oil and Gas dataset.https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/ZTPW0Y
Oil dependence: Where oil and gas value are the quantity of oil and gas extracted in a given year multiplied by the per-unit world price divided by GDP.	