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Wenye Zhang April 14, 2015

Oil Wealth and Economic Freedom: Revisiting the Oil Curse from a New Perspective

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Abstract

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Based on two panel datasets of 152 countries and 42 major oil-producing countries respectively, for the time period 1984-2012, this paper confirms that oil wealth and oil dependence undermine economic freedom in countries worldwide. When political risk factors are considered in the regressions, military involvement in governance leads to robustly less free economies across all specifications in both datasets. Within the large dataset, higher political accountability is robustly associated with stronger economic liberation across all measures of oil wealth and oil dependence. Corruption and ethnic tensions only robustly impair countries' economic liberation in a few instances. Considering regional fixed effects, countries in North America enjoy higher degrees of economic freedom whereas countries in all other regions tend to have less economic freedom. Contrastingly, for the 42 major oil producers, political irresponsiveness only robustly impedes economic freedom under a few circumstances. Counterintuitively, higher ethnic tensions are robustly associated with greater economic liberty, which implies that greater ethnic diversity promotes economic activities even though such diversity causes conflicts among different ethnic groups. Corruption's surprisingly significant and positive influence on economic freedom of major oil-producers disappears in robust regressions, which adjust for effects of outliers. Major oil producers in Sub-Saharan Africa, Latin America, and Central Asia statistically significantly lack economic freedom. Religious tensions demonstrate no robust association with economic freedom in either dataset.

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I. Introduction

Numerous political scientists and policymakers have studied and debated over the "natural resource curse" hypothesis. This hypothesis suggests that natural resource wealth such as the abundance of petroleum and natural gas imposes profound negative impact on the political and economic progresses of resource-rich countries. Previous literature has studied the association between natural resource wealth and democracy levels, corruption, political instability, and economic growth. On the one hand, with both statistical tools and country-by-country case studies, some scholars substantiate the hypothesis that oil and other natural resources hinder political reforms, entice corruption, trigger civil and external conflicts, and impede economic development (Anderson & Ross, 2013; Anyanwu, 2014; de Soysa, 2002; Ross, 2011). On the other hand, a number of researchers find counterevidence or mixed results in response to the natural resource curse (Gurses, 2011; Haber & Menaldo, 2011; Oskarsson & Ottosen, 2010; Smith, 2004).

The discussion of the political and socioeconomic impact of oil continues to be relevant in the contemporary context. The global economy still relies heavily on oil production and behaves volatilely to changing oil prices. Since July 2014 global crude oil prices have plummeted and spread panics among major oil-exporting countries and oil companies. This time without active intervention by the Organization of Petroleum Exporting Countries (OPEC), oil prices have so far stayed low. Higher-cost producers such as U.S. shale oil drillers and Canadian tar sand producers are gradually expelled from the market. The stock prices of many multinational oil companies plunge. Russia, as an economy highly reliant on oil and natural gas exports, suffered a severe recession. But for some gloomy economies in Europe and Asia that rely on oil import for domestic production, the slumping prices alleviate their burdens to some extent.

The pervasive impact of oil on national economies and the global economy as a whole encourages me to revisit the oil curse from the economic perspective. A few previous studies observe statistically significant effects of oil wealth on economic growth. Some argue that oil wealth harms economic growth through weak governance while others declare that beyond a certain threshold oil revenues start to hinder economic growth (Bjorvatn, Farzanegan and Schneider, 2012; Mehrara, 2009). In contrast to earlier research that focuses on economic growth, I am primarily interested in the effect of oil wealth and oil dependence on countries' economic freedom. Economic freedom can be measured by how freely individuals and corporations can engage in both domestic and international business activities as long as they do not harm other market participants. Oil wealth is assessed by the abundance of oil reserves, total oil production, and the profits generated by oil export. Oil dependence is the extent to which an economy relies on oil export to generate income. If oil wealth and oil dependence hinder economic freedom, the governments and citizens of oil-producing countries should conscientiously preserve market participants' rights in spite of the nation's oil wealth. Furthermore, foreign corporations and governments would have to be alert and proceed cautiously when engaging in business transactions with those oil-rich yet economically illiberal countries as foreigners' business rights may also be impeded.

To study oil's effect on economic freedom, I employ two cross-country time-series datasets for the period of 1984-2012, one of which consists of 152 countries and the other 42 major oil-producing countries. I apply five measures of oil wealth and oil dependence to assess their association with economic freedom. I find that oil wealth and oil dependence undermines countries' economic freedom in both datasets. When political risk factors are incorporated, stronger military involvement in governance is robustly associated with less free economies in both datasets across all specifications. In the large dataset, political accountability exerts robustly positive impact upon economic liberation across all measures of oil wealth and

dependence. Corruption is robustly associated with lower economic freedom in a number of instances. Ethnic tensions are statistically significantly associated with lower economic freedom across a few specifications, but such significance fades away in the robust regressions. Considering regional fixed effects, North American countries Canada, United States and Mexico enjoy higher degrees of economic freedom, but countries in all other regions tend to have lower economic freedom. In contrast, the small dataset of 42 major oil producers demonstrates that political irresponsiveness only robustly impedes economic freedom under a few circumstances. Counterintuitively, greater ethnic tensions are robustly associated with higher degrees of economic liberation. This implies that among major oil producers, although greater ethnic diversity causes tensions between different ethnic groups, such diversity also facilitates economic activities and alleviates economic constraints. Corruption also demonstrates statistically significant and positive effects on economic freedom in the small dataset. This could result from the fact that in some major oil-producing countries oil generates so much wealth that corruption prevails and help promote economic activities in the society. Although civilians may not benefit from such wealth, a large network of elites bring sufficient prosperity and a certain degree of freedom into the economy. However, corruption's counterintuitive positive impact dissolves when robust regressions are employed, which eliminates the effects of outliers and influential observations. Major oil producers in Sub-Saharan Africa, Latin America, and Central Asia tend to lack economic freedom due to regional idiosyncrasies. Religious tensions do not display any robust association with economic freedom in either dataset.

This paper is structured as follows. Section II reviews previous literature on the oil curse hypothesis which covers three main areas upon which oil wealth exerts influence: democracy, corruption and civil conflict, and economic development. I then introduce the datasets and variables employed and the empirical framework applied to this study in section

III. Moreover, section IV summarizes the regression results using the two panel datasets. I analyze the economic implications of those regressions in section V. Section VI discusses the limitations of my methodology and analyses. I proceed to conclude the paper in section VII by summarizing important findings, identifying potential policy responses to my findings, and exploring areas worth of future research. Finally, the Appendix section gathers the tables and figures relevant to the analyses.

II. Literature Review

Abundant literature contributes to the live debate of the "natural resource curse," and especially the "oil curse." The oil curse implies that oil wealth adversely impacts the political and economic wellbeing of oil-producing countries. Scholars have used various datasets and statistical methods to argue for and against the oil curse, which lie in three major areas: democracy level, political stability and civil war, and economic development.

1. Oil Wealth and Democracy

Among the three realms of the oil curse, most studies exist in the effect of oil wealth on democracy. Employing cross-country time-series data from 1971 to 1997, Ross finds the "oil-impedes-democracy" theory valid and statistically significant (2001). He concludes that oil hinders the democratic progress of poorer countries more than that of richer ones and that the negative impact exists among oil-wealthy countries across geographies. Ross explains the correlation between oil abundance and authoritarianism with three relatively robust "causal mechanisms," which are the "rentier effect" by which oil rents-collecting governments lower tax rates and increases spending to appease democratic urges, the "repression effect" in which governments strengthen their law enforcement forces to hold back democratic urges, and the "modernization effect" with which economic growth reliant on oil exports slows down citizens' transition to higher education levels and more specialized jobs and thus generates less pursuit

for democracy. These effects not only apply to the slowdown of democratization, but also sustain in the economic context. When a country generates large wealth from oil, the government would want to control oil production and export and thus promulgate rigorous regulations to prevent civilian entrance to the oil sector. In addition, the government would invest a large volume of money in infrastructure and other key sectors, which constrains civilians' opportunities to invest in profitable projects. Thus, I include some measures of corruption and political accountability in my regressions to examine how oil wealth affects economic freedom partly through these variables. Unlike Ross who measures oil wealth with "export value of mineral-based fuels," Tsui estimates the long-term effects of oil abundance on nations' democracy levels using oil discovery (Ross, 2001; Tsui, 2011). Tsui finds that while oil discovery has almost no impact on democratic countries, its negative effect on nondemocratic regimes increases drastically with higher quality oil and lower production costs. Furthermore, this relationship exists across large and small oil-producing countries. However, such effects are only significant in absolute measures and may fail when sizing oil discovery to per capita terms. Whereas Tsui identifies no robust impact of oil discovery upon democracies, Gurses demonstrates that elite support and oil wealth – measured by natural resource exports as a percentage of merchandise exports – each sustains the democratization process of extant democratic regimes (Gurses, 2011; Tsui, 2011). When measured by different parameters, therefore, oil wealth exerts influence on both democratic and nondemocratic nations, with the former being positive and the latter adverse.

Although a plethora of literature supports the "oil-hinders-democracy" statement, Haber and Menaldo examine the relationship between the increase of oil reliance and the authoritarian tendency of oil-wealthy countries using both longitudinal measures and cross-country comparisons and find no robust causal relationship (2011). In some country-specific instances they discover a "resource blessing" rather than a "resource curse," meaning that

increases in oil reliance promotes democratic transition and political institution, measured by the *Polity* index. Moreover, several oil-rich countries "such as Bahrain, Kuwait, Oman, Qatar, and… Saudi Arabia – have been moving toward wider political participation" due to the prosperity of private sector elites rising from oil-generated wealth even though these countries are far from full democracies (Luciani, 2005, p. 149, cited by Gurses, 2009). This positive view of the oil-democracy paradigm is challenged by Andersen and Ross' more recent study which claims that the Haber-Menaldo analysis failed to acknowledge the macroscopic changes in the developing countries in the 1970s when those governments started to collect oil rents that were previously kept by foreign firms (2014). They conclude that the "no resource curse" argument might only be valid before the 1970s and that the adverse effect of oil wealth on democracy has heightened since then. Oskarsson and Ottosen also remarked on the divergent patterns across time as they revisit Ross' analytical framework through both a "conceptual" and a "temporal" route to elucidate the conflicting arguments in existing literature (Oskarsson & Ottosen, 2010; Ross, 2001). Conceptually, the authors verify that resource wealth's democracy hindrance effect is only valid when the independent variable is narrowly defined as "resource dependence" – exports of natural resources– instead of "resource abundance," which represents the "stock of natural resources" (Oskarsson & Ottosen, 2010). In addition, the *Polity* index implemented in Ross' model only includes "political rights and not civil liberties" and thus is an inaccurate proxy of democracy, the dependent variable. They thereby test Freedom House's composite index and later combine the two indices in the regression. When incorporating such conceptual modifications and temporal data between 2000 and 2006, Oskarsson and Ottosen's study shows blurred and even contradictory results compared to Ross' analysis, which only covers the last three decades of the twentieth century. To clear the confusion, Arezki and Brückner treat the political rights score and the civil liberties score in the Freedom House index separately in their study of 30 oil-exporting nations from 1992 to 2005 (2011). They conclude

that oil wealth, measured by oil rents in their model, undermines political rights but enhances civil liberties. Arezki and Brückner infer from the results that elites who benefit from oil rents are incentivized to expand civil liberties but restrict political rights in order to "evade [wealth] redistribution" and civil conflict.

Some of the divergent outcomes in the above literature result from using different measures of oil wealth and dependence (Ross, 2001; Gurses, 2011; Tsui, 2011). To mitigate such biases and compare the results from employing various assessments, I regress economic freedom against five different measures of oil wealth and dependence. Some contradictory results are caused by different interpretations of democracy. An index depicting political rights demonstrates an opposite result than an index describing civil rights (Arezki and Brückner, 2011). I use a composite index incorporating various aspects of economic freedom to avoid such bias in the dependent variable.

2. Oil Wealth, Corruption and Civil Conflict

Besides democracy, another aspect of the "oil curse" debate is oil wealth's effect on corruption and political instability, and thereafter on civil war onsets. Earlier studies focus on "governance failure" and "military spending" as the primary explanatory variables of the connection between oil wealth and civil war and confirm the existence of an oil curse on civil wars (de Soysa 2002; Humphreys, 2005). In contrast, after addressing previously neglected statistical issues such as endogeneity and omitted variable bias resulted from cross-national idiosyncrasies as well as specific within-country variations, more recent literature concludes that oil wealth alleviates and oftentimes prevents civil conflict through the rentier effect, the suppression effect, and the modernization effect (Arezki & Brückner, 2011; Cotet & Tsui, 2013; Fjelde, 2009).

Basedau and Lay concur with Oskarsson and Ottosen in the necessity to differentiate resource dependence and per capita resource wealth, which affect civil conflict in diverged

directions (Basedau & Lay, 2009; Oskarsson and Ottosen, 2010). Illustrated by the rentier state theory, higher per capita resource wealth indicates that governments use the revenue to "buy off peace through patronage," clientelism, "large-scale distributive policies and effective repression," which tend to stabilize the regime and conciliate conflict, an outcome that amplifies when the sample is reduced to only large oil-exporting countries (Basedau & Lay, 2009). On the other hand, the researchers' regressions on oil dependence and "civil war onset" show an "inverted U-shaped relationship," indicating that oil dependence reduces the likelihood of civil conflicts once oil dependence exceeds a certain level. Smith examines the effect of oil exports' annual contribution to gross domestic product on regime stability and the likelihoods of civil conflicts and political protest across 107 developing countries over the period of 1960-1999 (2004). The scholar finds robust results that high oil dependence leads to greater regime durability and less risks of civil war and anti-governmental protest even when controlling for repression. Such results persist through the oil bust period of 1980s, implying sustainable effect on regime resilience even during hard times. His conclusion of oil dependence's lessening effect on civil conflict differs from Basedau and Lay's U-curve delineation, partly due to a different choice of time periods and countries, and partly because of his statistical adjustments to the U-shaped relationship between control variable *Democracy* and dependent variable *Conflict* (Basedau & Lay, 2009; Smith, 2004). Smith further states that the causes of state "longevity" goes beyond the rentier effect through which elites buy off political dissent and maintain regime stability (2004). He asserts that oil-dependent states may have formed strong "coalitions" amongst social sectors and have established political institutions that are capable of providing "nonrepressive, as well as repressive, responses to organized opposition." Observing 30 oil-exporting nations between 1992 and 2005 and controlling for country-specific fixed effects, Arezki and Brückner find no significant effect of oil wealth – as predicted by oil rents – on civil conflict, compared to Smith's findings of a

mitigating effect (2011). Nevertheless, they confirm that oil abundance aggravates corruption, which is explained by the rentier state theory. Going a step further than Smith and Arezki and Brückner's analyses, Fjelde runs logistic regressions on a 1985-1999 dataset of civil war onsets and contends that oil and corruption independently increase the risk of civil war onsets, but the interaction term between oil production and corruption imposes a statistically significant negative effect upon civil war onsets (2009). This result implies that the political elites corruptively use resource-generated public wealth to bolster the clientelist network and therefore buy off peace.

3. Oil Wealth and Economy Development

The profound impact of oil wealth upon countries' politics in turn affects the economic environment and development of the oil-producing countries. In spite of the ambivalent research results in previous literature using empirical methods and case-by-case studies, Mehrara tests the effect of oil revenue growth on economic growth with a nonlinear "threshold model," which illustrates that oil revenue growth positively influences economic growth up until a "breakpoint" of 18-19% beyond which the effect reverses to a harmful one (2008). This robust nonlinear relationship sheds some light on the conflicting arguments amidst previous linear models, which are supported by theoretical foundations. On the one hand, oil export stimulates trade and economic activities between the exporter and other countries and thus boosts the economy. On the other hand, oil booms often result in currency appreciation and weakened exports in non-oil sectors, which might decrease economic growth. Mehrara's research indicates that the former reasoning trumps the latter at a relatively low level of oil revenue growth, but the latter prevails when an oil boom, or a sudden large increase in oil revenue, strikes.

Despite the opposite theoretical explanations, Williams employs a medium variable Transparency to elucidate the negative aspect of the resource-and-economy paradigm (2011).

Using the Release of Information (RI) index as a measure of government transparency and accountability across 175 countries between 1960 and 2005, he confirms a robust negative relationship between point resource export revenues and governance transparency. In addition, because resource revenues' curse on economic growth becomes statistically insignificant when the RI index is incorporated in the model, one can infer that resource wealth slows economic growth at least partially through deteriorating political transparency. With a similar approach as in Williams, Bjorvatn, Farzanegan and Schneider include a third variable to study the association between oil wealth and economic growth (2012). Instead of *Transparency*, they use *Balance of Political Power* as the link between oil rents and GDP performance. The Power Balance measure determines a weak government if it is highly fractionalized by different parties and that a government is strong if it is dominated by one or two strong parties. They conclude that in a strong-government country, oil rents stimulate economic growth even with "poorly developed institutions" and that oil wealth may harm the economy in a state with a weak – or fractionalized – government.

Rather than focusing primarily on the growth effect of oil wealth, Mazaheri studies the relationship between oil wealth and economic liberalization in terms of the financial and investment environment (2014). He observes a significant negative liberalization effect of oil wealth in the context of the financial sector and investment atmosphere. Furthermore, such effect is intensified for long-term oil-producing countries and those that have experienced colonialism. The author interprets this syndrome as a protective response to the "volatility in the international oil market" and to the unpleasant experiences with foreign firms' control over the economy of the previously colonized states. Mazaheri's research is most relevant to this paper as he studies oil wealth's effect on economic freedom through one sector – finance and investment. Built on his discoveries, I examine oil's impact on economic freedom across all sectors. To account for country-by-country idiosyncrasies such as long-term oil production and

colonization, I take a simplistic approach by incorporating region-fixed effects. For instance, oil producers in the Middle East tend to have produced oil for a long time and many oil producers in Latin America are historical colonies. Therefore, region-fixed effects can mimic most of such idiosyncrasies.

III. Data and Empirical Framework

1. Data

a. Economic Freedom

Economic freedom exists when individuals and corporations have the ability to voluntarily participate in various transactions and business activities without harming other players in the economy (Gwartney, Lawson, and Hall, 2014). I employ the standardized Economic Freedom of the World (EFW) Summary Index provided by the Fraser Institute as a proxy of economic freedom in countries (see Table 1 for variable descriptions). This composite index assesses the level of economic freedom from five main areas, which are "Size of Government," "Legal System and Security of Property Rights," "Sound Money," "Freedom to Trade Internationally," and "Regulation."

b. Oil Wealth and Dependence

To obtain various measures of oil wealth and oil dependence across countries, I combine oil-related data from U.S. Energy Information Administration (EIA)'s "Petroleum and other Liquids" dataset and the World Bank's "World Development Indicators" of 152 countries for the period 1984-2012. Particularly, proved crude oil reserves and total oil supply in thousand barrels per day provided by the EIA are used as the proxy for oil abundance. On the other hand, the World Bank's fuel exports as a percentage of merchandise exports and oil rents as well as the EIA's total exports of refined petroleum products in thousand barrels per

day are utilized to predict oil dependence of all countries for which data is available. Whereas Oskarsson and Ottosen define resource abundance narrowly as natural resource reserves (2010), I interpret oil wealth, or oil abundance (used interchangeably throughout this paper), more broadly as the wealth generated by oil that is used in the nation's socioeconomic activities. Hence, I include oil rents as one of the measures of oil abundance. To study how the regression results change as the sample size shrinks to only consist of major oil-producing countries, I apply the BP Statistical Review dataset, including 42 countries for the same time period (British Petroleum, 2014).

c. Other Explanatory Variables

Because the economic freedom of a country is largely affected by political, social and cultural conditions besides oil wealth and oil reliance, I include five other explanatory variables from the International Country Risk Guide's Political Risk Rating using their standardized annual averages in the regressions (The PRS Group). They are *Democratic Accountability*, *Religious Tensions*, *Ethnic Tensions*, *Military in Politics*, and *Corruption*. The *Democratic Accountability* index assesses a government's responsiveness to its people by categorizing all countries five types of regimes, from the most democratic to the least and measuring the responsiveness of each government. Less responsive governments in the most autocratic countries are more likely to fail and thus receive the lowest scores. *Religious Tensions* may result from the dominance of one religion, suppression of diverse religions, or a religious group's desire to control governance. High ratings are given to countries with low religious tensions, which implies low political risk. *Ethnic Tensions* measures the extent to which tensions arise from "racial, nationality, or language divisions." Countries that have little such tensions receive high scores even if ethnic differences exist. *Military in Politics* delineates the military's participation in or influence on the government. Greater military involvement in governance indicates higher political risk and hence a lower score. Lastly, the *Corruption* index

depicts the level of corruption in a country's political institution. The index includes both financial corruption such as bribes associated "with import and export licenses, exchange controls, tax assessments, police protection, or loans" and "insidious" corruption that involves "excessive patronage, nepotism, …, and suspiciously close ties between politics and business." Shown by previous scholars' support for the rentier state theory (Basedau & Lay, 2009; Fjelde, 2009), the relationship of oil wealth to political instability and civil conflict is largely associated with the interactions between oil abundance and corruption. Therefore, the "insidious" type of corruption which is reflected in this index conveys great relevance to the regression models discussed in the following sections.

Furthermore, macroeconomic variables such as gross domestic product (GDP), GDP growth, and total population affect the economic conditions including economic freedom in a country. Thus, I employ such data from the World Bank to mitigate errors in the coefficients of oil abundance and oil dependence measures, or in other words, to alleviate the inaccuracies in depicting the influence of oil wealth on economic freedom.

2. Empirical Framework

$$EconFreedom_{it} = \beta_1 \cdot oil_{it} + \beta_2 \cdot democracy_{it} + \beta_3 \cdot religion_{it} + \beta_4 \cdot ethnic_{it} + \beta_5 \cdot military_{it} + \beta_6 \cdot corrupt_{it} + \beta_7 \cdot logGDP_{it} + \beta_8 \cdot GDPgrow_{it} + \beta_9 \cdot logpop_{it} + \gamma_i + \varepsilon_{it}$$

$EconFreedom_{it}$ is the standardized economic freedom score received by country *i* in year *t*. oil_{it} denotes one of the five measures of oil wealth or dependence: oil reserves, oil production (named as "oil supply" in the EIA data and "oil production" in the BP data), petroleum exports, fuel exports as a percentage of merchandise exports, and oil rents as a percentage of GDP. $democracy_{it}$, $religion_{it}$, $ethnic_{it}$, $military_{it}$, and $corrupt_{it}$ denote five political risk ratings, respectively, for country *i* in year *t*. $logGDP_{it}$ is the logarithm of GDP and $logpop_{it}$ is the logarithm of population. $GDPgrow_{it}$ denotes the GDP growth rate in percentage terms. γ_i denotes the region-fixed effects for country *i* which is assumed to be

unchanged across time. Finally, ε_{it} is the error term. Note that *fuel exports* and *oil rents* are already measured as a percentage of merchandise export and GDP, respectively. Thus, when oil_{it} represents either of these two terms, $logGDP_{it}$ is excluded from the regression in order to attenuate collinearity issues.

IV. Results

1. Regressions

I first regress the EFW index on the EIA and World Bank's measures of oil wealth and oil dependence independently, as shown in regression models (1)-(5) (see Table 3). The oil wealth variables include crude oil reserves, oil supply and oil rents as a percentage of GDP (see Table 2 for summary statistics). The oil dependence measures are petroleum exports and fuel exports as a percentage of total merchandise export. All five models incorporate region-fixed effects. While all models show statistically significant results with p-values less than 0.01, model (3) denotes a less significant result with a p-value of 0.027. Models (1), (2), (4) and (5) display negative relations of the oil wealth or dependence measure to economic freedom whereas model (3) depicts a positive association. The R-squared for all five models are approximately between 25% and 30%, indicating that the independent variable only portrays about 25% to 30% of the dependent variable.

The political risk measures including *Democratic Accountability*, *Religious Tensions*, *Ethnic Tensions*, *Military in Politics*, and *Corruption* from the International Country Risk Guide are then added into models (6)-(10), which all absorb region-fixed effects. (see Table 4). Crude oil reserves, oil supply, fuel exports (% merchandise export), and oil rents (% GDP) demonstrate statistically significant and negative association with economic freedom, respectively. However, petroleum exports in its absolute amount shows no significant relationship with the dependent variable. All of the above listed political risk ratings except

Religious Tensions are robustly and positively associated with economic freedom throughout models (6)-(10). *Religious Tensions* only show statistically significant and positive effect on the EFW index in models (9) and (10). The R-squared for these five models are between 46% and 52%, a notable increase from models (1)-(5).

Subsequently, some or all of the following macroscopic variables are built into regressions (11) to (18): logarithm of GDP, GDP Growth, and logarithm of total population (see Table 5). Logarithm of GDP is not included in models (15)-(18) because fuel export's contribution to merchandise export and oil rents as a percentage of GDP, the respective main regressors in those four models, already pick up the effects of GDP. The even numbered regressions are controlled for region-fixed effects whilst the odd numbered ones are not. Results vary greatly when the same regressions consider region-specific effects. In accordance with model (8), petroleum exports produce no significant relationship with the EFW index in models (13) and (14), regardless of whether region-fixed effects are included. On the other hand, the other four measures of oil wealth and dependence all portray robustly negative relationships with economic freedom. *Religious Tensions* shows no robust outcome in any of these regressions, whether or not region-fixed effects are incorporated. In spite of region-fixed effect considerations, explanatory variables *Democratic Accountability*, *Military in Politics*, logarithm of GDP, GDP growth, and logarithm of population show statistically significant effect on economic freedom across all models in Table 5. In contrast, the statistical robustness of *Ethnic Tensions* and *Corruption* alters when region-fixed effects are included and when the main regressor of oil wealth or reliance changes. The significance level of *Ethnic Tensions* decreases when region-specific impact is taken into account. *Corruption* is highly robust in models (15)-(18) despite of regional fixed effects. Yet, from model (1) to model (2), *Corruption* shifts from statistically insignificant to somewhat significant. The R-squared varies from 43% to 58% some of which show improvement from models (6)-(10).

When using a reduced sample of 42 major oil-producing countries provided by British Petroleum's Statistical Review of World Energy published in June 2014, some results change drastically compared to the previous larger sample from the U.S. Energy Information Administration (see Table 6 for summary statistics). Similar to the EIA dataset, I first regress the EFW index on five measures of oil wealth or dependence independently. In this shrunk dataset, proved oil reserves, oil production, and oil rents are the three oil wealth measures whereas petroleum exports and fuel exports as a percentage of merchandise exports evaluate oil dependence (see Table 7 for regression results). Regressions (19)-(23) absorb region-fixed effects. Model 22 shows statistically significant association between fuel exports' percentage contribution to merchandise exports and economic freedom. Models (20), (21) and (23) point to somewhat significant results. But model (19) implies no robust effect of proved oil reserves on economic freedom. The R-squared of approximately 35% for these five models is higher than similar regressions in the larger sample.

When the five political risk measures are incorporated, only proved oil reserves out of the five oil wealth and dependence measures show a statistically robust negative association with the EFW index (see Table 8). The other four measures result in statistically insignificant coefficients. The region-specific effects are again incorporated. Moreover, the significance levels of the political risk ratings are surprisingly different than those in Table 4. Three such ratings – *Democratic Accountability*, *Religious Tensions*, and *Military in Politics* – illustrate robust positive association with the EFW index across regressions (24)-(28). On the contrary, *Ethnic Tensions* and *Corruption*, the remaining two political risk measures, are statistically insignificant in all five models.

I further analyze four oil wealth and dependence measures, which are oil production, petroleum exports, fuel exports as a percentage of merchandise exports, and oil rents as a percentage of GDP, along with the five political risk measures and the three macroeconomic

measures – the logarithms of GDP and population, and GDP growth (see Table 9). Oil production is the only oil measure that shows significant negative results in both region-effect omitted model (29) and region-effect controlled model (30). When region-fixed effects are considered, petroleum exports shifts from statistical insignificance to statistical robustness, but the opposite happens to fuel exports (% merchandise exports) and oil rents (% GDP). As for other explanatory variables, *Military in Politics*, logarithm of GDP, and logarithm of population demonstrate statistically strong association with economic freedom whether or not region-fixed effects are absorbed, with the coefficients of *Military in Politics* and logarithm of GDP being positive and logarithm of population negative. In three pairs of regressions – models (29)-(30), (33-34), and (35)-(36) – the coefficients for *Democratic Accountability* and *Religious Tensions* become statistically significant and positive when region-specific effects are accounted for. But their coefficients remain statistically weak in models (31) and (32). In models (29)-(32), a high Ethnic Tensions rating, indicating low tensions between ethnic groups, is statistically significantly associated with a low economic freedom score. A high level of corruption shows a statistically significant positive impact on the EFW index in models (30), (32), and (36) in which region-fixed effects are incorporated. GDP growth possesses some moderate significance in models (29)-(30) and (34)-(36).

2. Comparative Analysis

a. Oil Wealth and Oil Dependence

Comparing the simple regressions in Tables 3 and 7, oil reserves show a statistically significant positive association with economic freedom in the large sample but indicate an insignificant relationship in the reduced sample. When five assessments of political risk are incorporated, reserves remain significant in the larger sample and become significant in the reduced sample. The altered outcomes in the shrunk sample imply that the initially insignificant results may have resulted from omitted variable bias. When such bias is alleviated by the

political risk measures, oil reserves show negative association to economic freedom with statistical significance. As a measure of oil wealth, therefore, oil reserves negatively affect the freedom of business activities both major oil-producing countries and countries that produce little to no oil.

Another measure of oil wealth, total oil supply (same as oil production) from the EIA dataset, shows a statistically significant negative effect on economic freedom across all the related regressions, including the simplistic model (Model [2]), the more complex model incorporating political risk factors (Model [7]), and the most comprehensive model considering political risk ratings and macroeconomic factors (models [11]-[12]). This indicates that an increase in oil supply can statistically predict a decrease in a country's economic freedom. In the BP dataset, oil production of the 42 major oil producers is the equivalent measure to EIA's oil supply. Unlike in the EIA dataset, oil production only shows moderate significance in the simplest model for the major oil producers. When political risk measures are added into the regression, oil production becomes completely insignificant. These results can be explained by omitted variable bias, meaning that oil production correlates and interacts with some or all of the political risk ratings, which were previously omitted from the model. As the only regressor in the simple model, oil production mistakenly represents the effects of other missing variables and is falsely recognized as statistically robust. Nonetheless, once measures such as GDP, GDP growth and population are accounted for in the regression and region-specific effect is considered, oil production shows a significant negative relationship. Once such macroeconomic figures are incorporated in the model, oil production's disguised significance is recovered. Hence, in the most comprehensive regressions, both the large sample with 152 countries and the small sample with 42 oil-producing countries reveal a consistent result that oil production negatively impacts economic freedom.

Oil rents as a percentage of GDP assess oil wealth from a different perspective. While reserves and production measure the amount of oil available in barrels, oil rents show the dollar value of wealth created by oil. As elucidated by the rentier theory, repression theory, and modernization theory (Ross, 2001), oil rents are claimed to interact with corruption in their causal relationships to economic freedom. The two variables together affect the democratic progress and civil stability of countries in contradictory directions depending on the samples drawn, the time period chosen, and the specific variables selected to depict oil wealth (Arezki & Brückner, 2011; Basedau & Lay, 2009; Fjelde, 2009). In the large sample, *oil rents* demonstrates a statistically significant negative impact upon economic freedom. In accord with Mazaheri's study which observes a statistically significant and negative liberalization effect of oil wealth particularly in the financial sector and investment environment (2014), models (5), (10), (17) and (18) confirm oil rents' statistically significant negative influence on the economic freedom of all business activities among all market participants, measured by the EFW composite index. Nevertheless, the reduced sample shows inconsistent results. While the simple-form regression implies a moderately significant relationship between oil rents and economic freedom, the two more comprehensive models (models [28] and [36]) accounting for region-specific effects demonstrate insignificant results. This might partially be due to the sample bias that a majority of the 42 major oil-producing countries in the reduced sample already collect large oil rents as a contribution to their total GDP and that little deviation from high oil rents gives rise to an undistinguishable relationship between oil rents and economic freedom.

Following the analyses of the three oil wealth measures, I then examine the two oil dependence variables: petroleum exports (measured in thousands of barrels per day) and fuel exports as a percentage of merchandise exports. When regressed alone, *fuel exports* (% merchandise exports) show statistically strong negative association with economic freedom

whereas *petroleum exports* has a moderately significant association. However, such results lack substance because of enormous omitted variable bias. I then examine more complex models that include political risk factors and/or macroeconomic measures. In these two types of models, *petroleum exports* completely loses statistical significance, absent or present consideration of region-fixed effects. Even when GDP and population are taken into account, *petroleum exports* fails to show significant association with the dependent variable. This means that neither petroleum exports in relation to GDP nor its per capita volume strongly relate to economic freedom. On the contrary, *fuel exports (% merchandise exports)* establishes a statistically significant negative relationship with economic freedom whether or not political risk factors, macroeconomic variables, or region-specific effects are incorporated. In the shrunk dataset, on the one hand, *fuel exports (% merchandise exports)* only displays moderately significant negative association when political risk ratings and macroscopic figures are included but region-fixed effects are not accounted for. This may be caused by sample bias. In the small and biased sample of major oil-producing countries, most countries have high fuel export levels in relation to total merchandise exports and thus do not have distinguishing differences to reflect statistical significance. On the other hand, *petroleum exports* measured in barrels demonstrates a significant negative association with economic freedom when political risk measures, macroeconomic factors, and regional fixed effects are considered. This means that the more petroleum an oil producer exports, the less economic freedom its market participants enjoy. In other words, these countries are exporting oil in expense of their domestic economic liberty. This makes sense because the governments of oil-abundant countries often are tempted to control the natural resource by running state-owned oil companies or intervening the country's business activities both domestically and internationally to maintain the competitive advantage. Such outcomes may also be explained by the various "oil curse" theories, which will be discussed in more detail in the next section where political risk factors are analyzed. Compared

to the insignificant result in the large sample, the statistically significant association of *petroleum exports* in barrels and economic freedom found in the shrunk sample may have arisen because major oil-producing countries compete in the global oil markets by export volume or quantity, not by its monetary contribution to total merchandise export or to GDP. Therefore, for large oil-producing countries, the thousands-of-barrels-per-day measure better distinguishes one oil producer from another than *fuel exports (% merchandise exports)*, the monetary measure. But for other countries, as reflected in the large sample, the monetary contribution of fuel exports to total merchandise exports is a more significant and relevant estimator of such countries' underlying economic liberation conditions.

b. Political Risk Factors

The political risk measures incorporated in the regressions include *Democratic Accountability*, *Religious Tensions*, *Ethnic Tensions*, *Military in Politics*, and *Corruption* (The PRS Group). In the large sample, the *Religious Tensions* rating shows no statistically significant association with economic freedom whatsoever across models (11)-(18). But in the small sample of major oil producers, the religious measure becomes significant in the oil rents regression (Model [36]) when region-fixed effects are controlled for. The higher the *Religious Tensions* score, the lower religious tensions are in that oil-producing country, and the more economically liberal that country is. Therefore, the religious tension factor comes into play only when major oil producers are studied. This makes sense when thinking about the Middle Eastern and North African oil producers. This region is known for internal and external conflicts due to inherent religious tensions between Islam and Christianity as well as between different Islamic factions. The religious factor does not robustly impact economic freedom in non-major oil-producing countries.

Examining the *Democratic Accountability* measure, one can find its statistically significant positive relationship with economic freedom when studying the 152-country dataset.

This indicates that regardless of its oil wealth or oil dependence, a country's economic freedom is highly dependent on its political institution and level of democracy. In the reduced sample, however, *Democratic Accountability* is only robust in the *fuel exports* and *oil rents* models (models [34] and [36]) when regional fixed effects are considered. This lack of statistical significance in the small sample again may be due to sample bias. Since many major oil producers in the Middle East, North Africa and South America are non-democratic regimes, it is hard to find a robust association between democracy and economic freedom in this particular dataset due to lack of representative observations.

Military in Politics is robust across all regression models in both the large and small samples (models [11]-[18] and [29]-[36]). To a certain extent, strong military dominance in a country's governance definitively implies a lack of democracy, transparency, and thus economic freedom. Governments with strong military involvement are usually authoritarian regimes which are highly corrupt and have centralized economies.

As for *Ethnic Tensions*, this measure draws a statistically significant positive relationship toward economic freedom in most models for the large dataset (see Table 5). A low *Ethnic Tensions* score indicates high levels of conflicts due to racial, nationality, and cultural differences. The more ethnic tensions there are, the less economic freedom that country has. In the reduced sample of major oil producers however, stronger ethnic tensions are statistically significantly associated with greater economic freedom in the *oil production* and *petroleum exports* models (models [29]-[32]). This outcome may in part be explained by the positive economic liberalization impact of ethnic diversity. Although ethnic diversity causes tensions among groups with different racial and cultural backgrounds, it also promotes economic activities both domestically and with nearby countries and thus alleviates economic constraints.

The *Corruption* index demonstrates the strongest statistical significance in the *fuel exports* and *oil rents* models (models [15]-[18]). Fuel exports as a percentage of merchandise exports and oil rents as a percentage of GDP both measures oil's wealth-generating ability compared to the overall economic conditions in that country. Supported by the rentier state theory (Basedau & Lay, 2009; Ross, 2001), oil rents, or wealth generated by oil exports, allows governments to lower tax rates, expand spending, and form clientelist networks which together can essentially buy off peace, undermine democratic urges, and as a result, brings forth a less liberal economy. The interaction between oil rents and corruption harms the liberalization process of an economy. But in the shrunk dataset, higher corruption statistically significantly estimates greater economic freedom when regressed with oil production or oil rents. This may result from the fact that in many of the oil-rich countries oil generates so much wealth that corruption pervasively exists and fosters a large network of elites who bring prosperity and some level of freedom into the economy.

3. Robustness Tests

To check for outliers, I run leverage-versus-squared residual diagnostic tests for the comprehensive regression models that show statistically significant associations between the oil wealth or dependence measure and economic freedom (models [12], [16], [18], [30], [32], and [36]). I find that while most observations have low leverage and low squared residual values, some outliers have high leverages that may distort the regression results (see Figures 1(a)-1(c) and 2(a)-2(c)). Therefore, I proceed to run robust regressions for these models, which hence change the statistical significance of certain variables (see Tables 10 and 11). For the large dataset, democratic accountability and military involvement in governance still exhibit statistically significant association with economic freedom. Higher corruption is also significantly associated with lower economic freedom. Religious tensions are even more irrelevant to economic liberation in the robust regressions. Ethnic tensions remain moderately

significant. In the smaller dataset, however, previously significant democratic accountability only shows a robust positive effect on economic freedom in the robust regression when regressed with oil rents. Ethnic tension which is insignificant when regressed with oil rents in the ordinary least squares regression becomes robustly positively associated with economic freedom. Military dominance in governance still robustly and negatively affects economic freedom. The significant positive effect of corruption on economic freedom disappears in robust regressions.

V. Discussion

Both the large and small datasets demonstrate a statistically significant and negative association between oil wealth or dependence and economic freedom. Such results survive the robustness tests. Higher oil wealth, measured by oil production and oil rents independently, results in robustly lower economic freedom in both datasets. Correspondingly, in the large dataset, oil dependence exerts a statistically significant and negative impact on economic freedom through fuel exports as a percentage of merchandise export. In the small dataset of major oil producers, oil dependence shows robustly detrimental effect on economic liberation through petroleum exports, measured in barrels. Because many countries included in the large dataset are not oil producers, the fuel exports (% merchandise export) measure better depicts the differences among observations and results in statistical significance. But for major oil producers in the smaller dataset, their fuel exports already make large contributions to total merchandise export. Once fuel exports exceed a certain level in relation to merchandise export, the negative economic liberation effect of an increase in fuel exports diminishes. Therefore, petroleum exports, which assesse oil dependence in volume rather than monetary value, become a better indicator of economic freedom in the smaller dataset. It is not surprising that oil wealth and oil dependence negatively affect economic freedom. By collecting oil rents,

governments in oil-rich states have more wealth to distribute to areas of their choice. By producing and exporting oil, these governments also establish stronger political positions in the international community. Thus, such governments tend to control oil wealth and prevent civilian entrance into the oil market. Moreover, they are often inclined to protect their domestic economies from foreign citizens and companies by issuing discriminating regulations.

When incorporated into the regressions together with an oil wealth or dependence measure, some political risk factors show robust association with economic freedom while others do not. Military involvement in governance robustly impedes economic freedom in both datasets across all measures of oil wealth and oil dependence. Because military dominance in key government decisions indicates a lack of democracy, a restrictive and government-dominant economy usually results. Especially for some major oil-producing countries in Africa and Latin America, governments are often controlled by military leaders and experience frequent turnovers. The economies in those countries are radically dominated by military leadership and a select circle of elites, which results in little to no economic freedom. When a new military leader overthrows the predecessor, the economy suffers and rebuilds from chaos. This leads to a fragile and instable economic environment. Religious tensions show no robust association with economic freedom in either dataset. This implies that previous beliefs that religious tensions relate to a less free economy may have misidentified some country- or region-specific effects as religious conflicts. Within the large dataset, higher political accountability is robustly related to greater economic freedom across all oil wealth and dependence measures. This result verifies that oil-wealthy states tend to have more authoritarian and less responsive governments, which results in a government-dominated, less liberal economy. Ethnic tensions statistically significantly and negatively impact economic freedom when regressed with oil production, fuel exports (% merchandise export), and oil rents (% GDP). But such significance disappears in the robust regressions. The significant results

may have come from outliers, not representative of all countries across time. However, corruption demonstrates robustly negative association with economic liberation when *fuel exports* or *oil rents* is the oil measure in the regression. Earlier research has proven that countries that export more oil or accumulates more wealth from oil tend to have a more corrupt political system. Here I further confirm that oil wealth and corruption together impede economic freedom. In the smaller dataset of 42 major oil producers, ethnic tensions show a counterintuitive robust and positive association with economic freedom. This implies that although ethnic diversity causes conflicts between different ethnic groups, such diversity promotes business activities and alleviates economic constraints. For those major oil-producing countries, democratic irresponsiveness only shows robust negative association with economic freedom when regressed with oil rents. This signifies that high oil wealth and low democratic accountability lead to a less liberal economy. But when oil production or petroleum exports are regressed, democracy shows no robust relationship. This likely means that major oil producers have a similarly low level of democracy, which hence demonstrate no robust estimation of economic freedom. Likewise, corruption does not illustrate robust effects on economic liberation predictably because many major oil-producing countries have similarly corrupt political systems.

VI. Limitations

Although I use five measures of oil wealth and dependence to mitigate the biases resulted from employing one measure over another, omitted variable biases caused by time-specific effects and country-specific idiosyncrasies are not eliminated. In particular, this paper does not account for time-specific impact of the oil glut in the 1980s as mentioned in Smith (2004). Additionally, the varied economic compositions of countries may also alter oil wealth and dependence's impact on economic freedom. For instance, a service-dominant economy

would react to oil wealth very differently than a manufacturing-heavy economy or an agricultural economy. Nevertheless, the inclusion of political risk factors and macroeconomic assessments constrains omitted variable biases to an insignificant level. Furthermore, I use the Economic Freedom of the World composite index as the only dependent variable of interest in this study, which might be a bias itself. Future research could study certain subcomponents of this index, such as "Freedom to Trade Internationally" and "Regulation," or employ other measures of economic or business freedom to conduct similar regressions and compare results to identify potential biases. Or similar to Mazaheri (2014), one can study the economic liberalization effect of oil wealth through a certain sector of the economy.

VII. Conclusion

This paper reexamines the oil curse from a new perspective by shedding some light on the effect of oil wealth and oil reliance on economic freedom, an area that encourages further research. Mazaheri's study on oil wealth's economic liberalization effect specifically targets the financial sector and investment environment and conveys most relevance to this paper (2014). Nonetheless, while he studies a particular segment of economic activities, I investigate oil's effect on economic freedom as a whole. I employ five oil wealth and oil reliance measures, which are oil reserves, oil supply or production, oil rents (% GDP), petroleum exports (thousands of barrels per day), and fuel exports (% merchandise exports). This allows me to explore the comprehensive influence of oil wealth and dependence on market participants' freedom to conduct business activities. Despite of oil abundance, exiting political risk factors greatly impact a country's economic freedom. I hence incorporate some of those factors such as democratic accountability, religious tensions, ethnic tensions, military involvement in governance, and corruption in the regressions. These factors not only partly explain countries' economic freedom conditions, but also reflect interesting interactions with the oil wealth or

dependence measure, which alters each independent variable's degree of impact on economic freedom. Macroeconomic variables such as GDP, GDP growth, and population are included as control variables.

Using a large sample of 152 countries and a small sample of 42 major oil-producing countries across the time period of 1984-2012, I confirm that oil wealth and oil dependence undermine a country's economic freedom regardless of the level of oil abundance or the extent to which the country relies on oil-generated wealth. When political risk factors are accounted for in the regressions, military interference in governance robustly impairs economic liberation in both datasets across all specifications. Military dominance in a country's political institution implies weak democracy and a fragile environment for business activities. Many major oil-producing countries in Africa and Latin America are controlled by military leaders a select network of whom control the economy and leaves little to no room for civilian economic activities. Whenever these governments overturn, the economy suffers with the political turmoil. Such inference is further supported by the negative economic liberation effects of countries residing in Latin America and Sub-Saharan Africa. Within the large dataset, higher democratic accountability is robustly associated with great economic freedom across all measures of oil wealth and oil dependence. Ethnic tensions demonstrate statistically significant negative impact on economic freedom across a few specifications, but such significance dissolves in the robust regressions. Corruption is robustly and negatively associated with economic freedom under several circumstances. On the other hand, among the 42 major oil producers, greater ethnic tensions are surprisingly robustly associated with higher levels of economic freedom. This indicates that in major oil-producing countries although greater ethnic diversity may intensify tensions between different ethnic groups, such diversity also promotes business activities and reduces economic constraints. Similarly, corruption demonstrates statistically significant and positive impact on economic liberty in the small dataset. This partly

results form the fact that these countries generate a lot of wealth from oil and foster a corruptive network of elites who inject prosperity and some degree of freedom into the economy. But corruption's significant positive effect disappears in robust regressions, which removes the impact of outliers. Furthermore, political irresponsiveness robustly impairs economic freedom in major oil-producing countries across a number of specifications. Religious tensions do not demonstrate robust association with economic freedom in either dataset.

Because of the impeding effects of oil wealth and oil dependence upon economic freedom, policymakers and governments of oil-rich countries should pay special attention to establishing appropriate political institution and economic regulations in order to protect the fundamental rights and freedom of market participants. Since oil-rich countries tend to have more authoritarian regimes, more corruption, and higher military involvement in governance, citizens and corporations should closely watch their governments' behaviors and urge policymakers to issue laws and regulations to preserve economic freedom. In addition, the international community should be aware of the more authoritarian political institution as well as the more protective and restrictive economic regulations in those oil-rich states. The international community should encourage such states to open up to international business activities and follow global trade standards. Global business and finance organizations such as the World Trade Organization and the International Monetary Fund should lead efforts to create more universal trade standards and facilitate international business dealings. Finally, while extensive literature studies the political effects of oil wealth and dependence, the literature on the economic implications of oil remains limited. I encourage further studies on the economic liberalization effects of oil wealth and dependence through observations in different business sectors.

Appendix

Table 1: Descriptions of Variables

Variable	Description	Source
Economic Freedom of the World Summary Index	The extent to which the institutions and policies of a country correspond with a limited government ideal while protecting property rights and offering a limited set of public goods.	Fraser Institute
Crude Oil Reserves	Annual proved reserves of crude oil in billions of barrels	U.S. Energy Information Administration (EIA)
Oil: Proved Reserves	Proved reserves in billion of barrels	BP Statistical Review of World Energy 2014
Petroleum Exports	Total exports of refined petroleum products measured in thousands of barrels per day.	U.S. Energy Information Administration (EIA)
Oil Production	Oil production (thousand barrels daily)	BP Statistical Review of World Energy 2014
Oil Supply	Total oil production measured in thousands of barrels per day	U.S. Energy Information Administration (EIA)
Fuel Exports (% of merchandise exports)	Fuels comprise SITC section 3 (mineral fuels).	World Bank: World Development Indicators
Oil Rents (% GDP)	Oil rents are the difference between the value of crude oil production at world prices and total costs of production.	World Bank: World Development Indicators
GDP (constant 2005 US$)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in constant 2005 U.S. dollars.	World Bank: World Development Indicators
GDP Growth (annual %)	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2005 U.S. dollars.	World Bank: World Development Indicators
Population, Total	Midyear estimates of total population, which counts all residents regardless of legal status or citizenship--except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin.	World Bank: World Development Indicators
Region	Countries are divided into 7 regions: East Asia & Pacific, Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa, North America, South Asia, and Sub-Saharan Africa.	World Bank: World Development Indicators
Democratic Accountability	A measure of the government's responsiveness to its people.	The PRS Group: International Country Risk Guide

Religious Tensions	Tensions arising from the dominance of a single religious group or suppression of religious freedom.	The PRS Group: International Country Risk Guide
Ethnic Tensions	An assessment of the degree of tension within a country attributable to racial, nationality, or language divisions.	The PRS Group: International Country Risk Guide
Military in Politics	Military's involvement in politics as a diminution of democratic accountability.	The PRS Group: International Country Risk Guide
Corruption	An assessment of corruption within the political system.	The PRS Group: International Country Risk Guide

Table 2: Summary Statistics for Regression Models (1) - (18)

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variable					
Economic Freedom of the World Index (EFW)[1]	2134	99.890	19.998	15.787	147.354
Independent Variable Measuring Oil Wealth/Dependence					
Crude Oil Reserves	3985	6.716	27.993	0	267.020
Fuel Exports (% Merchandise Exports)	4221	454.614	1395.475	-23.745	11840.680
Oil Rents (% GDP)	3780	111.972	268.837	0	3137.350
Petroleum Exports	3219	16.112	26.599	0	99.955
Total Oil Supply (Thousand Barrels Per Day)	3476	5.601	11.785	0	75.708
Other Independent Variables					
Log of GDP (Constant 2005 US$)	4122	23.973	2.150	19.062	30.280
GDP Growth	4146	3.541	5.493	-50.248	88.958
Log of Population	4365	15.930	1.663	11.985	21.024
Democratic Accountability[1]	3567	101.509	19.250	55.108	126.905
Religious Tensions[1]	3567	100.734	19.547	31.504	120.946
Ethnic Tensions[1]	3567	100.931	19.174	45.172	128.623
Military in Politics[1]	3567	101.550	19.308	58.897	124.819
Corruption[1]	3567	100.589	19.870	55.536	143.965

[1] These indices are standardized with a mean of 100 and a standard deviation of 20.

Table 3: Effect of Oil Wealth & Dependence on Economic Freedom Using EIA Data (Part A)

Variables	**Model (1)** Std. EFW[1]	**Model (2)** Std. EFW	**Model (3)** Std. EFW	**Model (4)** Std. EFW	**Model (5)** Std. EFW
Crude Oil Reserves	-0.0647***				
	(0.017)				
Oil Supply		-0.0020***			
		(0.000)			
Petroleum Exports			0.0032**		
			(0.001)		
Fuel Exports (% Merchandise Export)				-0.1472***	
				(0.016)	
Oil Rents (% GDP)					-0.3103***
					(0.034)
Middle East & North Africa[2]	-5.4082***	-6.1354***	-7.6367***	-6.9559***	-7.8590***
	(1.640)	(1.579)	(1.676)	(1.629)	(1.628)
Latin America & Caribbean[2]	-7.2746***	-7.7905***	-6.3786***	-10.0059***	-11.9694***
	(1.377)	(1.352)	(1.453)	(1.326)	(1.419)
South Asia[2]	-17.6943***	-18.9740***	-18.2656***	-23.4385***	-23.7579***
	(2.194)	(2.186)	(2.349)	(2.165)	(2.125)
Sub-Saharan Africa[2]	-21.9420***	-22.8784***	-22.5454***	-20.8874***	-24.8162***
	(1.314)	(1.293)	(1.405)	(1.328)	(1.471)
Europe & Central Asia[2]	3.0801**	1.6245	1.1979	-1.2073	-2.9548**
	(1.281)	(1.256)	(1.312)	(1.228)	(1.292)
North America[2]	25.9051***	32.6513***	17.4568***	17.6735***	16.3309***
	(3.389)	(3.696)	(3.424)	(2.932)	(3.068)
Constant	107.2495***	108.2669***	107.5756***	112.7987***	112.8186***
	(1.076)	(1.056)	(1.148)	(1.059)	(1.118)
Observations	2,073	2,131	1,814	1,820	1,792
R-squared	0.273	0.268	0.278	0.274	0.304

Note: Standard errors are in parentheses.

[1] The index is standardized to have a mean of 100 and a standard deviation of 20.

[2] Dummy variable representing one of the 7 regions that the country belongs to. One region, East Asia & Pacific is intentionally left out to avoid perfect collinearity.

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

Table 4: Effect of Oil Wealth & Dependence on Economic Freedom Using EIA Data (Part B)

Variables	**Model (6)** Std. EFW[1]	**Model (7)** Std. EFW	**Model (8)** Std. EFW	**Model (9)** Std. EFW	**Model (10)** Std. EFW
Crude Oil Reserves	-0.0440***				
	(0.015)				
Oil Supply		-0.0009***			
		(0.000)			
Petroleum Exports			0.0019		
			(0.001)		
Fuel Exports (% Merchandise Export)				-0.0527***	
				(0.015)	
Oil Rents (% GDP)					-0.1062***
					(0.032)
Democratic Accountability[1]	0.1894***	0.2081***	0.1867***	0.1255***	0.1463***
	(0.025)	(0.025)	(0.026)	(0.026)	(0.026)
Religious Tensions[1]	0.0161	0.0280	0.0336	0.0506**	0.0882***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.026)
Ethnic Tensions[1]	0.1201***	0.1159***	0.0735***	0.0583***	0.0564**
	(0.022)	(0.022)	(0.022)	(0.022)	(0.023)
Military in Politics[1]	0.4074***	0.4019***	0.4260***	0.3839***	0.4096***
	(0.027)	(0.027)	(0.028)	(0.029)	(0.029)
Corruption[1]	0.0857***	0.0739***	0.1066***	0.0999***	0.0707***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Middle East & North Africa[2]	-4.1389***	-4.2414***	-4.3481***	-5.7054***	-5.1138***
	(1.473)	(1.439)	(1.497)	(1.482)	(1.456)
Latin America & Caribbean[2]	-7.1750***	-7.4698***	-5.2824***	-9.3678***	-8.9877***
	(1.298)	(1.264)	(1.302)	(1.317)	(1.347)
South Asia[2]	-5.7424***	-6.1719***	-5.1030**	-9.6506***	-8.0835***
	(2.220)	(2.231)	(2.331)	(2.175)	(2.185)
Sub-Saharan Africa[2]	-14.1372***	-14.2141***	-13.5354***	-14.2033***	-16.1315***
	(1.241)	(1.239)	(1.303)	(1.304)	(1.366)
Europe & Central Asia[2]	-7.8556***	-8.6177***	-9.0834***	-9.0761***	-10.3361***
	(1.215)	(1.185)	(1.193)	(1.201)	(1.206)
North America[2]	10.3099***	12.4898***	4.9229*	6.2884**	5.5162**
	(2.999)	(3.301)	(2.913)	(2.671)	(2.734)
Constant	24.5929***	23.7820***	23.2186***	37.6944***	31.8774***
	(3.520)	(3.592)	(3.646)	(3.863)	(3.740)

Observations	1,858	1,891	1,629	1,660	1,689
R-squared	0.502	0.495	0.522	0.462	0.495

Notes: Standard errors are in parentheses.

[1] These indices are standardized with a mean of 100 and a standard deviation of 20.

[2] Dummy variable representing one of the 7 regions that the country belongs to. One region, East Asia & Pacific is intentionally left out to avoid perfect collinearity.

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

Table 5: Effect of Oil Wealth & Dependence on Economic Freedom Using EIA Data (Part C)

Variables	**Model (11)** Std. EFW[1]	**Model (12)** Std. EFW	**Model (13)** Std. EFW	**Model (14)** Std. EFW	**Model (15)** Std. EFW	**Model (16)** Std. EFW	**Model (17)** Std. EFW	**Model (18)** Std. EFW
Oil Supply	-0.0008***	-0.0015***						
	(0.000)	(0.000)						
Petroleum Exports			0.0007	-0.0009				
			(0.001)	(0.001)				
Fuel Exports (% Merchandise Export)					-0.0456***	-0.0520***		
					(0.014)	(0.015)		
Oil Rents (% GDP)							-0.1948***	-0.1658***
							(0.033)	(0.031)
Democratic Accountability[1]	0.1144***	0.1341***	0.1030***	0.1199***	0.1148***	0.1333***	0.1243***	0.1460***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.025)	(0.026)	(0.025)	(0.025)
Religious Tensions[1]	0.0347*	0.0420*	0.0387*	0.0297	0.0069	0.0194	0.0006	0.0391
	(0.020)	(0.023)	(0.020)	(0.023)	(0.021)	(0.024)	(0.022)	(0.025)
Ethnic Tensions[1]	0.0643***	0.0520**	0.0519**	0.0333	0.0896***	0.0577***	0.1089***	0.0466**
	(0.021)	(0.021)	(0.021)	(0.021)	(0.022)	(0.021)	(0.022)	(0.022)
Military in Politics[1]	0.2438***	0.2546***	0.2431***	0.2695***	0.3974***	0.3389***	0.4159***	0.3687***
	(0.027)	(0.027)	(0.028)	(0.028)	(0.028)	(0.028)	(0.027)	(0.028)
Corruption[1]	-0.0120	-0.0495**	0.0130	-0.0066	0.1744***	0.0973***	0.1286***	0.0639***
	(0.024)	(0.023)	(0.024)	(0.023)	(0.023)	(0.023)	(0.023)	(0.022)
Log of GDP	5.4316***	5.2098***	4.9635***	4.7813***				

	(0.338)	(0.383)	(0.355)	(0.401)				
GDP Growth	0.4777***	0.4350***	0.4075***	0.3521***	0.3739***	0.3349***	0.4131***	0.3800***
	(0.079)	(0.075)	(0.080)	(0.076)	(0.088)	(0.083)	(0.085)	(0.080)
Log of Population	-5.2848***	-5.8823***	-5.2109***	-5.9746***	-0.8780***	-2.0521***	-1.3019***	-2.4429***
	(0.368)	(0.403)	(0.382)	(0.417)	(0.227)	(0.237)	(0.238)	(0.241)
Middle East & North Africa[2]		-9.0070***		-10.4632***		-9.6170***		-8.7808***
		(1.426)		(1.458)		(1.511)		(1.449)
Latin America & Caribbean[2]		-8.9118***		-7.6422***		-12.0039***		-10.8489***
		(1.301)		(1.310)		(1.335)		(1.329)
South Asia[2]		-3.0547		-1.8797		-9.2408***		-7.8176***
		(2.098)		(2.182)		(2.101)		(2.094)
Sub-Saharan Africa[2]		-11.5220***		-12.1765***		-16.9863***		-18.7124***
		(1.347)		(1.398)		(1.305)		(1.341)
Europe & Central Asia[2]		-11.9901***		-12.5452***		-10.4671***		-11.5305***
		(1.164)		(1.159)		(1.193)		(1.188)
North America[2]		12.3565***		5.0619*		9.9366***		10.5160***
		(3.050)		(2.669)		(2.601)		(2.649)
Constant	5.9740	31.5308***	15.8716***	42.6896***	35.9495***	79.3284***	43.0640***	83.4046***
	(5.174)	(6.268)	(5.453)	(6.502)	(5.456)	(6.221)	(5.716)	(6.270)
Observations	1,830	1,830	1,580	1,580	1,646	1,646	1,678	1,678
R-squared	0.509	0.556	0.530	0.580	0.425	0.495	0.459	0.533

Notes: Standard errors are in parentheses.

[1] These indices are standardized with a mean of 100 and a standard deviation of 20.

[2] Dummy variable representing one of the 7 regions that the country belongs to. One region, East Asia & Pacific is intentionally left out to avoid perfect collinearity.

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

Table 6: Summary Statistics for Regression Models (19) - (36)

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variable					
Economic Freedom of the World Index (EFW)[1]	587	100.064	19.958	29.796	139.269
Independent Variable Measuring Oil Wealth/Dependence					
Oil: Proved Reserves	1176	25.278	51.830	0	297.571
Oil Production	1208	1544.588	2145.520	0	11634.540
Petroleum Exports	1064	238.472	361.303	0	3137.350
Fuel Exports (% of merchandise exports)	985	40.788	34.883	0.193	99.955
Oil Rents	1161	15.292	16.052	0	75.708
Other Independent Variables					
Log of GDP (Constant 2005 US$)	1168	25.370	1.803	21.333	30.280
GDP Growth	1167	3.907	5.466	-24.700	34.500
Log of Population	1205	16.832	1.812	12.287	21.024
Democratic Accountability[1]	1142	101.512	19.671	59.565	130.756
Religious Tensions[1]	1142	101.448	19.098	44.676	123.641
Ethnic Tensions[1]	1142	101.937	18.385	48.801	129.977
Military in Politics[1]	1142	102.172	18.713	58.990	126.647
Corruption[1]	1142	101.173	19.810	53.627	150.286

[1] These indices are standardized to have a mean of 100 and a standard deviation of 20.

Table 7: Effect of Oil Wealth & Dependence on Economic Freedom For 42 Major Oil-Producing Countries (Part A)

Variables	**Model 19** Std. EFW[1]	**Model 20** Std. EFW	**Model 21** Std. EFW	**Model 22** Std. EFW	**Model 23** Std. EFW
Oil: Proved Reserves	-0.0293*				
	(0.015)				
Oil Production		-0.0007**			
		(0.000)			
Petroleum Exports			-0.0050**		
			(0.002)		
Fuel Exports (% of merchandise exports)				-0.0893***	
				(0.027)	
Oil Rents					-0.1484**
					(0.058)
Middle East & North Africa[2]	-4.6334**	-5.3466**	-5.3208**	-2.7368	-2.9626
	(2.256)	(2.192)	(2.291)	(2.613)	(2.442)
Latin America & Caribbean[2]	-10.5490***	-10.9410***	-9.6156***	-8.9100***	-10.2715***
	(2.202)	(2.202)	(2.282)	(2.234)	(2.227)
South Asia[2]	-9.7712**	-10.0073**	-7.8139*	-10.2128**	-10.2876**
	(4.346)	(4.375)	(4.636)	(4.276)	(4.390)
Sub-Saharan Africa[2]	-25.7026***	-26.0400***	-27.0333***	-15.1097***	-20.0732***
	(2.521)	(2.539)	(2.675)	(3.799)	(3.468)
Europe & Central Asia[2]	6.2733***	6.2595***	6.7595***	7.8433***	6.6337***
	(2.266)	(2.296)	(2.380)	(2.280)	(2.305)
North America[2]	28.2532***	28.8223***	29.8102***	25.4111***	25.2103***
	(3.554)	(3.655)	(3.819)	(3.242)	(3.326)
Constant	104.9503***	105.6114***	106.2975***	106.1435***	105.4861***
	(1.667)	(1.725)	(1.774)	(1.716)	(1.702)
Observations	586	587	496	513	577
R-squared	0.358	0.352	0.385	0.321	0.352

Note: Standard errors are in parentheses.

[1] These indices are standardized with a mean of 100 and a standard deviation of 20.

[2] Dummy variable representing one of the 7 regions that the country belongs to. One region, East Asia & Pacific is intentionally left out to avoid perfect collinearity.

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

Table 8: Effect of Oil Wealth & Dependence on Economic Freedom For 42 Major Oil-Producing Countries (Part B)

	Model 24	**Model 25**	**Model 26**	**Model 27**	**Model 28**
Variables	Std. EFW[1]	Std. EFW	Std. EFW	Std. EFW	Std. EFW
Oil: Proved Reserves	-0.0326***				
	(0.012)				
Oil Production		-0.0002			
		(0.000)			
Petroleum Exports			-0.0001		
			(0.002)		
Fuel Exports (% of merchandise exports)				0.0134	
				(0.023)	
Oil Rents (% GDP)					0.0379
					(0.050)
Democratic Accountability[1]	0.1487***	0.1619***	0.1225***	0.1395***	0.1750***
	(0.042)	(0.042)	(0.043)	(0.045)	(0.045)
Religious Tensions[1]	0.1542***	0.1679***	0.1300***	0.1326***	0.1705***
	(0.044)	(0.044)	(0.044)	(0.047)	(0.046)
Ethnic Tensions[1]	-0.0583	-0.0479	-0.0669*	-0.0690*	-0.0449
	(0.037)	(0.038)	(0.037)	(0.038)	(0.038)
Military in Politics[1]	0.6220***	0.6101***	0.6216***	0.6228***	0.6093***
	(0.044)	(0.043)	(0.044)	(0.045)	(0.044)
Corruption[1]	-0.0641	-0.0630	0.0058	-0.0324	-0.0603
	(0.040)	(0.041)	(0.040)	(0.042)	(0.040)
Middle East & North Africa[2]	-0.8443	-1.8550	-1.2953	-2.7956	-2.6393
	(1.914)	(1.898)	(1.931)	(2.133)	(2.018)
Latin America & Caribbean[2]	-11.5674***	-12.5232***	-9.1069***	-11.5759***	-12.9128***
	(2.032)	(2.015)	(2.011)	(2.153)	(2.082)
South Asia[2]	-12.1827***	-11.9994***	-10.9753***	-12.3645***	-11.9646***
	(3.616)	(3.653)	(3.705)	(3.551)	(3.659)
Sub-Saharan Africa[2]	-9.3209***	-9.5355***	-8.3275***	-5.8856*	-10.9073***
	(2.323)	(2.345)	(2.428)	(3.126)	(3.073)
Europe & Central Asia[2]	-8.5871***	-9.2430***	-9.1850***	-8.6778***	-9.8085***
	(1.975)	(2.018)	(2.019)	(2.086)	(2.051)
North America[2]	12.5508***	10.1072***	9.1937***	9.6207***	8.7395***
	(3.180)	(3.307)	(3.306)	(2.849)	(2.933)
Constant	23.6616***	21.1603***	22.2615***	24.0793***	18.6769***
	(5.993)	(6.152)	(6.118)	(6.577)	(6.237)
Observations	570	571	483	513	567
R-squared	0.613	0.607	0.655	0.599	0.607

Note: Standard errors are in parentheses.

[1] These indices are standardized with a mean of 100 and a standard deviation of 20.

[2] Dummy variable representing one of the 7 regions that the country belongs to. One region, East Asia & Pacific is intentionally left out to avoid perfect collinearity.

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

Table 9: Effect of Oil Wealth & Dependence on Economic Freedom For 42 Major Oil-Producing Countries (Part C)

Variables	**Model 29** Std. EFW[1]	**Model 30** Std. EFW	**Model 31** Std. EFW	**Model 32** Std. EFW	**Model 33** Std. EFW	**Model 34** Std. EFW	**Model 35** Std. EFW	**Model 36** Std. EFW
Oil Production	-0.0009***	-0.0009**						
	(0.000)	(0.000)						
Petroleum Exports								
			-0.0027	-0.0060***				
			(0.002)	(0.002)				
Fuel Exports (% of merchandise exports)								
					-0.0519**	-0.0313		
					(0.026)	(0.026)		
Oil Rents (% GDP)								
							-0.1480***	-0.1070*
							(0.050)	(0.056)
Democratic Accountability[1]	-0.0238	0.0928**	-0.0319	0.0455	0.0546	0.1601***	0.0772*	0.1907***
	(0.041)	(0.044)	(0.041)	(0.043)	(0.043)	(0.045)	(0.041)	(0.044)
Religious Tensions[1]	-0.0171	0.1078**	-0.0141	0.0769*	-0.0122	0.0951**	0.0145	0.1363***
	(0.034)	(0.042)	(0.034)	(0.042)	(0.040)	(0.048)	(0.037)	(0.045)
Ethnic Tensions[1]	-0.0959***	-0.1012***	-0.1072***	-0.1160***	-0.0629	-0.0735*	-0.0159	-0.0404
	(0.037)	(0.036)	(0.037)	(0.036)	(0.039)	(0.038)	(0.039)	(0.038)
Military in Politics[1]	0.4654***	0.4132***	0.4640***	0.3988***	0.6339***	0.5808***	0.6460***	0.5519***
	(0.042)	(0.046)	(0.042)	(0.048)	(0.042)	(0.046)	(0.040)	(0.044)
Corruption[1]	-0.0083	-0.1307***	0.0317	-0.0914**	0.1052**	-0.0571	0.0595	-0.1048**
	(0.039)	(0.039)	(0.038)	(0.039)	(0.042)	(0.042)	(0.041)	(0.041)

Log of GDP	8.0471***	6.7114***	7.2469***	6.9699***				
	(0.869)	(0.831)	(0.911)	(0.872)				
GDP Growth	0.2728**	0.2421**	0.1780	0.1465	0.2738*	0.2698**	0.2687**	0.2426**
	(0.122)	(0.114)	(0.121)	(0.112)	(0.144)	(0.135)	(0.133)	(0.123)
Log of Population	-5.9777***	-6.3254***	-5.6249***	-6.7715***	-1.0072**	-1.8311***	-1.3002***	-2.3900***
	(0.653)	(0.657)	(0.688)	(0.706)	(0.468)	(0.473)	(0.448)	(0.455)
Middle East & North Africa[2]		-4.8841**		-5.0144**		-3.8167*		-4.4398**
		(1.989)		(1.992)		(2.217)		(2.060)
Latin America & Caribbean[2]		-13.3110***		-10.6915***		-11.9279***		-14.1686***
		(1.986)		(1.917)		(2.156)		(2.072)
South Asia[2]		-3.9923		0.7315		-9.8977***		-7.7666**
		(3.534)		(3.632)		(3.598)		(3.677)
Sub-Saharan Africa[2]		-12.8100***		-14.0148***		-7.9898**		-12.1627***
		(2.524)		(2.508)		(3.207)		(3.057)
Europe & Central Asia[2]		-11.2089***		-10.3683***		-8.4676***		-9.6637***
		(1.937)		(1.894)		(2.066)		(2.013)
North America[2]		6.8122**		9.3977***		12.3675***		12.2886***
		(3.099)		(3.036)		(2.884)		(2.938)
Constant	-37.2385***	3.4997	-24.5278**	12.0452	46.1308***	65.3996***	43.9917***	72.9082***
	(10.690)	(12.964)	(10.984)	(12.340)	(12.666)	(13.376)	(11.497)	(12.307)
Observations	566	566	479	479	509	509	566	566
R-squared	0.607	0.665	0.651	0.713	0.533	0.613	0.548	0.627

Note: Standard errors are in parentheses.

[1] These indices are standardized with a mean of 100 and a standard deviation of 20.

[2] Dummy variable representing one of the 7 regions that the country belongs to. One region, East Asia & Pacific is intentionally left out to avoid perfect collinearity.

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

Table 10: Robust Regressions on OLS Significant Models (Part A)

Variables	Robust (12) Std. EFW[1]	Robust (16) Std. EFW	Robust (18) Std. EFW
Oil Supply	-0.0013***		
	(0.000)		
Fuel Exports (% Merchandise Export)		-0.0602***	
		(0.012)	
Oil Rents (% GDP)			-0.2207***
			(0.026)
Democratic Accountability[1]	0.0665***	0.0648***	0.0512**
	(0.020)	(0.021)	(0.021)
Religious Tensions[1]	0.0289	0.0146	0.0084
	(0.019)	(0.020)	(0.020)
Ethnic Tensions[1]	0.0398**	0.0349*	0.0262
	(0.017)	(0.018)	(0.018)
Military in Politics[1]	0.2525***	0.3290***	0.3697***
	(0.023)	(0.024)	(0.023)
Corruption[1]	0.0205	0.1597***	0.1343***
	(0.020)	(0.019)	(0.018)
Log of GDP	4.4388***		
	(0.326)		
GDP Growth	0.3099***	0.1882***	0.2018***
	(0.064)	(0.070)	(0.065)
Log of Population	-4.9692***	-1.6362***	-2.0458***
	(0.343)	(0.199)	(0.197)
Middle East & North Africa[2]	-6.2559***	-5.9876***	-4.7544***
	(1.214)	(1.269)	(1.184)
Latin America & Caribbean[2]	-4.4717***	-7.1434***	-5.4709***
	(1.108)	(1.120)	(1.085)
South Asia[2]	-2.9710*	-7.6191***	-6.7339***
	(1.787)	(1.764)	(1.710)
Sub-Saharan Africa[2]	-10.7541***	-14.6608***	-15.3582***
	(1.147)	(1.095)	(1.095)
Europe & Central Asia[2]	-9.2335***	-7.8853***	-8.2230***
	(0.991)	(1.002)	(0.970)
North America[2]	12.5210***	9.7275***	10.8276***
	(2.596)	(2.184)	(2.163)
Constant	38.5538***	77.1734***	84.8853***
	(5.336)	(5.222)	(5.120)
Observations	1,830	1,646	1,678

R-squared	0.599	0.553	0.601

Notes: Standard errors are in parentheses.

[1] These indices are standardized with a mean of 100 and a standard deviation of 20.

[2] Dummy variable representing one of the 7 regions that the country belongs to. One region, East Asia & Pacific is intentionally left out to avoid perfect collinearity.

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

Table 11: Robust Regressions on OLS Significant Models (Part B)

Variables	Robust (30) Std. EFW[1]	Robust (32) Std. EFW	Robust (36) Std. EFW
Oil Production	-0.0009***		
	(0.000)		
Petroleum Exports		-0.0046***	
		(0.002)	
Oil Rents (% GDP)			-0.1693***
			(0.045)
Democratic Accountability[1]	0.0021	-0.0099	0.0742**
	(0.037)	(0.037)	(0.035)
Religious Tensions[1]	0.0544	0.0452	0.0512
	(0.035)	(0.036)	(0.036)
Ethnic Tensions[1]	-0.1305***	-0.1231***	-0.0669**
	(0.031)	(0.031)	(0.030)
Military in Politics[1]	0.4363***	0.4605***	0.5373***
	(0.038)	(0.041)	(0.036)
Corruption[1]	0.0252	0.0235	0.0650**
	(0.033)	(0.033)	(0.033)
Log of GDP	5.1629***	5.1419***	
	(0.696)	(0.753)	
GDP Growth	0.1444	0.0818	0.2070**
	(0.095)	(0.097)	(0.099)
Log of Population	-4.5261***	-4.8136***	-1.7826***
	(0.550)	(0.610)	(0.365)
Middle East & North Africa[2]	-1.3854	-2.7259	0.0254
	(1.666)	(1.720)	(1.652)
Latin America & Caribbean[2]	-7.1893***	-6.8949***	-7.2760***
	(1.663)	(1.655)	(1.662)
South Asia[2]	-4.8613	-0.2884	-7.4068**
	(2.960)	(3.137)	(2.949)
Sub-Saharan Africa[2]	-11.1613***	-11.1205***	-7.5185***
	(2.115)	(2.166)	(2.452)
Europe & Central Asia[2]	-7.3739***	-7.8791***	-5.7491***
	(1.623)	(1.636)	(1.614)
North America[2]	8.3059***	9.2475***	11.0637***
	(2.596)	(2.622)	(2.357)
Constant	12.1272	16.9466	70.6038***
	(10.859)	(10.656)	(9.872)
Observations	566	479	566
R-squared	0.713	0.755	0.703

Note: Standard errors are in parentheses.

[1] These indices are standardized with a mean of 100 and a standard deviation of 20.

[2] Dummy variable representing one of the 7 regions to which each country belongs. One region, East Asia & Pacific is intentionally left out to avoid perfect collinearity.

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

Figure 1(a): Leverage-versus-Square Residual Diagnostic Plot for Model (12)

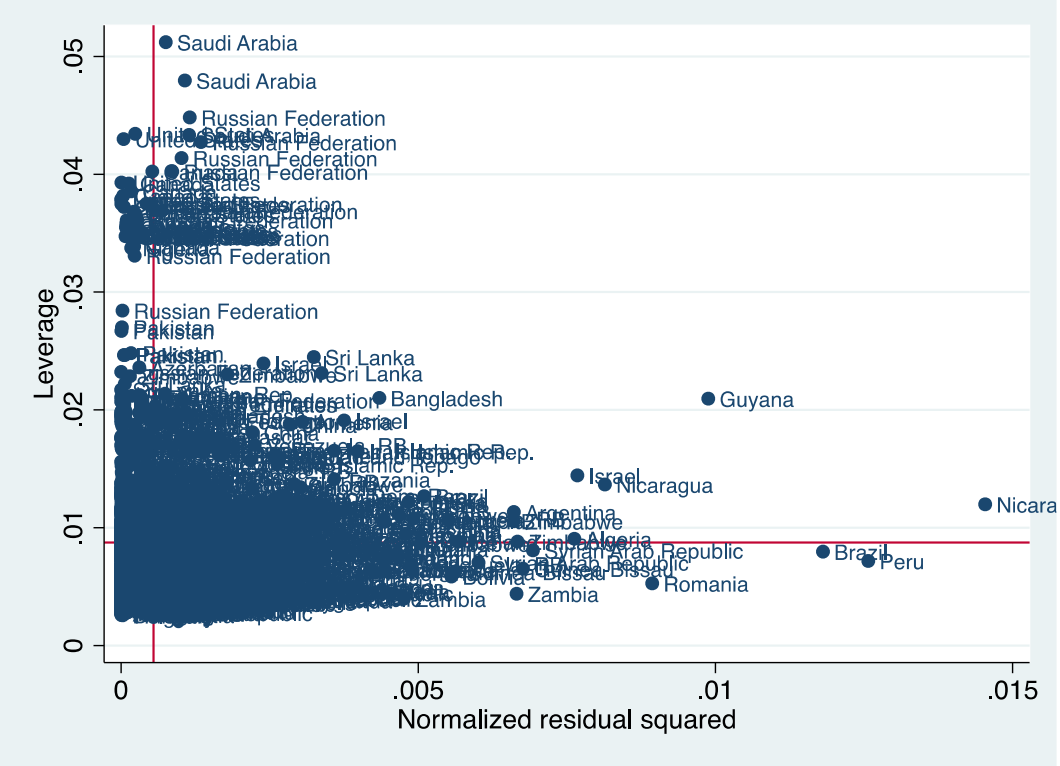


Figure 1(b): Leverage-versus-Square Residual Diagnostic Plot for Model (16)

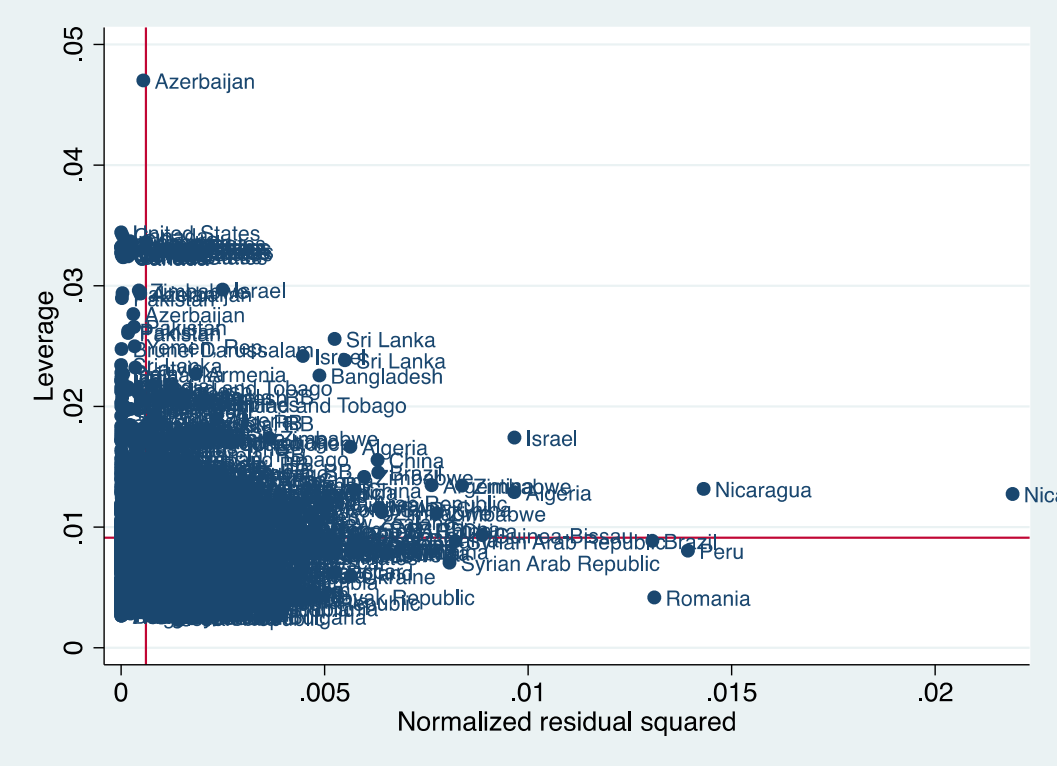


Figure 1(c): Leverage-versus-Square Residual Diagnostic Plot for Model (18)

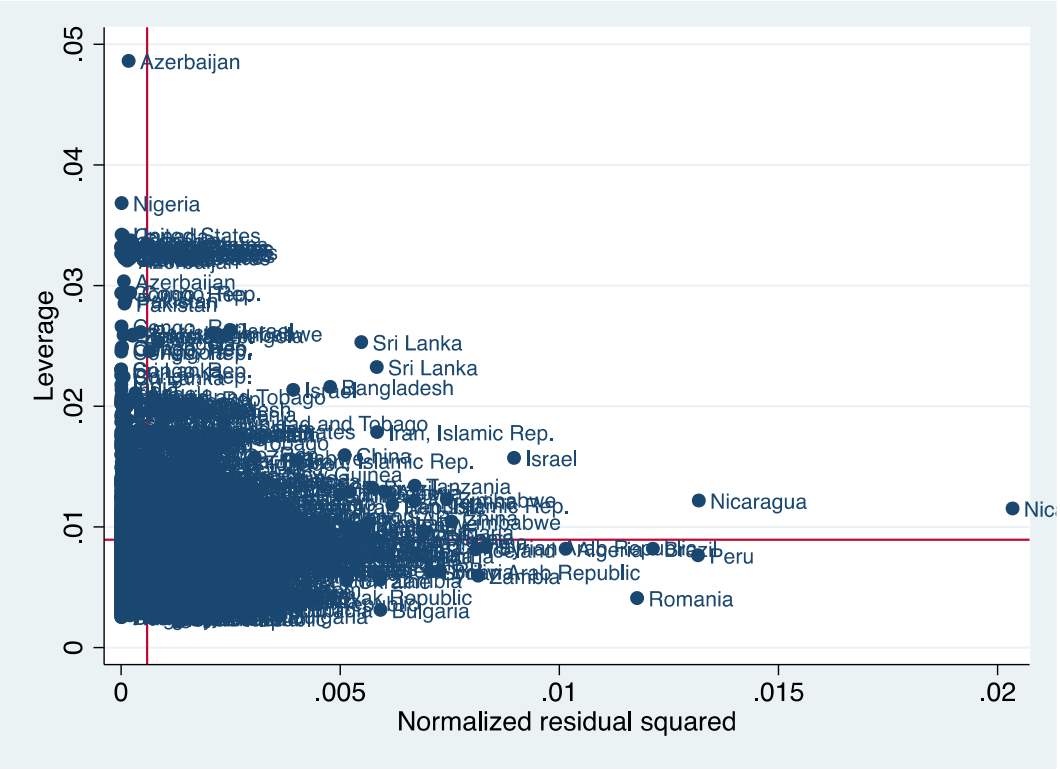


Figure 2(a): Leverage-versus-Square Residual Diagnostic Plot for Model (30)

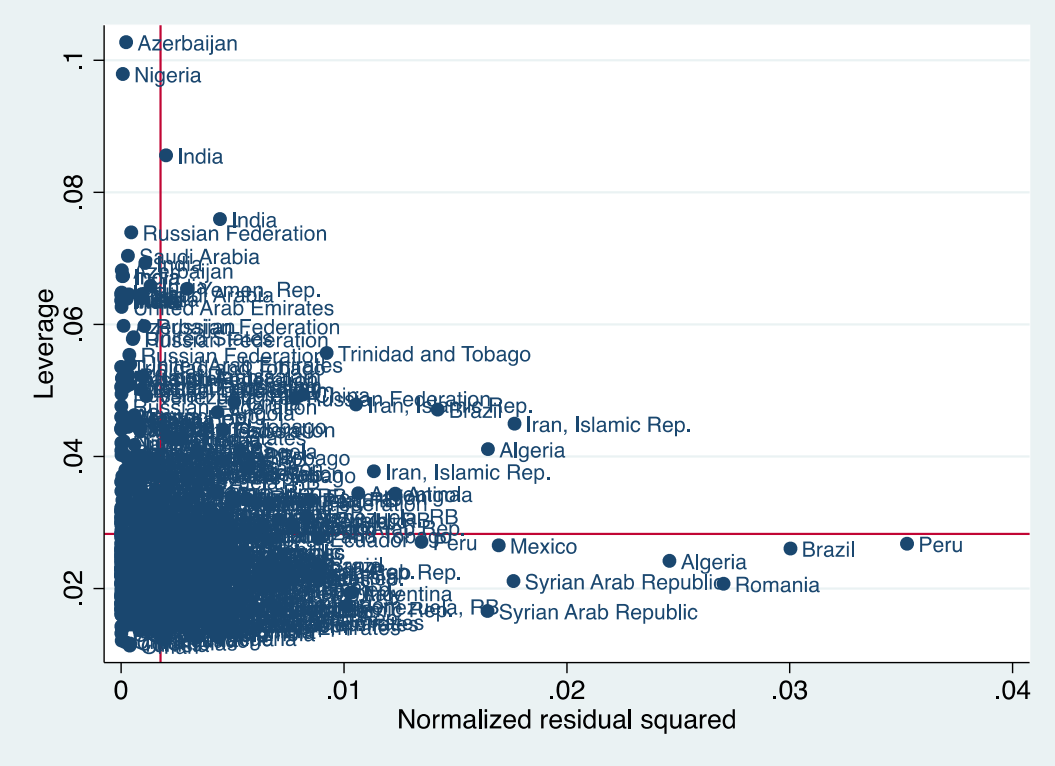


Figure 2(b): Leverage-versus-Square Residual Diagnostic Plot for Model (32)

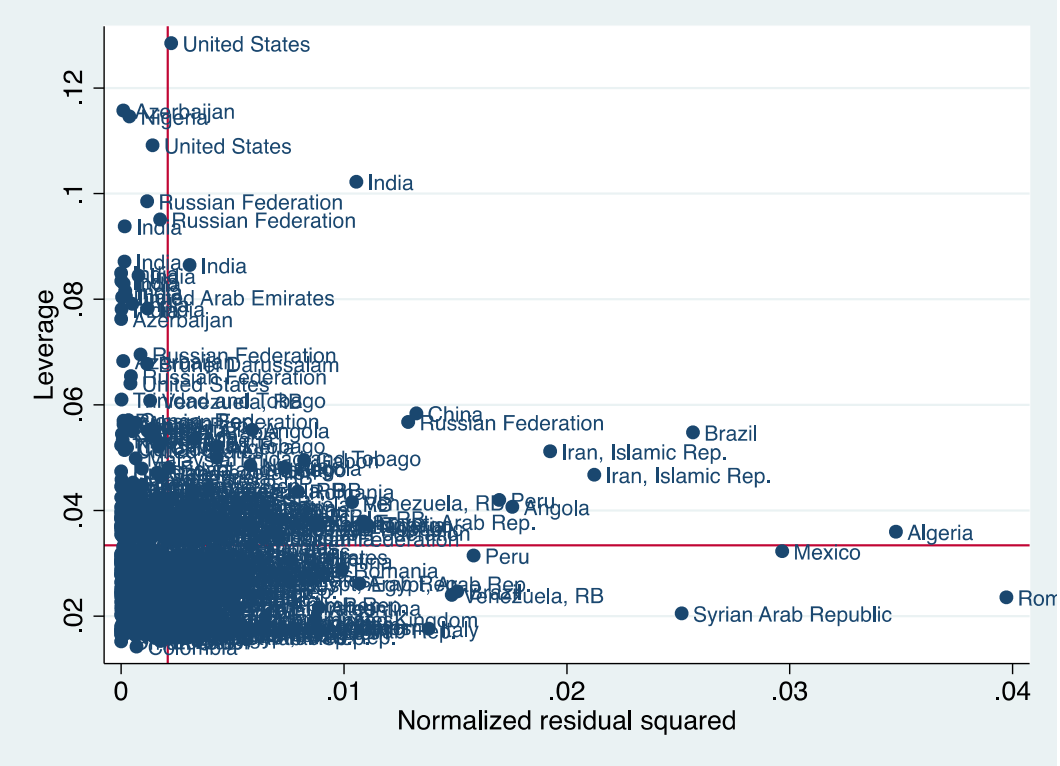
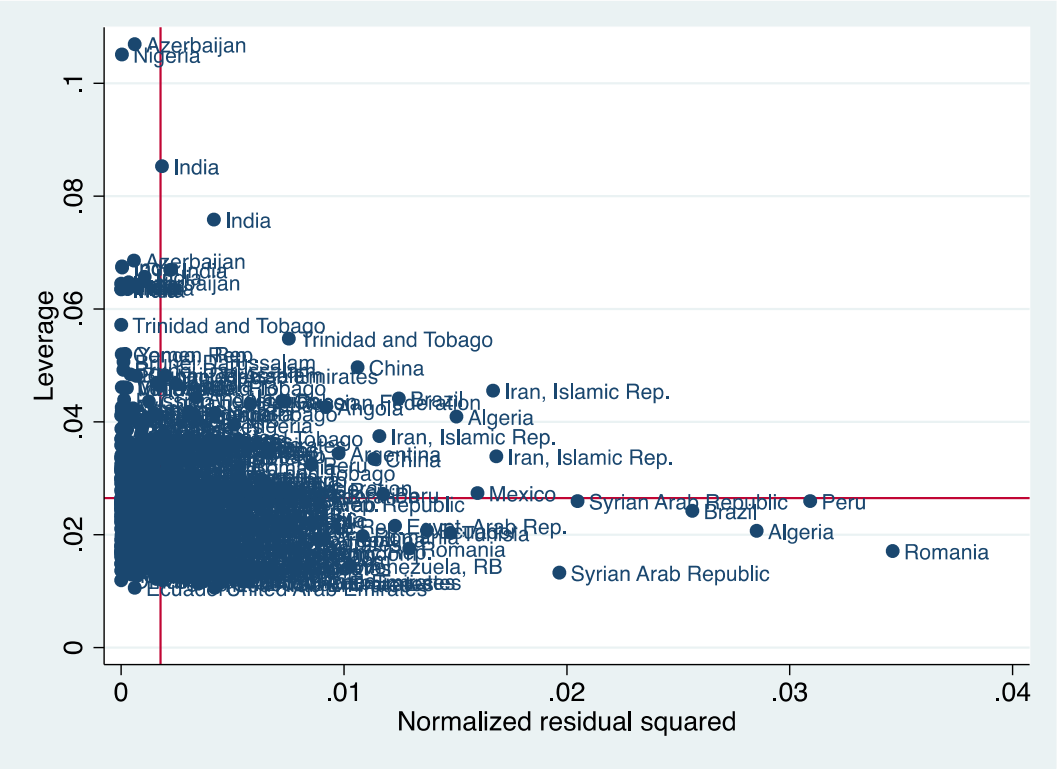


Figure 2(c): Leverage-versus-Square Residual Diagnostic Plot for Model (36)



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