



Does political will have the potential to improve GCC economic diversification?

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Abstract

Objectives: This study investigates the role of political will on economic diversification throughout the Gulf Cooperation Council [GCC] countries. The study examines determinants of economic diversification, including economic, demographic, political, and institutional factors. **Method:** The applied model was estimated using pooled ordinary least squares [OLS], random- and fixed-effect techniques, as well as the Hausman test. According to the appropriate fixed-effect estimation model. The data sample covered the six GCC countries throughout the period from 1996 to 2019. **Results:** The findings proposed that increased political will can lead to increase of the economic diversification efforts across the GCC region. Particularly, higher government effectiveness indicates lower dependence on oil rent. However, results confirmed that the impact of political stability tends to be associated with greater dependence on oil rent. This suggests that the GCC governments tend to deviate from the process of economic diversification when political environments are improved, reflecting the political-economy model of rentier states across the GCC region. On the other hand, findings showed that the impact of per capita income and oil prices tend to significantly affect dependency on oil correlatively. Furthermore, increased population growth is associated with lower dependency on oil when the labor force expands and can provide more opportunities for economic diversification.

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Conclusion: GCC policy makers should pursue appropriate incentive frameworks through reforms to the GCC's business and investment environments besides the need to reconsider strategies for foreign direct investments to achieve economic diversification.

Keywords: economic diversification, oil, panel data, GCC,
JEL Classification: O1, E0, O11, O50

هل لدى الإرادة السياسية القدرة على تحسين التنويع الاقتصادي في دول مجلس التعاون الخليجي؟

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ملخص

الأهداف: بحثت هذه الدراسة في دور الإرادة السياسية في التنويع الاقتصادي في دول مجلس التعاون الخليجي. وركزت على محددات التنويع الاقتصادي، بما في ذلك العوامل الاقتصادية، والديموغرافية، والسياسية، والمؤسسية. **المنهج:** قُدِّر النموذج المطبق باستخدام المربعات الصغرى العادية المجمعة (OLS)، ومنهجية الأثر العشوائي والثابت، بالإضافة إلى اختبار Hausman. وشملت عينة البيانات دول مجلس التعاون الخليجي الست، خلال الفترة من 1996 إلى 2019. **النتائج:** أشارت النتائج إلى أن زيادة الإرادة السياسية يمكن أن تؤدي إلى زيادة جهود التنويع الاقتصادي في منطقة دول مجلس التعاون الخليجي. وعلى وجه الخصوص، تشير الفعالية الحكومية العليا إلى اعتماد أقل على ريع النفط. ومع ذلك، تؤكد النتائج أن تأثير الاستقرار السياسي يميل إلى أن يكون مصحوباً باعتماد أكبر على الريع النفطي، وهذه دلالة على أن حكومات دول مجلس التعاون الخليجي تميل إلى الانحراف عن عملية التنويع الاقتصادي عندما تتحسن البيئة السياسية؛ مما يعكس نموذج الاقتصاد السياسي للدول الريعانية لدول مجلس التعاون الخليجي. ومن ناحية أخرى، تظهر النتائج أن تأثير دخل الفرد وأسعار النفط يميلان إلى التأثير بشكل كبير على الاعتماد على النفط مع وجود علاقة طردية. فضلاً عن ذلك، يرتبط النمو السكاني المتزايد بانخفاض الاعتماد على النفط عندما تتوسع القوى

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العامة، ويمكن أن يوفر المزيد من الفرص للتنويع الاقتصادي. **الخاتمة:**
ينبغي لصانعي السياسات في دول مجلس التعاون الخليجي اتباع أطر
تحفيزية مناسبة، من خلال إصلاحات في بيئة الأعمال والاستثمار في دول
الخليج. وهناك أيضاً حاجة إلى إعادة النظر في إستراتيجيات الاستثمارات
الأجنبية المباشرة؛ بهدف تحقيق التنويع الاقتصادي.

الكلمات المفتاحية: التنويع الاقتصادي، النفط، بيانات البائل، دول
مجلس التعاون الخليجي، تصنيف البحوث الاقتصادية وفق JEL:O1, E0
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Introduction

In general, governments tend to implement policies to diversify their economies as a way to create investment channels over various economic sectors, decreasing the risk of excessive dependency on one or a few sources of income. The aim of this diversification process is to increase the number of sectors contributing to a country's economy and thereby enhance the complexity of the economic activities making up that country's Growth Domestic Product [GDP]. Therefore, the policies used to diversify an economy are targeted to reduce that country's dependence on a particular economic sector to finance the national budget, as is the case in many oil-producing countries (Dif & Azzouz, 2018).

Despite the attendant challenges, economic diversification has taken on a crucial role as a way for rentier economies operate in addition to their standard economic structures. These countries rely heavily on a single export product that finances most of their public spending. As a result, the economic growth of such rentier economies have been found to be driven by a single income-generating product. In the case of Gulf Cooperation Council [GCC] countries, the structures of their economies are such that oil production is the engine of economic growth; this reality thus poses a threat to development processes in such countries if oil prices drop.

The debate on economic diversification has been discussed throughout the existing literature, especially regarding resource-dependent countries. Although factors affecting such diversification efforts are mainly economic, there are also demographic, political, and institutional factors that influence diversifications efforts. Income levels and investments have an important relationship with economic diversification (Esanov, 2012; Imbs & Wacziarg, 2003; Klinger & Lederman, 2011; Nganga, 2021). In terms of demographics,

population growth reflects an expansion in the labor force as well. Therefore, in such case, this would better deliver more opportunities for economic development (Proctor, 2014). The political and institutional implications of economic diversification efforts have been well explained in many studies. These studies have also shown that higher levels of corruption in a country tend to hinder the process of that nation's economic diversification (Adelaja & Akaeze, 2018; Anyaehie & Areji, 2015; Matallah, 2020).

Extending the work of previous studies, this study aimed to further examine the main factors involved in economic diversification across the GCC region. In addition, this study sought to investigate the links among the economic, institutional, and political aspects of economic diversification strategies across the region in an effort to improve them. Understanding such links can be useful in identifying obstacles facing GCC governments seeking to diversify their economies. This understanding can also help countries detect the potential for stimulating their economy through economic diversification, and thus improve the future implementation of diversification mechanisms.

In this study, the estimated model identifies the impact of the political will on economic diversification across all the six GCC countries. In particular, this study investigates the economic, demographic, institutional, and political determinants of economic diversification across the GCC region. The sample includes an annual panel data covering the period from 1996 to 2019 using pooled OLS, random-effect and fixed-effect techniques, as well as the Hausman test. In preparation for the present study, various testing methods were investigated before choosing the appropriate techniques. Furthermore, the estimated model applies different specifications to investigate the political and institutional factors.

Literature Review

Extensive international research has focused on the importance of economic diversification and its effects on both economic development and social welfare. Ali and Cantner (2020) and Ali and Memon (2019) found that economic diversification has a positive effect on welfare in Central and Eastern European Countries and South Asia. A study by Sachs and Warner (1995) found that countries dependent on natural resources tended to grow more slowly compared to diversified economies. Hausmann et al. (2007) found that sustainable growth requires a diversified tradeable sector. Lashitew et al. (2020) found a negative correlation between resource dependence and service value added and exports growth. Venables (2016) found that lower levels of economic diversification increased the exposure of resource-rich economies to economic shocks. Freire (2019) analyzed the effect of economic diversification on structural economic dynamics and found a negative relationship between economic diversification and the risks of conducting economic activities, which in turn affects the course of endogenous technological changes.

GCC economies are heavily dependent on the oil sector as a main source of income. In this regard, economists have paid special attention to GCC economies as a unique case study for investigating the importance of economic diversification across these countries; this topic is also of vital importance for GCC policy makers. A study by Coury and Dave (2009) provided empirical analysis of economic diversification in GCC countries over the period spanning 1980 to 2005 to assess whether oil revenues, government policies, and foreign flows of labor have contributed to enhanced diversification of the economy. Their study analyzed real growth in non-hydrocarbon gross domestic production [GDP] per worker. Furthermore, Young (2019)

has indicated that GCC efforts toward diversification are notable particularly for their ability to generate revenue from investments in energy projects abroad.

A study by Ari et al. (2019) conducted across GCC countries investigated the relationship between public and private investments over the extended time period from 1960 to 2015. Their findings showed significant attempts by these countries to employ various policies toward the goal of diversifying their economies. Almutairi (2016) analyzed the economic diversification policies by looking at different related aspects, such as the dependence of economic activity and revenues generated by the hydrocarbon and non-hydrocarbon sectors. However, a study by Mishrif (2018) explained the reality that these GCC countries have not yet developed the non-hydrocarbon industries necessary to create more diversified economies. In line with that, Ganguli (2018) found that five out of the six GCC states have clear similarities in term of merchandise exports and imports, which suggests fewer distinct diversification strategies. The only exception is in the case of the United Arab Emirates [UAE], which has experienced better concentration and diversification indices.

Other recent papers, such as the one by Lang and Aldori (2020), used a comparative compound diversification index [CCDI] to confirm that there is potential for GCC economies to move toward mixed-mode economies; in these cases, special attention is paid to knowledge-based, as well as technology- and innovation-based sectors. The link between economic growth and different economic diversification indicators in the case of the GCC is outlined by El Shazly and Lou (2020). They found that despite the important role of oil in boosting economic growth in these countries, the volatility in prices is a notable cause of destabilization within the targeted sustainable and stable economic development across GCC economies.

Few studies have investigated the efforts of achieving diversification within each specific GCC country. Albassam (2015) examined the Saudi government's efforts toward economic diversification, using the oil share of the GDP as a dependent variable and three independent variables-the share of the private sector in the GDP, oil exports as a percentage of Saudi Arabia's total exports, and Saudi Arabia's total revenue as a percentage of the revenue of all countries. Albassam's paper concluded that oil was still the main driver of the Saudi economy, although efforts and development plans to diversify this economy have been ongoing for the past forty years. Another study by Haouas and Heshmati (2014) investigated the efforts of the UAE to achieve economic diversification. This study applied the Normalized Herfindahl-Hirschman Index [NH] to a sample of six economic variables over the period from 1975 to 2006. Findings showed that although good progress has been made by the UAE to diversify their economy, the economy is still vulnerable to external shocks. This evidence suggested that greater efforts were needed to motivate the diversification of the production base by encouraging increased private investment.

In addition, policy reforms were reported as needed to increase the contribution of the private sector in the economy. Furthermore, Shayah (2015) concluded that the UAE economy required high levels of growth in trade to increase economic diversification. He also noted that the UAE's economic diversification played a key role in regaining confidence, especially after the 2008 financial crisis. In addition, Nakibullah (2018) used the share of non-oil real GDP to total real GDP as a measure of diversification to assess the degree of diversification in Bahrain. Evidence showed that the shares of non-oil GDP increased from 64% in 2000 to 80% in 2016, with an average annual growth rate of 6.2% for the period from 2002 to 2016.

This was shown to support the policies of sustainable and diversified economic growth pursued by Bahrain's government. A bivariate structural VAR model with non-oil real GDP and oil price showed that oil prices had a significant positive effect on the non-oil real GDP. This means non-oil sector is heavily reliant on the oil sector.

Although the empirical investigations of these studies have produced some consistent results, there are still some important factors left to be further investigated. The statistical focus of this study relays on panel approach to identify the political will toward economic diversification across GCC region. Using some important governance indicators representing the institutional, and political factors are crucial to provide empirical results which can then help researchers to further investigate the political and institutional mechanisms in the region affecting the economic diversifications efforts.

Methodology

Countries typically establish targets for diversifying the production structures of their economies as a way to create new income-generating sources. Special attention has been paid by countries with natural-resource economies to seeking opportunities to diversify their economies away from natural resources. The present study attempts to investigate the effect of political will on economic diversification efforts by GCC countries. Specifically, the identified determinants of economic diversification including economic, demographic, institutional, and political factors—were considered in regard to aspects of their implementation.

The GCC countries included in the study are considered to be wealthy countries, rich in natural oil resources; however, such a “blessing” might become a “curse” as oil prices drop. The reason for this is the absence of alternative sources of income in these GCC

countries. In addition to the dependence of these economies on a single resource -oil- the GCC governments have also not made significant efforts to expand manufacturing activities. Taken together, these realities explain why these countries' economies are unstable: the oil industry exposes GCC countries to high levels of fluctuations, most significantly changes in global oil prices. Therefore, diversification is a necessary goal that most oil-producing countries seek to achieve, as it strengthens the economy and provides flexibility within that economy to absorb any shocks. Economic diversification also helps countries to create job opportunities, which in turn helps to reduce unemployment and to increase value added—that is, to increase a country's gross domestic product through the establishment of new projects and through the production of goods and services by the national labor force. Mismanagement of oil resources can result in a "resource curse," which is related to the absence of economic diversification, as it indicates the effects of a country's dependence on oil.

In order to investigate the process of economic diversification across the GCC region, various aspects affecting economic mechanisms must be identified. There are different measurements of economic diversification, including the measurement of the share of a country's revenue generated by a single natural resource to the country's GDP. If a higher share of the GDP is dependent on a single natural resource, there will be greater dependency on the natural resource in that country, suggesting a lower degree of economic diversification.

The current study follows a panel approach designed to control for unobserved time invariant indicators. The benchmark estimated model was the pooled OLS. The estimated model was verified using fixed-effect, random-effect, and Hausman tests. Accordingly, the

estimated model is based on the theoretical framework by Hackbart and Anderson (1975) to identify the economic diversification, as well as the extended empirical work by Coury and Dave (2009) and Albassam (2015). Therefore, the estimated benchmark model is specified in logarithm form as follows:

$$(oil\ rents\ share)_{it} + \alpha + \beta_1 (Population)_{it} + \beta_2 \log(Per\ Capita\ GDP)_{it} + \beta_3 \log(FDI)_{it} + \beta_4 \log(Oil\ Price)_{it} + \beta_5 (Political\ Stability\ index)_{it} + \beta_6 (Government\ Effectiveness\ Index)_{it} + \varepsilon$$

Where β denotes the estimated coefficients, i and t denote the i -th country, and t -th indicates the time period. The dependent variable represents the economic diversification efforts measured by “oil rents as a share of GDP”, as it accounts for the gap between the profit made via crude-oil production and the costs of its production. A higher share of oil rents compared to the GDP suggests a higher dependency on the oil sector, thus indicating less economic diversification. The independent variables are divided into four classifications-economic, demographic, institutional, and political factors-as follows:

- The economic factors are represented by GDP growth per capita, oil prices, and Foreign Direct Investment [FDI].
- The demographic factors are represented by population growth.
- The institutional factors are represented by government effectiveness.
- The political factors are represented by political stability.

The determinants of economic diversification are proxied in the estimated model in the following propositions, as seen in the literature:

- Population is measured by the growth rate of the population, which is used as a proxy for the demographic aspects of diversification. Higher population growth indicates a larger labor market,

which increases the country's potential for higher economic diversification (see Proctor, 2014; Wood & Alsayegh, 2014).

- GDP per capita is measured by the natural log of the real GDP per capita. A higher GDP per capita tends to be associated with a country's increased potential for economic diversification (see El Shazly & Lou, 2020).
- Foreign direct investment is measured by the log of foreign direct investment inflows in millions of US dollars. Higher FDI flows help facilitate greater potential for economic diversification, (see Esanov, 2012; Imbs & Wacziarg, 2003; Klinger & Lederman, 2011).
- The variable of oil price is measured by the natural log of the average oil price. Lower oil prices tend to negatively affect efforts toward economic diversification, suggesting again the potential benefits of a diversified economy (see Charfeddine & Barkat, 2020; Yasmin et al., 2020).
- The political stability index is the measurement of political disturbances. A higher political stability index tends to indicate a better environment for economic diversification (see Corden & Neary, 1982; Mehlum et al. , 2006).
- Government effectiveness measures a country's institutional readiness for economic diversification. Higher government effectiveness tends to foster economic diversification (see Esanov, 2012; Matallah, 2020).

The model has been extended to include the various specifications of institutional factors. These institutional factors have then been extended to include the rule of law, corruption control, and the regulatory quality index.

Data Description

This study covers yearly data for the six GCC countries during the period from 1996 to 2019. In general, the economic variables were obtained from the World Development Indicators at the World Bank database. Institutional and political variables were obtained from the Governance indicators at the World Bank database. Specifically, GDP, population, and FDI data was obtained from the World Bank database. Data for oil prices was constructed from Organization of the Petroleum Exporting Countries [OPEC] data statistics. Any missing data was then obtained from the GCC statistical institutions. The political stability index measures the existence of any political instability that may involve politically motivated violence. The index is based on estimates using standard normal distribution as it ranges from -2.5 to 2.5. The democratic index, another political factor, measures the quality of a country's democracy as published by the Economist Intelligence Unit. This index scores countries along a range from 0 to 10, where the 10 represents the highest quality of democratic practices.

Regarding the institutional indicators, data pertaining to government effectiveness, the rule of law, corruption control, and regulatory quality variables were obtained from the Governance indicators at the World Bank database (Kaufmann et al. ,1999). Such indicators are extensively used to reflect "good" governance of a country's local institutions. The government effectiveness index includes issues related to the quality of public service and bureaucracy, the capability of civil servants, and other issues related to a government's policy commitments. The index is measured by estimating the country with a standard normal distribution as it ranges from -2.5 to 2.5 values. The rule-of-law index reflects the perceived confidence of a population in their government's ability to enforce

contracts, property rights, and judicial procedures. The index also includes the existence probability of crime and violence in a society and uses estimates of standard normal distribution ranging between -2.5 and 2.5. The corruption-control index measures the possibility of private obtained by government as a seek for public power. This index includes different types of corruption, including petty. The index follows estimations using standard normal distribution ranging from -2.5 to 2.5. The regulatory quality index measures the capability of a government to set and apply strong policies designed to enhance the country's private sector. The index is estimated with standard normal distribution ranging from -2.5 to 2.5.

Empirical Results

Table 1 (Appendix A) provides a summary of the descriptive statistics of all variables studied. The correlation matrix of the variables used in the estimated model is shown in Table 2. All econometrics tables are represented in Appendix B. The main results of the estimated model using the pooled OLS, fixed-effect, and random-effect tests are presented in Table 3 (Appendix B).

According to the findings, as shown in Table 3, the economic, demographic, institutional, and political variables all had significant influence over the economic diversification process. Particularly, the estimated coefficients of all variables used in the model were consistent across the pooled OLS, fixed-effect, and random-effect techniques. Regarding the population growth variable that represented the demographic aspects of economic diversification, the relevant estimated coefficient was statistically significant at one percent significancy level with a negative sign. This suggests that higher rates of population growth in a country are associated with lower oil dependency, which improves a country's potential for economic

diversification. The economic aspects were represented by three independent variables, and the estimated coefficient for the GDP per capita was statistically significant at one percent significance level with a positive sign. This suggests that a higher GDP per capita is associated with greater dependency on oil, indicating lower potential for economic diversification. This is as generated more income out of oil tends to rely more on oil which reduces the process toward economic diversification.

Regarding the second economic factor, FDI, the estimated coefficient was statistically insignificant, suggesting that the efforts made by countries to increase FDI across the GCC region are not enough to reduce the region's dependency on oil, nor to increase economic diversification. The last studied economic factor, the variability of oil prices, had an estimated coefficient that was statistically significant at one/five percent significance level with a positive sign. This suggests that when oil prices rise, the probability of a country reducing its dependency on oil diminishes leading to a move away from economic diversification.

Regarding the role of political will as represented by the institutional and political variables, the estimated coefficient of the institutional factor (government effectiveness) was statistically significant at one percent significance level with a negative sign. This suggests that greater government effectiveness leads to lower dependence on oil, thus producing increased economic diversification. Regarding the political factors involved, the estimated coefficient of the political stability variable was also statistically significant at one percent significance level with a positive sign. These findings suggest that greater political stability across the GCC region produces greater dependency on oil, which represents less potential for increased economic diversification.

The chosen estimation model is presented in Table 3. The Hausman test was used to determine which results were reliable between the fixed and random effects. As shown in Table 4 (Appendix B), the findings of the Hausman test suggested the use of the fixed-effect estimation model, as the $\text{Prob} > \chi^2$ is 0.0212, which is less than 0.05. As a result, the findings of the estimated model were to be interpreted according to the findings of the fixed-effect technique.

Accordingly, after obtaining the fixed-effect findings shown in Table 3, the statistically significant coefficient of population growth could be interpreted as follows: greater population growth by 1% leads to lower oil dependency by 1.7%. Regarding the GDP per capita variable, a higher GDP per capita by 1% led to higher oil dependency by 0.08%. Regarding the oil price variable, an increase in oil prices by 1% tended to increase the dependency on oil by 0.08%. In terms of the institutional aspects represented in part by government effectiveness, the estimated coefficient tended to lower oil dependency by 31% as government effectiveness increased by 1%, suggesting increased potential for economic diversification. Regarding the political factors represented in part by political stability, higher stability by 1% led to greater oil dependency by 16% across the GCC region.

Upon further investigation, the impacts of institutional factors served as a proxy for the political will in addition to the political factors (e.g., the political stability variable). The findings shown in Table 5 indicate the inclusion of the corruption-control variable rather than the government-effectiveness variable. The estimated coefficient was statistically significant at 1% significance level, suggesting that a higher probability of corruption control by 1% led to reduced dependency on oil by 14%; this suggested the increased potential for economic diversification across the GCC region.

As shown in Table 6, the institutional factor was replaced by the rule-of-law index, representing the strength of law in various institutions. The estimated coefficient confirmed the findings obtained when analyzing other institutional factors. The estimated coefficient of the rule of law was statistically significant at 1% significance level, suggesting that a higher probability of the presence of the rule of law by 1% tended to lower a country's dependency on oil by 31%, representing the increased potential for economic diversification.

Finally, the regulatory-quality index variable was used as a proxy for the institutional factor, shown in Table 7. The results indicated that a higher regulatory quality across the GCC countries by 1% led to a 31% lowering in dependence on oil, representing the increased potential for economic diversification.

In summary, the current study's findings showed the important effect of institutional factors on a GCC country's process of undertaking economic diversification efforts across the GCC region. Therefore, improved institutional factors could be an indicator of increased political will toward increased efforts toward economic diversification.

Conclusion and Policy Implications

This study investigated the main determinants of economic diversification across the GCC countries. Accordingly, the study attempted to identify the effect of political will on a country's potential for economic diversification. The main results were based on an annual panel of data covering the period from 1996 to 2019. The estimation model was examined using pooled, fixed-effect, and random-effect estimation techniques. The general findings showed that there was political will toward increased economic diversification across the GCC countries. The economic, demographic, and political

aspects have important influence over the process of economic diversification. Importantly, findings showed that government effectiveness, political stability, regulatory quality, rule of law, and corruption control significantly affected efforts toward economic diversification.

Particularly, the empirical findings showed that population growth was associated with lower oil dependency. Results also showed that dependency on oil increased as the GDP per capita and oil prices increased, suggesting less potential for economic diversification. Findings also showed that inward FDI appeared not to influence economic diversification. Regarding the institutional variables, the main findings showed that oil dependency diminished as GCC countries improved governmental effectiveness. In terms of the political aspects, dependency on oil increased with greater political stability, suggesting the model of rentier states in the case of the GCC.

These findings have wide-ranging policy implications. First, GCC policy makers should pursue appropriate incentive frameworks through reforms to the GCC's business and investment environments. This is necessary in order to truly facilitate and encourage foreign direct investments, which in turn would promote economic diversification. In addition, the findings highlighted the crucial role that political will plays in promoting economic diversification, suggesting that serious efforts must be made to improve governmental effectiveness and institutional quality in order to achieve greater economic diversification.

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Appendix A

Table 1

Descriptive Statistics

Variable	Observation	M	SD	Min.	Max.
Oil rents (% of GDP).	144	27.592	15.264	1.813	58.249
Population growth (annual %).	144	4.555	3.490	0.093	17.510
Log real GDP per capita.	140	10.905	0.369	10.214	11.562
Foreign direct investment, net inflows (% of GDP).	144	2.506	3.785	-3.176	33.566
Log oil price.	144	3.822	0.639	2.507	4.695
Political stability index.	144	0.351	0.619	-1.335	1.223
Government effectiveness index.	144	0.410	0.413	-0.374	1.509
Regulatory quality index.	144	0.396	0.341	-0.308	1.120
Rule of law index.	144	0.428	0.252	-0.150	0.958
Control of corruption index.	144	0.408	0.438	-0.331	1.567

Table 2

Correlation Matrix

Variable	Oil rent	Population growth	Log GDP per capita	FDI, net	Log oil Price	Government effectiveness	Political stability
Oil rent.	1.000						
Population growth.	-0.033	1.000					
Log GDP per capita.	-0.094	0.435	1.000				
FDI, net.	-0.252	0.184	-0.080	1.000			
Log oil price.	0.184	0.227	0.001	0.103	1.000		
Government effectiveness.	-0.530	0.181	0.450	0.152	0.098	1.000	
Political stability.	0.201	0.344	0.354	-0.151	-0.113	0.449	1.000

Appendix B

Regressions

Table 3

Benchmark Regression

Dependent variable: Oil rents (% of GDP)	Pooled OLS panel	Fixed effects	Random effects
Population growth.	-1.286 *** (0.268)	-1.661 *** (0.286)	-1.286 *** (0.268)
Log GDP per capita.	8.583 *** (2.563)	8.385 *** (2.478)	8.583 *** (2.563)
FDI, net.	0.089 (0.2155)	-0.307 (0.231)	0.089 (.2155)
Log oil price.	10.384 *** (1.275)	8.072 ** (3.101)	10.384 *** (1.275)
Government effectiveness.	-34.264 *** (2.291)	-31.579 *** (2.346)	-34.264 *** (2.291)
Political stability.	17.266 *** (1.514)	16.143 *** (1.523)	17.266 *** (1.514)
Observation.	144	144	144
Adj.	0.681	0.714	0.695

Note. The table reports the standard error in parentheses, *Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 4

Results Using the Hausman Test

Dependent variable: Oil rents (% of GDP)	Fixed effects	Random effects	Difference
Population growth.	-1.661	-1.286	-0.374
Log GDP per capita.	8.385	8.583	-0.198
FDI, net.	-0.307	0.089	-0.396
Log oil price.	8.072	10.384	-2.311

Cont. Table 4*Results Using the Hausman Test*

Dependent variable: Oil rents (% of GDP)	Fixed effects	Random effects	Difference
Government effectiveness.	-31.579	-34.264	2.684
Political stability.	16.143	17.266	-1.122
χ^2 (9)		14.880	
Prob > Chi2		0.021	

Table 5*Fixed Effects Regression Using Control of Corruption Index*

Dependent variable: Oil rents (% of GDP)	Parameter estimates of fixed effects
Population growth.	-1.252 *** (0.428)
Log GDP per capita.	-1.500 (3.530)
FDI, net.	1.217 *** (0.330)
Log oil price.	4.958 (4.686)
Political stability.	11.763 *** (2.454)
Control of corruption.	-14.562 *** (3.466)
Observation.	144
Adj.	0.351

Note. The table reports the standard error in parentheses, *Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 6

Fixed Effects Regression Using Rule of Law Index

Dependent variable:	Parameter estimates of fixed effects
Oil rents (% of GDP)	
Population growth.	-1.254 *** (0.408)
Log GDP per capita.	0.564 (3.424)
FDI, net.	-1.641 *** (0.303)
Log oil price.	3.382 (4.416)
Political stability.	12.619 *** (2.269)
Rule of law index.	-31.693 *** (5.756)
Observation.	144
Adj.	0.410

Note. The table reports the standard error in parentheses, *Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 7

Fixed Effects Regression Using Regulatory Quality Index

Dependent variable:	Parameter estimates of fixed effects
Oil rents (% of GDP)	
Population growth.	-1.359 *** (0.290)
Log GDP per capita.	0.9179 (2.355)

Cont. Table 7*Fixed Effects Regression Using Regulatory Quality Index*

Dependent variable:	Parameter estimates of fixed effects
Oil rents (% of GDP)	
FDI, net.	-.509 ** (0.232)
Log oil price.	7.650 ** (3.173)
Political stability.	10.508 *** (1.390)
Regulatory quality Index.	-31.661 *** (2.447)
Observation.	144
Adj.	0.7005

Note. The table reports the standard error in parentheses, *Significant at 10%, ** Significant at 5%, *** Significant at 1%.

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