The Myth of the Resource Curse:
A Case Study of Algeria

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Abstract
This paper compares Algeria to Norway in the context of the resource curse theory. This paper uses Algeria as a case study where the natural resource curse is contrasted with the argument that the problem is to be found in weak or ill-designed institutions: namely, that the problem of underdeveloped countries with valuable resources is an institutional one. An alternative explanation for the presumed ills of oil-rich nations examines the role of weak or ill-designed institutions. We find that from 1970 through 2010, Algeria's short-, medium-, and long-term growth rates are not affected by the presence of natural resource rents in an economically significant way. We argue that the role of institutions advances a more consistent explanation for the much-discussed and analyzed alleged negative impact of natural resources on the economy, and offers a way out of economic underperformance in terms of policy implications.

I. Introduction
Endowed with natural resources, Algeria should have done well in the fifty-plus years since it gained independence from France in 1962. But it has yet to make measurable progress on both the economic and political fronts. The country has stumbled from one turning point to another, all marked by the direct or indirect influence of the military. There is no political class in the true sense of the word, despite the multitude of parties that proliferated after the October 1988 riots. On the economic front, Algeria has relied on the oil and gas sector and has failed to diversify its economy and to create much-needed jobs for the millions of disaffected youth.

In exploring the oil and democracy theme, this paper compares Algeria to Norway in the context of the resource curse theory. An

extensive literature on this subject has concluded that countries rich in natural resources exhibit low rates of economic growth (De Mesquita and Smith 2011; Karl 1997; Ross 2012; Sachs and Warner 1995). An alternative explanation for the presumed ills of oil-rich nations examines the role of weak or ill-designed institutions. Similar to Ploeg (2011), we argue that the role of institutions advances a more consistent explanation for the much-discussed and analyzed alleged negative impact of natural resources on a country's economy, and offers a way out of economic underperformance in terms of policy implications. Acemoglu and Robinson (2012) examine the role that institutions play in the fall or rise of nations. Contrary to Sachs (2003), they assert that institutions explain many failures of nations. Data on institutions and other indices for Algeria further support the claim that oil does not lead to a resource curse and that institutions play a central role.

Section 2 discusses the dynamics of the natural resource curse. Section 3 offers a literature review of this economic problem. Section 4 discusses Algeria and its institutional framework. Section 5 presents an econometric model that supports the argument that the presence of natural resources is not the main source of a country's economic underperformance. Section 6 discusses policy implications, and section 7 concludes.[1]

II. The Natural Resource Curse
Frankel (2010) explores the natural resource curse and outlines five channels through which it could impact economies: (1) volatility of commodity price—in our case, oil prices; (2) crowding out of manufacturing (data presented in this paper stress the importance of the rule of law and enforcement of property rights if countries are to avoid the oil curse); (3) institutions, which are central to our main argument but appear to be one of many arguments in Frankel's approach; (4) anarchy; and (5) the Dutch disease, which impacts the country's exchange rate and negatively impacts the economy. However, none of these factors led to the same result for our benchmark country. Norway faced the same volatility of oil prices as the rest of the oil producers but avoided negative impacts on its economy and started a sovereign wealth fund that is the envy of other oil-producing nations. Because commodities trade

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[1] The first draft of this paper was originally presented at the Seventh Annual ASMEA (Association for the Study of the Middle East and Africa) conference in 2014 in Washington, DC.

internationally and are part of a country's exports, price volatility can lead to central bank reserves volatility. The result can be difficulties in paying external debt and speculative attacks on the domestic currency if the exchange rate is expected to depreciate in the short run or if there is exchange rate volatility, in the case of a floating exchange rate regime.

The sectors that rely on the natural resource can pay higher average wages than other sectors, crowding out high human capital labor from other sectors (such as manufacturing) and slowing those sectors' productivity growth. In addition, the government may impose regulations that slow the diversification of the economy, increasing the dependence on the natural resource beyond the case of an unregulated market. The crowding out of manufacturing did not occur in Norway, as other industries managed to coexist with the oil sector. Frankel (2010) points to autocratic or oligarchic institutions as a possible factor in explaining the loss of economic growth and development.

The argument that the presence of high-value resources leads to weak institutions or even anarchy weakens when considering whether the resources were discovered *before* or *after* the country's institutional framework was set up. In Norway, oil was discovered *after* democratic institutions were in place, but in Algeria (as in other countries), oil was discovered *before* a solid institutional framework was developed. This means that in Algeria, political institutions evolved as an extractive framework of oil resources to the benefit of the ruling class. Frankel (2010) also notes that natural resources could affect economic performance through civil wars or, as in the case of Algeria, civil strife. The *Economist* (2014) presents data on the civil wars and internal conflicts in the Middle East (1975–2014). Algeria has the second-highest number of deaths with 200,000, behind Sudan (because of the Darfur genocides). Civil strife was not the result of oil resource rent capture or even "archaic institutions" per se, but rather the cancellation of elections in 1991 when the Islamic Salvation Front was clearly ahead in the results and poised to win by a large majority. The military chose to abort the elections because it did not like the possible outcome and feared the consequences of Islamic rule. The civil strife was the result of deliberate actions by one group and was not due to other factors. In effect, the Algerian military and its actions were not directly linked to oil.

Finally, Humphreys, Sachs, and Stiglitz (2007) point to the increased spending on defense by oil economies. Data support their

claim both for Algeria specifically and for the Middle East and North Africa (MENA) in general. Since 1998, Algeria has spent more than the United States has on defense as a percentage of its GDP. Other than the period 1988–1993, Algeria has also spent more than Norway on defense as a percentage of its GDP. The increases were particularly noteworthy in the 1990s due to the "bloody decade" that Algeria went through following the cancellation of elections on December 26, 1991 (figure 1).

Figure 1. Defense Spending as a Percentage of GDP for Algeria, Norway, and the United States, 1988–2014
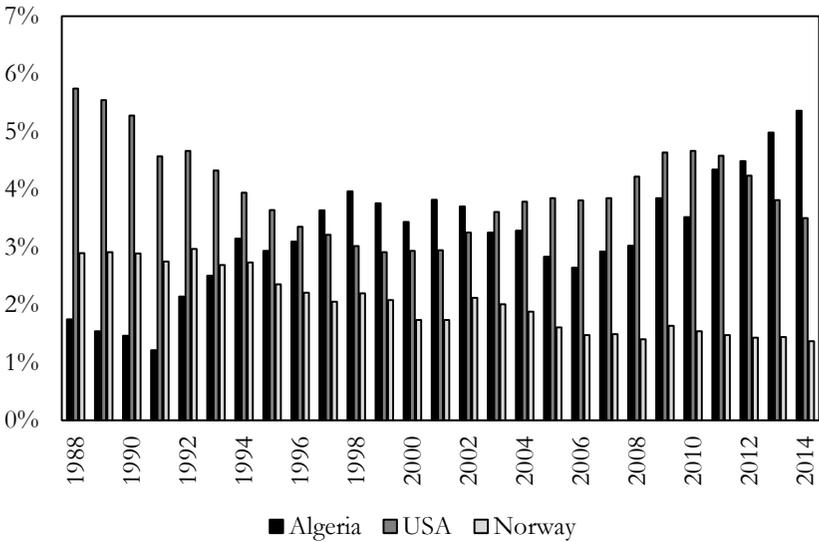
Source: Stockholm International Peace Research, SIPRI Military Expenditure Database.

Finally, consider the case of the Dutch disease, named after the loss of international competitiveness in the Netherlands after oil discovery in 1959. The export of natural resources, if large enough, can produce an appreciation of the domestic currency that harms the international competitiveness of other sectors (manufacturing, agriculture, etc.) While the natural resource sector thrives, the rest of the economy falters. The government may resort to exchange rate controls and bear the risk of speculative attacks. If the reserves become too volatile, it may also try to artificially create jobs or stimulate some sectors of the economy. In countries with weak institutions, such decisions invite corruption, rent-seeking, and government inefficiency in regulating the economy.

III. Literature Review

Sachs and Warner (1995, fig. 1) note that economies with little natural resource endowment have historically done better than those with an abundance of resource wealth. This observation remains true today in the MENA region as well where nonoil economies outperform richer oil economies.

If oil were universally to blame for the lack of economic growth and development, it would be hard to explain the progress and economic growth of countries such as Norway, which is also an oil economy. Still, because countries like Norway did not fall victim to the natural resource curse, it is hard to argue that oil is the problem. Contrary to Sachs and Warner (1995), Alexeev and Conrad (2009) assert that oil, in fact, contributes to development.

Karl (1997) concurs and argues that there is not a satisfactory economic explanation for oil's alleged harm to resource-rich countries. In Karl's argument, because institutions and development affect each other, each country's economic context must be considered. Most of the countries studied, Karl points out, show a positive correlation between the presence of oil and lack of democratic government, especially in the MENA region. However, oil seems to have facilitated democratization in Venezuela. In other words, a more comprehensive sample of oil-producing countries makes the correlation decrease.

Karl's (2007) contention that oil may impede "the appearance of democracy" does not tell the whole story. In what can be interpreted as a rent-seeking story, the rulers of oil-rich countries can use this revenue source to buy political favors and endorsement from the opposition, spend on defending the regime, fund a security apparatus to keep population and dissenters in check, and so on. Also, Karl (2007, p. 21) argues that since oil economies fund themselves mostly from oil rents as opposed to taxes, they become detached from the citizens and the citizens, in turn, are less likely to demand accountability. In essence, the vital link between taxation and representation is broken. This outcome results from weak or ill-designed institutions rather than from oil itself.

More in line with the institutional thesis of the economic underperformance of oil economies, Acemoglu and Robinson (2012, p. 372) state that nations "fail today because their extractive economic *institutions do not create the incentives* needed for people to save, invest and innovate" (emphasis added). Norway and Algeria, in this case, diverged because of their institutional setup and the presence of

what these authors call "extractive economic and political institutions." The former refers to the absence of due process and rule of law as well as barriers in the economic sphere that would improve living standards for the average citizen. Acemoglu and Robinson's extractive political institutions are a good description of the political space in MENA, where it is easy to find rulers that govern for decades and monopolize power in a small circle of people. However, nations such as Norway have what these authors refer to as "inclusive institutions" and produce a far different result. Inclusive institutions allow and encourage participation by a large population. They include secure property rights and an unbiased system of law. Jones Luong and Weinthal (2010, p. 2) reach a similar conclusion, arguing that different explanations of the natural resource curse implicitly recognize the problematic presence of weak institutions.

Ross (2012), who originally supported Sachs and Warner's (1995) argument, now claims that the data do not support the oil curse argument. He argues that hydrocarbon resources help the economies of countries with natural resources through the provision of public goods such as education and health care. The data, unfortunately, do not support such a claim.

Figure 2. GDP per Capita (Constant 2005 USD), Algeria, Singapore, and Norway, 1960–2014
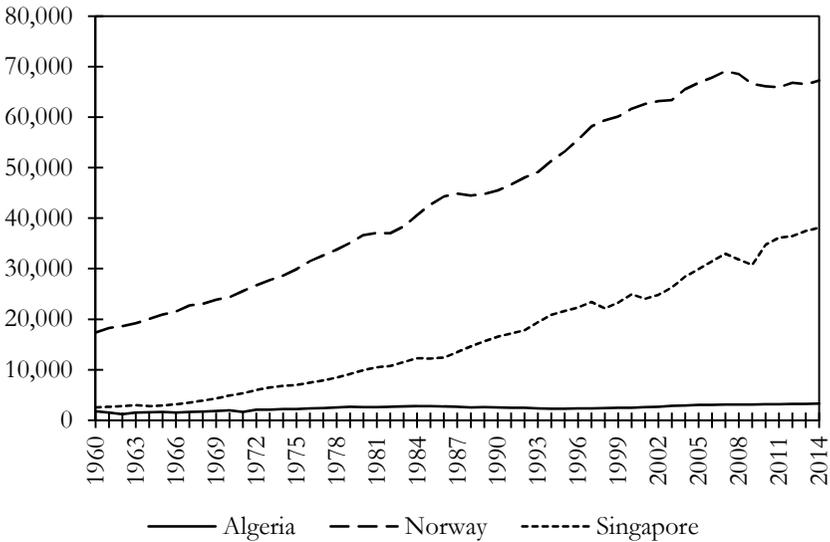
Source: The World Bank World Development Indicators.

While it is true that Algeria has spent a considerable amount on education and health, the results have been poor. The high unemployment rates in Algeria and the rest of MENA result from poor education systems that fail to deliver well-trained graduates for the job market. More importantly, nonoil economies provide public goods as well and do a much better job thanks to their inclusive economic and political institutions.

The underperformance of Algeria's economy relative to Singapore's can be seen in the evolution of their GDP per capita (PPP, in 2005 USD). Figure 2 shows (1) an economically underperforming country with oil (Algeria), (2) a wealthy country with oil (Norway), and (3) a wealthy country without oil (Singapore). Oil can drive wealth, but it is not the only driver and it does not have to be a curse.

IV. The Institutional Environment in Algeria

Algeria was a French colony from 1830 to 1962. After gaining independence, it followed a socialist model of economic development, where the state controlled most industries. One example is the agricultural sector. Before independence, the agricultural sector did well, but it suffered after 1962, when the authorities implemented agrarian reforms that nationalized agricultural land and distributed it to landless farmers. Output collapsed and the policy failed. Years after, the government reversed its decision, but by then, the damage was done. The country became dependent on food imports. The same scenario played out in other sectors, such as industry. In light of the softening of the world oil markets, the authorities are struggling to disentangle the government from the vast array of state-owned companies, but the pressure from labor unions is making it difficult.[2]

The experience of Algeria mirrors that of other oil economies in the Middle East and North Africa. Oil displaced agriculture and other sectors that could have made the country more competitive after the oil era. However, Algeria did not technically suffer from the Dutch disease since its exchange rate was heavily regulated and remains controlled to this day.[3] Figure 2 shows the impact of the presence of

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[2] Algeria's search for other sources of revenue is similar to what Saudi Arabia is going through at the moment by coming up with reforms to wean itself from oil in light of the softening of oil markets. See Stancati and Al Omran (2016).

[3] There is a black market premium for hard currency, mainly the euro and the US dollar, and importers face difficulties accessing funds.

oil when we examine the progress of an oil economy such as Norway and a nonoil economy such as Singapore.

The data on institutional factors support Acemoglu and Robinson's (2012) work regarding the importance of inclusive political and economic institutions and their role in democracies. A way to capture a proxy for an institutional framework with virtuous incentives (high scores) and countries with institutions that incentivize rent-seeking and wealth extraction from the ruling class (low scores) is the Polity IV index from the Center for Systemic Peace. The index ranges from –10 to 10. Those countries with a score from –10 to –6 are autocracies; those countries with a score from –5 to 5 are anocracies, and those countries with a score from 6 to 10 are democracies. For 2014, while Algeria has a score of 2, Norway had a score of 10. Algeria does not present the worst possible scenario, but the difference from Norway's institutional framework is significant.

Showing similar results is the voice and accountability subindex of the World Bank's *World Governance Indicators*, which "reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media." For 2013, Algeria has a score of –0.89 while Norway scores 1.76: another significant difference.

Just as the political institutions are important, so are the economic institutions, especially with respect to freedom of regulations and controls. The Fraser Institute's Economic Freedom of the World index ranges from 0 (least free) to 10 (most free.) In the 2015 report, Norway ranks 27th out of 157 countries with a score of 7.51. Algeria ranks 151st with a score of 5.20. While Norway ranks among the top economically free countries in the world, Algeria is in the bottom ten. With similarly poor results, the World Economic Forum's *Global Competitiveness Report 2014–15* ranks Algeria 100th out of 144 countries on the country's ability to compete in the world economy. According to this report, the macroeconomic environment is particularly problematic.

V. Econometric Model

The above discussion maintains that institutions play a fundamental role in avoiding the resource curse. In this last section, we offer a set of econometric models that estimate the economic impact of oil resources on the Algerian economy, controlling for the institutional

framework (and other variables). By adding this control, if the coefficient of the natural resource variable is either statistically or economically insignificant, then the problem *is not* the presence of natural resources. We develop a model similar to those of Akacem and Geng (2015) and Sachs and Warner (1995). The base model is as follows:

$$gY(T)_t = \beta_0 + \beta_1 \cdot t + \beta_2 \cdot TNRR_t + \beta_3 \cdot lY_t + \beta_4 \cdot Trade + \beta_5 \cdot A_t + \beta_6 \cdot gGDPW_t + \mu_t$$

where $gY(T)_t$ is the yearly growth rate of GDP for T forward-looking years. Unlike Sachs and Warner, we model for five-, ten-, and fifteen-year future growth rates. With this setting, we capture short-, medium-, and long-term effects of natural resource rents. The second term captures the time trend t and controls for GDP's trend. *TNRR*, our variable of interest, is total natural resource rents as a percent of GDP. To control for international trade, we add exports plus imports over GDP (trade variable.) The log GDP (l*Y*) at the current period captures level effects and the possibility of higher growth rates in the future if GDP is low today. To account for the institutional framework, we use an *autocracy* [authoritarian regime] variable (*A*) from the Polity IV report. Finally, $gGDPW_t$ is the growth rate of the world GDP and is used to control for international shocks. The *A* index ranges from –10 (full autocracy) to 10 (full democracy).[4]

We use yearly data from 1970 through 2010. We present the regression results in the following way. Table 1 shows four regressions that capture the impact of *TNRR* on the growth rate of the next five years (short run). Tables 2 and 3 show the same for ten years (medium run) and fifteen years (long run), respectively. We vary the regression model in two ways. First, and also different from the above-mentioned studies, even if we are working with growth rates, we add an *AR*(1) component to capture potential autoregressive behavior, which is statistically significant. Second, since the trade variable is highly correlated with *TNRR*, we drop trade to avoid potential multicollinearity issues with our variable of interest (see the appendix for the correlation matrix).[5]

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[4] Our sources are the World Development Indicators database for the economic variables and the Polity IV Annual Time Series.

[5] In terms of goodness of fit, we add three information criteria calculations: (1) the Schwartz criterion, (2) the Akaike criterion, and (3) Hannan-Quinn. The more negative this value, the more to the left on the real number line, and the better the fit of the model to the observed data.

To the extent that *TNRR* is statistically different than zero, its economic significance is negligible. The statistical significance of *TNRR* is to be expected because this variable has a large participation in GDP. However, a shock to *TNRR* has little effect on future growth rates. In addition, the short-run and mid-run effects have the opposite sign to the one that would be expected according to the resource curse.

Table 1. Regression Models for the Next Five Years' Growth Rates, 1970–2005

	Model 1	*Model 2*	*Model 3*	*Model 4*
Constant	4.5795*** (0.3657)	3.8046*** (0.4309)	4.7763*** (0.3606)	3.7930*** (0.4260)
Time	0.0054*** (0.0006)	0.0043*** (0.0006)	0.0052*** (0.0006)	0.0043*** (0.0006)
AR(1)		0.2864*** (0.0923)		0.3087*** (0.0845)
TNRR	0.0007** (0.0003)	0.0006** (0.0003)	0.0011*** (0.0015)	0.0007*** (0.0002)
Trade	0.0005* (0.0003)	0.0002 (0.0003)		
Log(GDP)	−0.1816*** (0.0144)	−0.1502*** (0.0170)	−0.1883*** (0.0144)	−0.1494*** (0.0169)
A	0.0034*** (0.0010)	0.0023** (0.0009)	0.0028*** (0.0010)	0.0020** (0.0008)
gGDPW	0.0011 (0.0010)	0.0004 (0.0009)	0.0008 (0.0011)	0.0002 (0.0009)
Schwartz criterion	−228.5584	−230.8514	−228.9775	−233.8825
Akaike criterion	−239.6431	−243.2941	−237.9550	−244.7699
Hannan-Quinn	−235.7742	−238.9989	−234.6388	−241.0116
Observations (T)	36	35	36	35

*** significant at 1 percent; ** significant at 5 percent, * significant at 10 percent.

Table 2. Regression Models for the Next Ten Years' Growth Rates, 1970–2000

	Model 1	*Model 2*	*Model 3*	*Model 4*
Constant	3.6725*** (0.1508)	2.7684*** (0.2116)	3.8316*** (0.1783)	2.6403*** (0.2163)
Time	0.0042*** (0.0002)	0.0032*** (0.0003)	0.00407*** (0.0003)	0.0029*** (0.0002)
AR(1)		0.3088*** (0.0604)		0.3700*** (0.0563)
TNRR	3.64e–5 (0.0001)	5.59e–5 (8.73e–5)	0.0004*** (8.56e–5)	0.0002*** (6.23e–5)
Trade	0.0004*** (0.0001)	0.0002** (8.83e–5)		
Log(GDP)	–0.1444*** (0.0060)	–0.1086*** (0.0083)	–0.1498*** (0.0071)	–0.1033*** (0.0085)
A	0.0006 (0.0004)	0.0005* (0.0003)	0.0002 (0.0005)	0.0004 (0.0003)
gGDPW	0.0005 (0.0004)	–0.0002 (0.0003)	0.0002 (0.0006)	–0.0004 (0.0034)
Schwartz criterion	–252.4237	–263.8871	–241.6375	–261.9409
Akaike criterion	–262.4616	–275.0966	–250.2414	–271.7492
Hannan-Quinn	–259.1895	–271.5106	–247.4367	–268.6115
Observations (T)	*31*	*30*	*31*	*30*

*** significant at 1 percent; ** significant at 5 percent, * significant at 10 percent.

The lack of statistical and economic significance of trade and world GDP growth suggests that Algeria is not well integrated with the rest of the world. Finally, autocracy has a negative sign in the long-term regression, which we do not expect to be of much concern for three reasons. First, the institutional framework defines the long-run *level* of wealth more than the growth rates. Second, the economic significance of these coefficients is also negligible (as is the case for table 2). Third, the autocracy variable is highly correlated with the time trend and, even though some collinearity effects on the

coefficients might be expected, we did not drop these variables from the regression models since both of them are important controls.

Table 3. Regression Models for the Next Fifteen Years' Growth Rates, 1970–1995

	Model 1	*Model 2*	*Model 3*	*Model 4*
Constant	2.4427*** (0.0952)	2.1318*** (0.1769)	2.4500*** (0.0911)	2.1293*** (0.1709)
Time	0.0026*** (0.0002)	0.0024*** (0.0002)	0.0026*** (0.0002)	0.0024*** (0.0002)
AR(1)		0.1358* (0.0705)		0.1379** (0.0665)
TNRR	−0.0002** (7.32e–5)	−0.0001** (6.70e–5)	−0.0002*** (4.60e–5)	−0.0001*** (4.26e–5)
Trade	2.26e–5 (6.07e–5)	6.88e–5 (5.61)		
Log(GDP)	−0.0945*** (0.0038)	−0.0825*** (0.0069)	−0.0947*** (0.0037)	−0.0824*** (0.0067)
A	−0.0007*** (0.0002)	−0.0005** (0.0002)	−0.0007*** (0.0002)	−0.0005** (0.0002)
gGDPW	−0.0002 (0.0003)	−0.0003 (0.0003)	−0.0002 (0.0003)	−0.0003 (0.0003)
Schwartz criterion	−242.2636	−236.6671	−245.3321	−239.8639
Akaike criterion	−251.0702	−246.4181	−252.8807	−248.3960
Hannan-Quinn	−248.5342	−243.7135	250.7070	-246.0296
Observations (T)	26	25	26	25

*** significant at 1 percent; ** significant at 5 percent, * significant at 10 percent.

VI. Policy Implications

What can Algeria do to unleash the forces of change for the good of the country? It is clear that oil did not cause or contribute to Algeria's economic and political ills. As argued in this paper, much can be learned from Norway, which is not harmed by the presence of oil. On the contrary, oil contributed to its economic growth. Norway has one of the largest sovereign wealth funds in the world and is considered an important reference for other resource-rich countries.

Algeria's fate was different. It discovered oil in 1956 in the midst of the war for independence from France, long before its independence in 1962. The socialist model of development that the country embarked on after independence concentrated all of the productive resources (including oil and gas) into the hands of the government. Contrary to what Norway did—allowing a national oil company to operate but compete with other oil majors firm—Algeria took full control of its oil resources.

Algeria could still benefit from the Norwegian approach with a disengagement of government from the oil sector and letting foreign companies operate with proper incentives and the resulting revenues remitted to the state. The proposed approach cannot be worse that the status quo. This change may gradually wean the government from inefficient oil operations and lead to more, not less, revenue in the future.

A more radical approach would be a full oil privatization model (Akacem 2015). This model implies bypassing the Algerian government when it comes to who receives the oil revenue. Using a combination of the Norwegian approach and full privatization would introduce checks on government excess. Oil wealth would be distributed to the general population on a per capita basis, preventing the government from wasting those funds. In return, the government could tax the citizens like any democracy does to fund its normal operations. This solution would repair the broken link between taxation and representation that Karl (2007) referred to.

Distributing oil wealth to citizens would starve the government of funds to use as it pleases without the consent of the governed. That is the purpose of such a strategy. In the West, the "starve the beast" theory does not work as it's meant to because governments like that of the United States simply borrow. Algeria, however, is not in any condition to do this. Its financial market is undeveloped and its bond market is practically nonexistent. Access to the world bond market and banks would be costly.

Thus, in the long run, the changes proposed would help usher in the rise of solid institutions, a civil society, and trust—nonexistent at present in Algeria—between the citizens and the authorities. Maintaining the status quo at all costs, as the 2014 elections proved, is bound to lead to adverse consequences in the future.

VII. Conclusions

The endowment of resources, natural or otherwise, adds to a country's wealth and growth potential. The fact that we can observe developed and developing countries with a significant income from natural resources suggests that there is some other variable driving the development of said countries. In this paper, we suggest that institutions matter more than natural resources. Without the right institutional framework, rents from natural resources are either squandered or inefficiently allocated. In addition, if natural resource rents go directly to the government, then the ruling party does not need a healthy economy to finance itself and can use the rents taken from an endowment that is given to them.

In this paper, we explored the conditions of one country, Algeria. We described its institutional framework and showed that natural resource rents have an economically insignificant impact on its short-, medium-, and long-run real growth rates. We show that institutional shocks carry a larger economic explanation for growth rates than a shock to natural resource rents does. Our study supports the idea that the problem with developing countries is not the presence of a profitable resource, but the presence of the wrong institutional framework.

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Appendix: Correlation Matrix

Time	TNRR	lGDP	Trade	Autocracy	gGDPW	
1	0.4804	0.9630	0.0388	–0.8942	–0.2650	*Time*
	1	0.4943	0.7833	–0.4706	–0.1558	*TNRR*
		1	0.0289	–0.8144	–0.2806	*lGDP*
			1	–0.1598	–0.1018	*Trade*
				1	0.1943	*Autocracy*
					1	*gGDPW*