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AN EVALUATION OF THE RELATIONSHIP BETWEEN OIL DEPENDENCE AND
REGIME STABILITY IN THE MIDDLE EAST

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ABSTRACT

A world in which oil is unable to continue to sustain such high levels of revenues for oil exporters is fast approaching. In the past six months, oil prices have dropped sixty percent and as demand growth is also on the decline, this trend has the potential to continue. This decline is in large part attributed to the recent successes in the development of new oil extracting technologies as well as increases of environmentally friendly alternatives. Many Middle Eastern countries, such as Saudi Arabia, depend on oil revenues to provide subsidized programs for their citizens. These programs allow the regime greater freedom from their citizens as well as increased control. However a lack of oil revenues would in turn transfer to a lack of the necessary money to fund such programs, likely generating greater unrest among the citizens of the country. This project examines the link between oil dependence and regime stability through a statistical historical time-series analysis to uncover whether they experienced instability in the past during years of decreased oil revenues. My project finds statistically significant relationships between my measures of dependence: countries' oil rents as a percentage of GDP, the US oil purchase price, and US levels of imports by country and my measures of regime change and regime durability.

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Chapter 1

Introduction

World oil prices dropped almost sixty percent in the past six months, a decline that has transferred to lower prices at the gas pump for citizens throughout the United States (International Energy Agency: Oil Market Report, 2015). This drop in price is a response to the recent increases in global oil production accompanied by a simultaneous decrease in demand growth (International Energy Agency: Oil Market Report, 2015). The success of fracking and shale oil production has been a significant contributor to the record levels of United States oil production. This surplus in the overall amount of oil available in the global market in turn contributed to the drop in the price of oil. As the United States pushes for continued increasing energy production along with the improved cultivation of green technologies, the global oil price has the potential to continue this downward trajectory. If in the future, the United States achieves complete energy independence from foreign suppliers, the price of oil in the worldwide market will undoubtedly be greatly impacted. As many Middle Eastern countries consist of autocratic regimes dependent on oil revenues to form the basis of the majority of their economies and then utilize them as a stabilizing force for the government; an economic loss poses a substantial threat to the overall stability of the country. Due to the possible consequences of lowered revenues, even with the multitude of benefits that exist to both the United States and the health of the planet, the political stability of the Middle East is a cost that needs to be considered if only in an attempt to prepare for and mitigate any negative global consequences.

The global price of a barrel of oil has recently fallen below fifty dollars for the first time in six years with global production exceeding the current demand for oil (International Energy Association: Oil Market Report, 2015). As a result, many oil exporting countries will face difficulties keeping their budget deficits under control (International Energy Association: Oil Market Report, 2015). From a global perspective, the Middle East is critical to world affairs due to the high number of natural resources concentrated in this area as well as the prevalence of terrorist actors and organizations that pose global threats. As the Middle East is already a region of the world known for its high levels of inter- and intra-state conflicts, a change to their established way of life deserves consideration. A breakdown of government could permit the easier formation of certain types of potentially dangerous groups or regimes. On the other end of the spectrum regime change could benefit the population by leading to measures of democratization. The discovery of the nature of the precipitating reasons for the conditions of instability throughout the region would be an important step in an attempt to provide an enhanced level of peace and stability not only for the good of this region, but also for the enhancement of world security.

A Case Study: Saudi Arabia

Saudi Arabia is a prime example of a regime that employs oil rents to stabilize and sustain control of the country. The royal family rules the country with the implementation of an autocratic regime financed primarily through the production and exportation of oil (Freedom House: Saudi Arabia. 2012, 1). The fiscal crisis that the country could potentially encounter in the near future is reminiscent of the economic crisis Saudi Arabia faced in the 1990s during

another instance when oil production overcame oil demand (Mabro, 1998). As the world's largest holder of proven crude oil reserves, with petroleum exports accounting for 85% of total exports from Saudi Arabia in 2013, oil revenues are clearly critical to this country's daily functions (OPEC Annual Statistical Bulletin 2014). The country has historically held either the first or second spot in the ranking of the world's top oil producers (EIA Country Analysis Brief: Saudi Arabia, 1). However as of 2013, the United States claimed this top spot taking over as the world's largest petroleum liquids producer (EIA Country Analysis Brief: Saudi Arabia, 1). This move by the United States could signal additional continued upheaval in the future with regard to Saudi Arabia's historical dominance of the oil market and consequently a change to their historically high oil revenues.

The Saudi Arabian government has an established "social contract" with its citizens; this contract created "in the boom years of the 1970s" "requires the government to provide jobs and services to its citizens" (Gause, 2000, 84). However after the economic crisis of the 1990s and the resultant decrease in oil revenues coupled with a soaring population, the country's medical services were ill-equipped to handle the growing population (Gause, 2000, 84). Additionally, young Saudis faced soaring unemployment levels as the government was not large enough to provide jobs to the continually increasing young graduates as the government had been capable of for the majority of the older population (Gause, 2000, 84). The government was no longer able to fulfill its social contract, thereby letting down its citizens and generating unrest, especially among the younger population. The fact that a past downturn in oil prices created a situation in which the Saudi Arabian government was unable to fulfill its promises of jobs and healthcare and such lack of fulfillment then created unrest, signals that this situation has the possibility to reoccur in the future if revenues are again reduced.

The provision of jobs to its citizens when actually carried out as promised decreases the likelihood of political dissent (Freedom House: Saudi Arabia, 2012, 3). Dependence on the government for your income clearly restricts your capacity to express discontent with your government. In fact the level of accountability and public voice of the country, as determined by Freedom House is .69 on a scale from 0-7 meaning the public has little to no say in the workings of their government (Freedom House, 2012, 3). In addition the regime does not impose domestic taxation on its citizens (Freedom House: Saudi Arabia, 2012, 3). Such lack of taxation serves to decrease the bargaining power of citizens thereby ensuring the government a further level of control over the population as they cannot require representation if they are not even taxed (Freedom House, 2012, 3). In this way, the government is able to buy support instead of being forced to earn it. In 2011 alone, Saudi Arabia spent \$136 billion to increase workers' wages in the public sector, provide unemployment benefits, and distribute housing subsidies (Ross, 2011). Citizens are content with the benefits they receive from the government and as a result "citizen demands for reform remain relatively weak" (Freedom House: Saudi Arabia, 2012, 4) Saudi Arabia knows it has the capacity to continue acting with little regard to its citizens as "high oil prices have further boosted the regime's confidence that it can endure regional unrest without major political concessions" (Freedom House: Saudi Arabia, 2012, 4). However, if these oil prices began to decline, even though the country may not immediately begin to experience negative effects, it is still alleged that by the end of the current decade the government would have to start raising the country's debt level (Freedom House: Saudi Arabia, 2012, 4). Such an event would ensure that even if the Saudi Arabian regime was capable of sustaining its current methods of control and power for several years, the regime would eventually have to face

changes to their political way of life as a consequence of a fiscal crisis resultant from changes in oil revenues.

American energy independence and its possible consequences is a more pertinent question in today's society than ever before due to the increased feasibility of such an achievement. The dream of American energy independence has been desired and debated by the United States government since the Arab Oil Embargo of 1973 (Cambanis, 2013). The ensuing fiasco and sharp spike in gas prices during the course of the embargo drove the United States to an obvious desire to never be forced to deal with a situation similar to this embargo again in the future. Unfortunately, this dream has yet to be achieved. The dream has seemed relatively unrealistic up until the recent advancements in technology related to shale extractions combined with the discovery that billions more barrels of oil than previously thought realistically accessible are actually available for cultivation (National Intelligence Council, 2012).

The rest of the paper will consist of a detailed examination of the already existing literature related to natural resource wealth and the subsequent political and economic fortunes and stability of countries across the world. I will then move on to my own empirical data related time-series historical analysis performed with the aid of the data manager Stata to evaluate my stated hypotheses about the correlation of the oil dependence and regime stability as well as the significance of any discovered correlation. Finally I will interpret and draw conclusions on the basis of any discovered correlation or lack of correlation to determine the accuracy of my previously stated hypotheses.

Chapter 2

Literature Review

In order to gain background knowledge on the issue of the importance of oil and other natural resources in countries across the world, not solely in the Middle East, I have reviewed extensive literature on the idea of the resource curse. Broadly, in the world of political science literature the existence of a theory known as the “resource curse” is hotly debated. The resource curse as first proposed by Michael Ross, in 1999, through his piece “The Political Economy of the Resource Curse” refers to the idea of a correlation between countries rich with natural resources and an increased likelihood of autocratic regimes that experience slow economic growth (Ross, 1999). Scholars and researchers debate the strength of the link concerning the possession of natural resources by countries and a higher predisposition to authoritarian regimes and slower economic growth as compared to democratic countries (Ross, 1999). In this piece, he argues a line of thought that closely imitates the situation of the Saudi Arabian royal family. Ross argues that resource cursed countries of the Middle East depend on energy revenues for a large part of their economic success because of mostly undiversified economies and in turn this high level of economic success allows regimes a greater freedom in regards to the ruling of their citizens (Ross, 1999).

Other scholars such as Daniel Byman and Jerrold Green agree with the idea of the resource curse and extend this idea to the existence of the unusual levels of decades-long periods of stability throughout countries in the Middle East, most notably in Kuwait, Bahrain, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (Byman & Green, 1999). These two scholars

argue that such stability is a result of the autocratic nature of the countries as well as the independence and additional levels of control their oil revenues allow them in regards to their citizens (Byman & Green, 1999). The oil wealth of these Gulf governments is what allows the state to dominate the economy and in fact “in Kuwait and Saudi Arabia, perhaps 90 percent of citizens work for the government” (Byman & Green, 1999). This statistic is yet another reference to the centrality of the regime in the daily survival of its citizens. While these two scholars and Michael Ross have all posited viable evidence for the existence of the resource curse, other political scientists disagree with the validity of this causal relationship between natural resource reliance and authoritarian regimes.

Stephen Haber and Victor Menaldo in their work “Do Natural Resources Fuel Authoritarianism? A Reappraisal of the Resource Curse”, perform a country by country time series analysis of over 168 countries and find instead the possibility of a resource blessing as opposed to the previously assumed resource curse (2011). Through their country by country time series approach they extend the time period of their study as far back as 1800 in an attempt to examine countries before, during, and after their discovery of a variety of natural resources and subsequent resource booms (Haber & Menaldo, 2011). Haber and Menaldo’s results indicate that the oil and mineral reliance of a country does not promote dictatorship over the long run (Haber & Menaldo, 2011). In fact some of the countries examined in the study successfully transitioned to democracy or at the least, achieved increases in the measure of their country’s democracy level (Haber & Menaldo, 2011).

In addition to Michael Ross’ initial examination of the resource curse, he has written more recently about the resource curse specifically in relation to the Arab Spring. Ross notes that citizens of countries with small amounts of oil or none at all have more freedom than the citizens

of oil-rich countries (Ross, Foreign Affairs, 2000). This correlation between freedom and oil is likely a result of the increased capability to control the population and therefore effectiveness of oil-rich regimes in fending off attempts to unseat them. Ross believes that the government's control over oil revenues helps autocrats stay in power in three main ways. The first method is due to the fact that as evidenced earlier in the case of Saudi Arabia, citizens can be bought off with the provision of benefits with a lack of general taxation (Ross, 2011). Additionally once citizens are satisfied with the benefits they receive they are less likely to demand accountability from their government and as such government finances are kept secret and the public is mostly unaware of the how much of the country's wealth is being lost to left, corruption, and overall government incompetence (Ross, 2011). Lastly, oil wealth allows the leader to buy the loyalty of the armed forces in addition to lavishly funding them (Ross, 2011). Ross states that "by reducing its total oil consumption, the United States could help both reduce global oil prices and undermine petroleum-based dictators, even those who sell their oil to China and other autocracies", so perhaps the consequences of lowered oil revenues could be an increase in democratic regimes in the world rather than an increase in potentially harmful instability (Ross, 2011).

The resource curse refers to many different types of natural resources held by a country, however in an attempt to more specifically focus on the effects that the profusion of oil and its revenues can have on a country, I will be turning my attention to the idea of rentier states. Hazem Beblawi was the first scholar to talk about rentier states in his piece "The Rentier State in the Arab World" (1987). The rentier state theory is an attempt to explain state society relations in states that generate a large portion of their income from rents (Gray, 2011, 1). Rents are defined commonly as royalties or other payments for oil and gas with an emphasis on this income being

from external sources (Gray, 2011, 1; Beblawi, 1987, 384). A country that is classified as a rentier state features an economy where the wealth is concentrated in the hands of only a few in society and the rest of the society is merely involved with the distribution and consumption of this wealth (Beblawi, 1987, 385). Due to these rents, the state is free from the obligation of having to impose taxation and as such does not have to offer concessions to society as part of a democratic bargain (Gray, 2011, 1). This autonomy from society is a major contributor to the democracy deficit experienced throughout the Middle East, the income is not only independent of the citizens of the country, but additionally enables the regime to be able to buy the public's support instead of earn it (Gray, 201, 1). Rentier states are extremely similar to Ross' arguments about the relationship between oil and stable autocratic regimes, but this term provides a specific name for this correlation.

The phenomenon of rentier states is related to the newer idea of "petropolitics" which refers to the freedom states are able to attain due to their abundance of oil. Petropolitics is the idea of a state manipulating their sale of petroleum in order to achieve international goals (Merriam-Webster). Petropolitics mirrors the theory that high oil prices help sustains autocratic regimes and further posits that those high oil prices are additionally undermining democracy. Thomas Friedman states his "First Law of Petropolitics" as the idea that the price of oil and the pace of freedom always move in opposite directions in oil-rich states (Friedman, 2006). He, like Ross, notes trends in which higher average global crude oil prices lead to harsher restrictions on free speech, free press, free and fair elections, independent judiciaries, rule of law, and independent political parties (Friedman, 2006). Such petrolist states, petrolist defined as states dependent on oil production for the bulk of their exports or gross domestic production combined with weak or outright authoritarian governments and institutions, reinforce their power through a

variety of methods (Friedman, 2006). These power enforcing procedures as noted by Friedman are similar to those previously mentioned by Ross. Friedman agrees with the idea that lack of taxation provides petrolist states with a wide range of freedom (Friedman, 2006). He also adds that the wealth the government possesses allows them to prevent the formation of social groups and dampen the pressure for democratization (Friedman, 2006).

As of now in the literature revolving oil and its function as a stabilizing force in Middle Eastern governments there exists a lot of written work in relation to natural resources and their connection with autocratic governments. However not many major pieces exist that serve as a statistical analysis of the relationship between oil revenues and regime length or an evaluation of the impact of low oil profits on regime change. My focus is primarily the political outcomes of changes in oil wealth. The analysis that follows is my attempt to fill in this gap with the hope of creating a prediction of how countries in the Middle East may possibly be affected if oil revenues continue to fall based on an analysis of historical data and events for previous instances of decreased revenues.

Chapter 3

Theory

My belief is that as the United States is able to produce oil at higher levels and rely increasingly on domestic production of natural resources then subsequently, oil exporting countries in the Middle East will receive decreased levels of profit. As these countries have previously used this money in widespread ways throughout their countries through the provision of a variety of subsidies as well as a complete replacement for domestic taxation, a change in the amount of revenue is likely to have an undeniable effect on that country's political and economic landscape. The study as of this point would appear to be an attempt at the creation of a predictive statement to forecast future world events. As such forecasting is difficult and imprecise, I will instead be performing a time-series historical analysis to observe past levels of Middle East dependence on the United States' appetite for oil and contribution to profits in comparison with levels of stability of regimes throughout the Middle East during the course of the same historical time period. Oil revenues have fluctuated in the past and I want to observe such fluctuations in relation to the stability of the Middle Eastern regimes.

I have six main hypotheses to test based off of two different dependent variables and three main independent variables.

Hypotheses:

H₁: If oil rents as a percentage of the GDP increase, then the likelihood of regime change will decrease.

H₂: If the US oil purchase price decreases, then the likelihood of regime change will increase.

H₃: If the levels of US imports of oil decreases, then the likelihood of regime will increase.

These first three hypotheses deal with regime change as the dependent variable and measure of stability of the country. My first hypothesis is attempt to test the idea that as the oil rents as a percentage of the GDP increases, that regime receives more funds to sustain their methods of control. As their methods of control have been successful throughout the past, it is probable they will continue or increase their level of success thereby making regime change less likely to occur. My second hypothesis is related to the main idea of the first hypothesis, but relates more specifically to the United States' contribution to the revenues of the regimes in the Middle East. The reasoning behind this hypothesis is that as the United States' oil purchase price responds to changes in the global market, a lower price reflects the decreased world demand for oil. This independent variable also measures the precise impact the United States as the world's largest consumer of oil, may have on regime change. This hypothesis is also an allusion to the potential for American energy independence and the effects such an achievement would have on regimes since the oil purchase price is low which in turn creates lowered revenues for the suppliers. The third hypothesis is an additional attempt to measure the particular influence the United States has on regime stability. The number of barrels of oils imported by the United States on a country by country basis from each of the 16 countries included in my analysis is the

independent variable. The fluctuations in this number and any effects of lower numbers of imports by the United States and the resultant decrease in profits might have on regime change is the purpose of this hypothesis. This hypothesis also refers to the idea that in the future if energy independence were to be accomplished, the United States would be importing no barrels from the Middle East and as such a look at if the historical outcome of such years of decrease, helps provide an idea of what the possible outcome of continued decreases in imports and revenues from the United States would mean for the Middle East.

H₄: If oil rents as a percentage of the GDP increase, then the durability of the regime will increase.

H₅: If the US oil purchase price decreases, then the durability of the regime will decrease.

H₆: If the levels of US imports of oil decreases, then the durability of the regime will decrease.

These next three hypotheses utilize the regime's durability as the dependent variable and measure of stability in the country. Hypothesis four is the notion that as oil rents increase the length of the regime will also increase as the government has increased resources to finance the power maintaining functions that they are already performing while autocratically ruling their countries. This hypothesis correlates with my first hypothesis in that if the length of the regime increases, the probability of regime change should also decrease as a result of increases in oil rents as a percent of the country's GDP. Hypothesis five relates to the idea that a decreased US oil purchase price leads to a decrease in the revenues for Middle Eastern regimes and therefore should decrease the durability of the regime since the regime cannot provide the benefits the public is accustomed to receiving. If the government is not fulfilling the expectations of its

people, as seen in the case of Saudi Arabia, the citizens are more likely to voice their discontent with the regime and urge for a change in governance. Hypothesis six is similar to hypothesis five, but uses the total number of barrels of oil imported by the United States yearly on a country by country basis instead of the US oil purchase price to measure basically the same idea. As United States imports decline, so do the profits for Middle Eastern regimes rendering them unable to function at their historical levels of provision of goods and services to its people, once again providing the impetus for the public to call for effective change to the established way of life.

These hypotheses are extensions of the literature surrounding resources and rentier states and attempt to provide a method to quantitatively analyze the theories of the literature and the relationship between oil wealth and stability throughout the Middle East. The finding that my hypotheses are not supported by the data would not signal a failure of my project but would in fact pose the interesting counterpoint that although countries appear to rely on oil revenues for a variety of uses, stability in the country may actually be dependent on an assortment of aspects of the country.

Chapter 4

Analysis

Tests and Variables

Throughout my examination, my unit of analysis is country-year for these 16 countries: the United Arab Emirates, Azerbaijan, Bahrain, Georgia, Iran, Iraq, Syria, Egypt, Israel, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Yemen, and Turkey. These 16 countries come from the CIA World Factbook's definition of countries that compose the Middle East and additionally are world oil-exporters and specifically export to the United States. I also included Egypt to my set even though it is not included in the CIA World Factbook's definition of the Middle East. The addition of Egypt to this dataset is an attempt to include a look at the events of the Arab Spring in this analysis. I am analyzing these 16 countries over the time period from 1970-2013. I chose 1970 as the starting year for this analysis, as 1970 is when the global oil market began to rapidly expand, worldwide oil demand grew, and new states joined the oil production industry, such as many of those in the Middle East (Cambanis, 2013). A reinforcing factor on the idea of my choice of time period is the statement by Michael Ross in his work "Will Oil Drown the Arab Spring? Democracy and the Resource Curse" that up until the beginning of the 1970s, oil-producing countries were no less likely to be democratic than any other state, however this phenomenon began to change in the 1970s (2011).

My dependent variable is the idea of the degree of political stability, a term that is unclear and requires a definition. In my analysis, I will be using both the measures of regime change and

durability as indicators of political stability. I created the variable of regime change from the Polity IV database which covers all independent states in the global system from 1800-2013 and codes the authority characteristics of these states (Marshall, Gurr & Jaggers, Polity IV Dataset, 2014). The coding in Polity for regime type ranges from -10, for a hereditary monarchy, to 10, for a consolidated democracy (Marshall, Gurr & Jaggers, Polity IV Database, 2014). In addition to this scale there are also three indicator values, -66, -77, -88 that signify cases of regime interruption, in that there is no established regime during this particular year (Marshall, Gurr & Jaggers, Polity IV Dataset and Users' Manual, 2014).

I then created my regime change variable as a dichotomous, dummy variable with 0 indicating no regime change in that specified year or 1 indicating regime change in that year as a result of a value of -66,-77, or -88 coded in that year for that country. A correlation between regime change and low revenues would signify that in years of lowered revenues countries are more likely to experience a change in regime. The other dependent variable I employed is that of the durability of the regime, or the number of years since the most recent regime change. Durability is defined by the Polity dataset as a 3-point change in the Polity score over a period of three years or less or the end of a transition period defined by a lack of stable political institutions within the specified country (Marshall, Gurr & Jaggers, Polity IV Dataset and Users' Manual, 2014). This measure will be used as indicator as to whether low oil revenues impact the length of regimes.

For my independent variable I am using the idea of dependence on oil revenues. In order to measure dependence I am using three different indicators. The first measure I will be utilizing is that of oil rents as a percentage of the country's total gross domestic product. Oil rents, as defined by the World Bank, are the difference between the value of crude oil production at

global prices and the total costs of the production (World Bank 2012). Oil rents as a percentage of the gross domestic product is an important measure for my independent variable because as this percentage increases, the country is more dependent on oil revenues as forming part of their total economy. A second measure is that of the US oil purchase price, the first purchase price of domestic crude oil measured in dollars per barrel for the specified year as provided by the Energy Information Administration (EIA: US Crude Oil First Purchase Price, 2015). I am employing purchase price as an indirect measure of demand, as the price of oil in the global market often mirrors the supply-demand scheme of economics, in that when demand is high, price is likely to also be high. On the opposite side of the spectrum when the price is low, demand is low forcing low revenues and lowered dependence upon the oil exporters. The final indicator of dependence that I will be utilizing is that of total levels of US imports of crude oil and petroleum products from each specified country by year as determined from statistics from the Energy Information Administration (EIA: U.S. Imports by Country of Origin: Total Crude Oil and Products, 2015). In years of lower levels of US imports, those affected countries have no choice but to accept lower revenues and dependence.

I performed a logit regression analysis to examine the relationship between regime change and oil rents as a percentage of GDP, oil imports in the United States, and the United States purchase price of oil. I performed this logit regression analysis, due to the fact that my variable for regime change is a dichotomous, dummy variable that either takes the value of 0 or 1. A logit regression is the most appropriate test to use when studying one nominal variable and a measurement variable (UCLA: Statistical Consulting Group). The choice of the best statistical measure to use is driven by the composition of the dependent variable. In my examination of the relationship between regime durability and my measures of oil dependence and revenues, I used

a negative binomial regression. I employed a negative binomial regression when using durability as the dependent variable because durability is a count variable that never reaches a value less than zero making a negative binomial regression test the most appropriate measure to employ in for this dependent variable (UCLA: Statistical Consulting Group).

In order to clarify the relationship between my independent and dependent variables I have also included control variables in my regression analysis. These control variables serve as a method to attempt to remove any factors that could be causing any discovered correlation that are outside the main variables being tested. The control variables included are the total population of the country, the gross domestic product per capita of the country, and the life expectancy from birth, all data as provided by the database created by the World Bank Worldwide Governance Development Indicators (WorldBank, 2012).

Results

Table 1: Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Oil Rents (% of GDP) (World Bank)	568	25.42	22.563	.0003	113.39
US Imports of Oil (EIA)	395	3740.1	5999.602	0	26858
US oil purchase price (EIA)	705	705	7059.143	2.89	95.99
GDP per capita (World Bank)	578	8157.64	12.478	211.39	42916.2
Polity	655	-6.53	2.10E+07	-88	10
Population (World Bank)	701	1.63E+07	.149	109342	8.21E+07
Regime Change (Polity IV)	654	.0229	20.461	0	1
Durable (Polity IV)	644	25.41	26.635	0	86
Life Expectancy (World Bank)	688	28.62	6.97	41.16	81.705

“Table 1: Descriptive Statistics” from the previous page, presents a univariate analysis of each variable included in my analysis. This analysis includes the variable name as well as the source the variable was gathered from, the number of total observations, the mean, the standard deviation, the minimum and the maximum value for each of the variables. This table provides a broad overview of the variables to be employed in the later more specific tests of relationship.

Table 2: Likelihood of Regime Change Based on Levels of Oil Dependence

Variable	Model 1 Regime Change	Model 2 Regime Change	Model 3 Regime Change
Oil Rents (% of GDP)	.047 (.014)***		
US Oil Purchase Price		.051 (.014)***	
US imports of oil			.0001 (.0001)
Population	3.13e-08 (2.14e-08)	-1.97e-08 (1.58e-08)	-5.57e-09 (1.63e-08)
GDPPC	-.0003 (.0001)	-.0006 (.0002)***	-.0005 (.0002)***
Life Expectancy	-.0801 (.061)	-.07 (.063)	-.075 (.071)
Constant	.222 (3.37)	2.25 (3.82)	3.93 (4.82)
N	518	554	339
Pseudo R ²	.296	.293	.248

*p≤.1; **p≤.05; ***p≤.01

All models presented in this table are logit regressions

My first three models as evidenced in “Table 2: Likelihood of Regime Change Based on Levels of Oil Dependence” illustrate a logit regression between regime change and each of the

main independent variables. These independent variables are oil rents as a percentage of GDP, the United States oil purchase price for a barrel of oil, and the amount of barrels of oil the United States imported from each country. In Model 1, oil rents are a significant positive predictor of regime change as evidenced by the coefficient, .047, which is significant at the highest level of .01. The Pseudo-R² of this model is .296 meaning 29.6% of the variations in the 518 observations that are included in this model are explained by the model. In Model 2, higher US purchase prices of barrels of oil is also a positive, significant predictor of regime change, as evidenced through the coefficient, .051, which is also significant at the highest level of significance, .01. In this model, the control variable of the gross domestic product per capita is a significant negative predictor of regime change at the highest significance level of .01. The Pseudo-R² is .293, meaning 29.3% of the variation in this model is explained by the model. In Model 3, the coefficient of the amount of US imports of oil, .0001, is not significantly related to regime change. In this model however, gross domestic product per capita is a significant negative predictor of regime change at the highest level of significance, .01. The Pseudo-R² of this model is .248 signifying that 24.8% of the variation in the 339 observations of Model 3 is explained by this model.

Table 3: Durability of Regime Based on Levels of Oil Dependence

Variables	Model 4 Durability	Model 5 Durability	Model 6 Durability
Oil Rents (% of GDP)	.009(.002)***		
US Oil Purchase Price		-.002 (.002)***	
US imports of oil			.000046 (7.41e-06)***
Population	-4.76e-09 (2.34e-09))*	-6.61e-09 (2.23e-09)	-1.15e-08 (2.53e-09)***
GDPPC	-.00004 (9.53e-06)***	-.000036 (.8.78e-06)***	-.00005 (.0077)***
Life Expectancy	.0503 (.0067)***	-.046 (.007)***	.047 (.0077)***
Constant	-.081 (.457)	.508 (.443)	.595 (5.24)
N	518	555	339
Pseudo R ²	.015	.011	.29

* $p \leq .1$; ** $p \leq .05$; *** $p \leq .01$

All models presented in this table are negative binomial regressions

My second set of models in Table 3, illustrate a negative binomial regression between the durability of a regime and each of the three main independent variables. In Model 4, oil rents as a percentage of GDP with a coefficient of .009, is a significant positive predictor of the durability of a regime at the highest significance level, .01. In this model, three of the control variables are significant in addition to the main independent variable. Each additional significant variable decreases the likelihood that the main variable will significant, so each added significant variable gives additional credibility to the significance of oil rents as related to regime durability. Population in this model is a significant negative predictor of durability at the .1 level of

significance. Gross domestic product per capita is also a negative predictor of durability and is significant at the highest level of .01. Life expectancy is significant positive predictor of durability also at the highest level of significance, .01. However, the Pseudo-R² is .015 meaning only 1.5% of the variation in the 518 observations is explained by this model. In Model 5, US oil purchase price with a coefficient of -.002, is a significant negative predictor of durability at the highest level of significance, .01. In this model both GDPPC and life expectancy are significant negative predictors of durability at the highest level of significance. The Pseudo-R² of this model is .011 meaning that only 1.1 % of the variation in the 555 observations of this model is explained by this model. In the final model, Model 6, US imports of oil is a positive predictor of regime durability with a coefficient of .000046, and is significant at the highest level of .01. Population and GDPPC are both significant negative predictors of durability in this model and are significant at the highest level. Life expectancy is a positive significant predictor of regime durability also at the highest level of significance. Every variable in Model 6 is significant giving further credibility to the significance of the main relationship between durability and US imports of oil. Also the Pseudo-R² of this model is .29 or 30% of the variation in the 339 observations are explained by this model.

The results are surprising in that they appear to show evidence of a connection between higher dependence on oil rents and an increased likelihood of regime change and longer regime durability. However at the same time the results present conflicting evidence that posits that a higher US purchase price of oil and a higher percentage of oil rents are predictors of a higher likelihood of regime change and to contribute to shorter lengths of regimes. This second finding is counterintuitive and does not support my hypotheses. I find four of my hypotheses: 1,2, 3 and

5 to not be supported by my findings. I do find hypotheses 4 and 6 to be supported by my discovered results.

Chapter 5

Conclusion

My results indicate that there is evidence of some degree of a relationship between higher oil wealth and regime stability within a country, but this support is not complete. This partial support implies that the relationship between oil dependence and political stability is complicated. The international oil market may in fact exhibit a non-linear relationship between oil wealth and the stabilizing effects of this wealth on Middle Eastern countries and therefore a relationship that is unable to be measured by the logit and negative binomial regressions employed in this analysis.

As mentioned previously, a higher percentage of oil rents appears to increase the likelihood of regime change as well as higher US oil purchase price predicting a higher probability of regime change. However these results stand alongside results that state that oil rents increase the durability of regimes along with higher amounts of the United States' imports of oil leading to longer regime lengths. Also a higher United States oil purchase price was found to decrease the durability of regimes. My results indicate both support for some of my hypotheses as well as the rejection of others of my hypotheses. More analysis and tests need to be performed as these findings are counterintuitive to the claims of the literature and the actions of the regimes in their use of their oil revenues.

The conflicting nature of my results may be due to a number of choices I made during the course of my analysis. My study is narrow and only focuses on the dependent variables of

regime change and regime durability as indicators of the political stability of a regime. Many other indicators of political stability could be employed to exhibit other aspects of the stability of the country. Other indicators could provide measures of political stability to a smaller extent than complete regime change, such as the number of organized protests held within a country. Along the same idea, there may be improved measures of oil dependence than the ones I included in my analysis that would better illustrate the relationship between oil dependence and political stability. Furthermore, more control variables could only serve to increase the validity of this analysis and to clarify the existence of a relationship between my independent and dependent variables. Additional control variables would increase the likelihood that there is not an unknown factor contributing to the relationship that is not included in my own analysis. I had wanted to include the unemployment rate as a control variable, as a high unemployment rate within a country customarily leads to increased political discontent. Unfortunately, the data available for this variable only dated back to 1990 which in turn dramatically reduced my pool of observations, a sacrifice I felt would ultimately harm the credibility of my analysis. An ideal control variable would be youth unemployment, in that not only is employment a non-negotiable issue but moreover the youth population is most often the sector of the population responsible for advocating for social and political changes. However the information available for this type of data faced the same restrictions as the regular unemployment rate of the country. These are just two examples of possible additional control variables, but any number of them exists and could possibly improve my analysis.

As I mentioned previously, the inclusion of the control variable of unemployment would have led to the shrinking of my number of observations nevertheless even without this variable I still faced this problem of the dropping out of observations from my dataset to a certain degree.

As evidenced by the difference in the number of my observations across my models from Tables 2 and 3, my independent variable of the number of United States' imports of oil had less data available, but not to an extreme degree and so was still included in the regressions. However this dropping of data still impacts the outcomes of my analysis and may influence the credibility of the findings.

In addition, I wish it were possible to include the recent global price decline in my study, but these events have obviously happened too recently for there to be accessible data to be able to be accurately measured and quantified. The price decline however has been dramatic and the effects would be interesting to examine. When possible in the future, this data should be included in an analysis and may possibly shed additional light on the correlation between oil wealth and political stability.

This historical time series analysis adds to the existing literature on resources' effect on political and economic wealth, in that my study focuses specifically on political stability while most literature examines economic wealth. My study also looks at two concrete independent variables as measures of instability in relation to oil wealth. Most literature studies this relationship in broader terms than those defined in my own study.

Even if the United States does not achieve complete energy independence in the future, one day the world will inevitably deplete its oil reserves meaning that the Middle East will at some point have to come to terms with the effects of decreased to non-existent oil revenues. Statistics estimate that the world has somewhere around 50 years left of oil reserves at the current production rates (McDonald, 2012). This number signifies that a change is coming, maybe not exactly in the next 50 years, but that change is imminent in the not too distant future, begging the question what will happen next in the world order. I began my analysis believing

that decreased oil revenues would lead to increased political instability in countries of the Middle East, but after evaluating the literature, this outcome is not the only possibility. As evidenced through the literature, regimes may begin to democratize rather than be thrown into chaos. This outcome would be beneficial for the citizens of these regimes in many areas such as increased political advocacy and participation. My results do not paint a clear picture of a likely future for Middle Eastern regimes as some evidence exists that supports an increased probability of regime change and instability while other evidence suggests the opposite. Based off of this evidence, the United States should obviously continue producing oil at increased rates, but all the while staying aware of the effects such increases may have on the oil-exporters of the Middle East. The world as whole needs to begin preparing for a future without oil and the assortment of implications in every area of life such a future holds.

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