What Explains the Variation in Economic Performance among Arab Countries? A Time-Series Analysis (1996-2006)

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Abstract

This paper attempts to apply theories regarding the effects of a number of exogenous variables, basically population size, heterogeneity, and area size, to explain the variation in economics performance. The setting chosen is the Arab countries of the Middle East, defined as the 22 member states of the Arab League. I conducted a cross-section time-series analysis to evaluate the effects of a number of these variables on GDP per capita. The results conform only in part to available theory, and thus draw attention to the importance of context in considering effects on economic performance. Population size did not have a statistically significant effect on GDP per capita, while area size had a positive effect, as expected, although this effect was only marginally significant. Fractionalization had an unexpected statistically significant positive coefficient. This should draw attention to the societal mechanisms for conflict resolution in determining the effect of this variable, as well as the effect of the regime type. Regime stability had a positive effect until a certain point when too much stability did not help economic performance. Trade in commercial services has a statistically significant positive coefficient, while the coefficient for total merchandise trade was not statistically significant. This further supports the argument that diversification, as well as becoming part of the service economy, enhances economic outcomes. Finally, British colonial history had a positive effect on the dependent variable.

Introduction

The Middle East and North Africa region is a turbulent place. The Arab countries within this region[14] share a number of common characteristics, including historical heritage, culture, and a geography that facilitated communication and trade since early history. At the same time, they share a number of vulnerabilities resulting from imposed borders, political tensions, and minority problems. The aim of this study is to identify the reasons behind the huge variation of economic performance among these countries given their shared heritage. I attempt to focus on exogenous variables and base my analysis on theoretical arguments regarding the effects of size, diversity, democracy, natural resources, and the legal and administrative framework. My purpose is to build a framework for understanding the factors contributing to economic success and failure, while at the same time paying attention to the uniqueness of the political and historical context in the Middle East.

Statement of the Problem

There is a great variation of economic performance among Arab countries, as indicated by several measures of development, including GDP, life expectancy, education, and health. Table 1 shows descriptive statistics of the variation among Arab countries regarding GDP and GDP per capita during the years between 1996 and 2006.

Table 1. Descriptive Statistics on GDP and GDP per Capita among Arab Countries*

	GDP	GDP per Capita
Minimum	202,000,000	757
Maximum	310,000,000,000	23416
25th Percentile	6,330,000,000	1856.5
75th Percentile	45,400,000,000	12079.5
99th Percentile	250,000,000,000	23126
Standard Deviation	48,200,000,000	6603.442

Source: World Development Indicators

[14] These countries are: Algeria, Bahrain, Comoros, Djibouti, Egypt, Eritrea, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Kingdom of Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen.

From the United Arab Emirates (UAE) and Qatar, which have been achieving astonishingly high growth rates by international standards, to Mauritania and Egypt, which score relatively low on development indices, one is induced to believe that some dynamic must explain these variations. This conviction is made especially strong given the fact that Arab countries, defined as member countries in the Arab League, share a number of common characteristics, such as having majority Muslim populations, a history of colonialism, and common cultural heritage. Given these similarities, the question is: What are the differences that account for the variation in economic performance?

Why the Arab Countries?

Arab countries share a lot of similarities. This means that it could be assumed that a number of confounding variables in explaining variation in growth, such as culture, history, climate, and so forth, are controlled for or at least their effects are reduced in a study of economic performance. I believe that empirically examining the causes for the variance of growth among countries of different historical and political experiences, as well as different values and social and economic problems, can hardly escape the omitted variable bias. Therefore, choosing countries as close to each other demographically, historically, and politically as Arab countries can help control for this expected bias. However, while this approach might create gains in terms of internal validity, it comes at the expense of external validity (Langbein and Felbinger 2006).

The literature discussing economic growth, or stagnation, in the Middle East usually approaches the region holistically, focusing on dynamics, values, or institutions which act as unifying factors that interpret the situation in the region at large. For example, Kuran (2004) focuses on the role of Islam in historical perspective to explain the failure of Middle Eastern countries to transform their institutions in a way that matches the institutional transformation through which Western Europe vastly enhanced its economic performance. Dasgupta, Keller, and Srinivasan (2002) use aggregate data and construct an index of four reformers among developing Middle East and North Africa (MENA) countries–Egypt, Jordan, Morocco, and Tunisia–to study the effects of economic reform on growth in the region. They conclude that growth performance in the countries they reviewed remain a half finished business. The pay-offs of economic reform and structural adjustment in terms of accelerated growth are seen to have been elusive, especially in the 1990s. Adams Jr. and Page (2003) also aggregate cross-country data and country case studies of Egypt, Jordan, Morocco,

Tunisia, and Iran to analyze trends in poverty, inequality, and economic growth. They conclude that, compared to other regions, the MENA region has a low incidence of poverty and income inequality. They attribute this to two factors: international migration, especially to the Persian Gulf and Europe, and public sector employment.

This approach that focuses on commonalities misses the diversity in the region and the methodological opportunity provided by variance in certain outcomes within a region whose countries share many similarities. As explained above, this setup controls for a number of important variables in explaining economic success and failure such as religion and culture. Focusing on common aspects blinds research to the fact that these overall similarities did not lead to homogeneous results in all fields. For example, while it could be argued that the cultural and historical heritage of the region explains the lack of democratic development in all its countries, these same factors cannot be used to explain economic performance given the huge variation in economic achievement among countries of the region. In other words, focusing on the shared components of the structural makeup of the region in order to interpret similarities is defensible. However, if certain aspects in the region vary widely, such as economic performance, it is difficult to explain this variance using shared values and institutions. After all, it is not possible to explain a variable using a constant. The research question in this paper represents an attempt to search for exogenous differences that might explain variation in economic growth.

Theoretical Framework

This paper is based on a theoretical framework that focuses on the effect of size on economic performance. Size is defined here to include population size, fractionalization (or the heterogeneity in the population), and geographic area. Most of the literature on the effect of size on economic performance, reviewed later, emphasizes population and fractionalization. However, I believe that geographic area matters too since a small area leads to constraining the resource base, especially if agriculture is a main economic activity. However, a small agricultural area, and the overall sense of vulnerability in small countries, is expected to induce the small country to direct more of its attention to trade and to diversifying its production (Armstrong, De Kervenoael, Li, and Lead 1998; Alesina and Wacziarg 1998; Armstrong and Read 2002). There is a high likelihood of a strong correlation between openness and growth in small countries in which the primary source of economic independence is foreign trade. This means that more

successful small states can be expected to have a higher degree of openness than poor performers (Easterly and Kraay 2000; Armstrong and Read 2002).

Regarding theories of size and growth, the literature seems to agree that there is a tradeoff between the benefits of a big market and tax base created by a large population, and higher administrative costs that result from administrative expansion and possible polarization and fractionalization accompanying large population size (Alesina and Spolaore 1993; 2003). Therefore, population is expected to have a diminishing positive effect on growth. However, it should be noted that a large population size, while arguably conducive to higher GDP, also could have a negative effect on other aspects of social growth, such as social policies and human development. This could explain why Saudi Arabia has a higher annual GDP compared to Kuwait, Bahrain, Qatar, and UAE, although the former four countries are categorized as "High Human Development" countries by the United Nations Human Development Indicators, while Saudi Arabia is categorized among "Medium Human Development" countries. However, these points are beyond the scope of this paper.

Literature Review

A sizable amount of literature attempts to account for variation in economic performance among countries. Most of this literature, however, provides this explanation on an international level. As I argued earlier, this kind of analysis hardly can escape the omitted variable bias. By focusing on Arab countries, I believe that such threat can be reduced.

I use a number of theoretical backgrounds in my discussion of the reasons for the high variation of economic performance among Arab countries. While my argument concentrates on the relationship between size and growth, I also include other trends in the literature, mainly the literature on the resource curse. Before discussing these trends and their contributions, I highlight the main schools of literature that I am going to discuss in the following points:
1. *Size and Growth.* The literature in this category focuses on population size as well as the degree of heterogeneity among the population. A trend within this literature also focuses on the effects of small area size.
2. *Democracy and Growth*
3. *Institutions*
4. *The Resource Curse*

Size and Growth

Population size can be beneficial for growth given the expansion of markets and tax revenues. However, this comes at the cost of administrative pressures and possible polarization in the society. Alesina and Spolaore (1997; 2003) argue that there is a tradeoff between the benefits of a large jurisdiction and the costs of large and heterogeneous population. That is, administrative and congestion costs may defeat the benefits of size. More important is the consideration that in larger countries there are more diverse preferences, cultures, and languages within the population. A country's heterogeneity increases as it becomes larger. Heterogeneity, especially as reflected in ethnic and linguistic fractionalization, often is correlated with poor growth rates (see for example Paolo 1995; Easterly 1997; Alesina et al. 2002). Alesina and Baqir (1999) conclude from their study of U.S. cities, metropolitan areas, and urban counties that spending on productive public goods–such as education, roads, sewers, and trash pickup–is inversely related to ethnic fragmentation.

Another trend in the literature, which I also find related to the issue of the homogeneity of the population, is that within the tradition of the logic of collective action (see Olson 1965). Countries with a relatively small and homogeneous population are better able to build effective institutions for long-term growth given the reduction in transactions costs. The main groups interacting in the public policy arena will be large according to Olson (1982). Large groups according to this logic are more concerned with the welfare of the society as a whole. On the other hand, small groups, such as labor unions or business cartels, are more concerned with redistribution even if this leads to less of the pie to be redistributed.

The final trend within this category is the literature that attempts to explain the challenges small countries face and their position relative to other countries regarding economic performance. Most of this literature defines size based on population. Armstrong, De Kervenoael, Li, and Lead (1998) conclude that economic smallness does not necessarily have an adverse impact on microstate performance. Easterly and Kraay (2000) examined evidence from small states, with population of one million or less, in order to evaluate the effect of small size. They found that small states do not have different per capita growth rates than other states. But they do have greater volatility in their annual growth rates. However, this volatility is a result of their openness to international trade–and the net benefits of openness on growth are positive. Alesina and Wacziarg (1998) also argue that small countries face stronger incentives to remain open to international trade

given the small size of their internal markets. Interestingly, Armstrong and Read (2002) found that vulnerability has a statistically significant positive relationship on the long-term economic performance of small states. They attribute this to the likelihood that there is a strong correlation between openness and growth since exports are the primary source of growth for small states. In order to examine these effects in the Arab world, I include measures of population size, area, and fractionalization in my model.

Democracy and Growth

As I argued earlier, one cannot explain a variable using a constant. Freedom House rated all Arab countries as "not free" in all its reports used in this study's time period, 1996-2006. Therefore, my assumption is that democracy is not expected to be a relevant factor in explaining variation of growth among Arab countries. On the other hand, the literature does not seem to agree on a causal relation between democracy and growth.

A number of studies found no systematic relationship between democracy and development (Przeworski 1993; Helliwell 1994; Baum and Lake 2003). When such a relationship was found, the direction of causation was not clear (Hero and Tan 2001). The most compelling conclusion is that which finds an indirect relationship between democracy and growth based on the ability of the former to aid political stability (Feng 1997), to promote health care, education, and investment (Baum and Lake 2003; Helliwell 1994), direct more expenditure toward public goods provision instead of rent seeking (Plümper and Martin 2003), and to help institutional development (Rodrik 2000). Przeworski et al. (2000) also found that democracy can aid growth through political stability and reducing population growth. It thus could be argued that development, broadly defined to cover all forms of human progress and the enjoyment of a better quality of life, is correlated with democracy (Shihata 1997; Nelson and Singh 1998).

According to one of the main arguments of this paper, one cannot explain variation using a constant. Therefore, democracy is not expected to account for variation of economic performance among Arab countries. Other variables, which have a wider variance, can better explain this situation, with significance for further studies attempting at understanding the role of democracy in explaining economic performance.

Institutions

There is agreement that institutions play a central role in economic growth and development (Evans and Rauch 1999; Rodrik and Subramanian 2004). Acemuglo, Johnson, and Robinson (2001) define institutions to mean the organization of society. They argue that institutions which insure property rights also are more likely to encourage investment. According to this perspective, what is crucial is whether the organization of society ensures that a broad section of the society has effective property rights.

A related trend in the literature stresses the role of state institutions in development through the concept of the developmental state model. This logic stresses the organizational dimension (Doner et al. 2005), the central role of the state as a unitary actor (Wong 2004), the importance of democracy in order to ensure that economic growth will improve the living conditions of the majority of the population (Edigheji 2005), bureaucratic capacity (Beeson 2003; Liao 2001), and the ability to coordinate between the various agencies responsible for the implementation of public policies (Chibber 2002). Therefore, this literature reiterates the belief that institutions matter, while focusing on the role of the state in mobilizing resources and directing investments.

The Resource Curse

The natural resource curse refers to the paradox that countries with abundant natural resources, or that enjoy large supply of a particular valuable resource, also tend to function poorly on a variety of economic, political, and social measures (Pegg 2005). A number of empirical studies showed a relationship between resource dependency and the spread of corruption (Vicente 2005; Papyrakis and Gerlagh 2005). There seems to be an agreement in the literature that the limitations on economic and political competition that result from a resource boom facilitates bureaucratic and political control and therefore can create patronage and patrimonial redistribution. For example, patronage in oil-rich countries is reinforced through populist policies, like welfare policies, which become affordable through oil revenues. Oil revenues therefore lead to reducing the government's incentive to establish "good" governance mechanisms, as well as strengthening the coercive capacity of the elite (Billon 2007; Alayli 2005). Ades and Di Tella (1999) found that countries that enjoy more rents tend to be more corrupt. The reason is that the bureaucrat in an agency that has high control rights also has higher incentives for extracting resources. The state's control over all the aspects of the dominant economic sector might

also lead to the same result. Montinola and Jackman (2002) attribute corruption in OPEC countries to egregious forms of state intervention. A resource boom can also increase the stakes of the elite in staying in power and thus hinder political development (Vicente 2005).

The economic literature uses two main approaches to explaining the negative effect of natural resources on a particular society. The first is the Dutch disease interpretation–the contraction of other tradable sectors as a result of the boom in the natural resource sector and the appreciation of the real exchange rate (Alayli 2005). The other approach focuses on the political economy dimension. This trend argues that the effect of the presence of a natural resource on the economy is determined by the presence or absence of political competition (Damania and Bulte 2005) and public pressure and control over politicians (Sala-i-Martin and Subramanian 2003). The main negative economic effect of a natural resource on the economy results from the fact that the extraction of natural resources requires huge initial investments. This allows corrupt politicians more leeway in extracting bribes and resources from firms. If these firms can switch between different technologies, they will prefer to use inefficient technologies with low sunk costs so that they can gain more flexibility in reacting to future demands from corrupt officials (Choi and Thum 2004). Other studies used rent-seeking models to understand the effect of a natural resource endowment on growth. Torvik (2003) concludes from his model that a greater amount of natural resources increases the number of entrepreneurs engaged in rent seeking and reduces the number of entrepreneurs running productive firms. Baland and Francois (2000), while also using a model of rent seeking, argue that whether the economy will be inclined either toward a predominance of rent seeking or a predominance of productive economic activity as a result of a natural resource endowment depends on the point at which the economy started. If the number of entrepreneurs is already large, a resource boom will increase entrepreneurship and thus further raise income. However, if a large proportion of individuals are engaged in rent seeking already, such increase inclines the economy toward more rent seeking and in turn may lead to a decline in aggregate income.

In summary, the political and economic literature on the effects of a natural resource on economic growth reveals the concern that the natural resource endowment will lead to corruption and directing resources away from productive uses. Dietz, Neumayer, and De Soya (2007) argue that the negative effects of resource abundance are reduced if corruption is reduced. Mehlum, Moene, and Torvik (2005) argue that the determinant of the resource curse is the presence of effective institutions. In other words, they

attribute the variation of economic performance among the resource-rich countries to the mechanisms through which resource rents are distributed via institutional arrangements. Transparency and accountability in the public sector are perceived as especially important in developing countries for natural resource management (Imi 2006), a point which has been specifically stressed in Transparency International's annual meeting in 2000 (Collis and Lee 2001).

In the Arab Middle East, democracy generally is lacking as previously explained. Therefore, the restraints on corruption and rent seeking that result from the transparency are lacking, as well as restraints on the exercise of power. This adds importance to the effect of economic institutions that were created through foreign intervention in certain sectors, especially in the oil sector, which was the main reason for the interference of Western countries especially in the Gulf region. Western colonialism in the region paid special attention to building the infrastructure necessary for extracting the oil wealth (Khalidi 2004).

Hypotheses

H1: Since small countries, especially as defined by area size, are inclined to engage in international trade and to diversify their economies, their chances of achieving economic growth are comparable to those of large countries as long as they are open to international trade. This hypothesis is presented in the following figure.

Figure 1. Hypothesis: Relationship between Vulnerability of Small Countries and Economic Growth
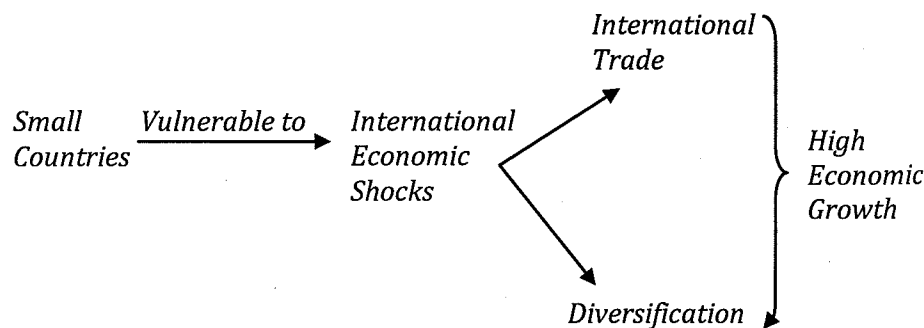
This sequence, however, is not inevitable. In other words, the argument here is that small countries will tend to engage in international trade to reduce

their vulnerability resulting from limited resources. This tendency can be supported by the presence of natural resources, mainly oil, which might help open the countries to international trade and provide resources that guarantee the independence of the regime and its interest in satisfying social needs in order to maintain control, as well as providing the financial resources and foreign expertise needed for institution building and economic diversification. The branches in the figure do not cover all the possible paths. However, the literature reviewed above supports the possibility of the path presented in this figure. Judgment on the plausibility of this hypothesis therefore is left to the regression analysis.

H2: An increase in population size is correlated with higher GDP per capita.

H3: While fractionalization is generally conducive to lower growth, its effect in the Arab world is not expected to be strong since the limited circles of decision making in stable autocracies are not expected to be affected by the varying demands of a heterogeneous population.

H4: Democracy is not expected to be correlated with GDP per capita.

H5: Trade is expected to lead to higher GDP per capita.

H6: Oil revenues lead to increasing the independence of small countries and therefore are expected to have a positive effect on growth. While it could be assumed that oil revenues reinforce patronage through such populist policies as welfare (Billon 2007; Alayli 2005), there is no reason to think that such policies negatively affect economic growth, although it might hinder political, as well as social, development (Ross 2001).

H7: Generally, the quality of institutions is expected to have a positive impact on growth.

Time Frame (1996-2006)

There are two reasons for using a time-series analysis in this study. The first is to increase the number of observations. The second reason is that studying economic performance over time allows for avoiding a focus on extreme cases. For example, economic performance in one year might be especially low in a particular country due to a natural disaster or the influence of fluctuations of prices in international markets. These shocks might be temporary and do not reflect the real performance of the country. The choice of the 1996-2006 time period was based on the availability of

data over a reasonable time period. In addition, the region did not witness any exceptional economic or political shocks within this period except for the invasion of Iraq in 2003.

Dataset and Methodology

I compiled data on Arab countries from 1996 to 2006. Arab countries are defined as the 22 member countries of the Arab League. However, Libya, the Palestinian territories, Qatar, and Iraq were dropped due to data limitations. Therefore, 18 countries are included in this study. I ran a cross-section time-series regression in order to ascertain the effects of a number of exogenous variables on GDP per capita in Arab countries. The model is adjusted for autocorrelation and heteroscedasticity. The main goal is to identify the effect of size, both population and area, on economic performance as measured by GDP per capita. The regression is run with fixed effects to account for differences among countries. Five country dummies were dropped due to collinearity. The country dummies are control variables for any special effects that the internal situation within each country has on the effect of the exogenous variables included in the model. The main interest is to discuss the effects of these exogenous variables. Dropping the five dummy variables is a result of the correlation with the theoretical variables. In other words, this can be taken to mean that the theoretical variables are driving out the dummies, which in turn could be considered an indicator of the explanatory strength of the model.

Variables and Measurement

Dependent Variable

Logarithm of GDP per Capita (purchasing power parity in constant 2000 international dollars). This variable is used as a measurement of economic performance. Data come from the World Development Indicators.

Independent Variables

1-Logarithm of Area: Area is measured in square kilometers. The data source is the CIA World Factbook.

2-Logarithm of Population: Data for this variable come from World Development Indicators.

3-Fractionalization: This variable is the summation of the ratings on ethnic, religious, and linguistic fractionalization from Alesina et al. (2002). While the data in this article are from sources generally in the early to mid-1990s, I assume that the social makeup could not have changed significantly between this period and the time frame of the study (1996-2006). I therefore used these figures throughout the time frame of my study. Each of the measures of ethnic, religious, and linguistic fractionalization ranges from zero to one, with zero meaning complete homogeneity. The measure of fractionalization therefore ranges from zero to three.

4-Democracy: This variable is the summation of each country's scores on political rights and civil liberties from Freedom House 2005 and 2007 reports.[15] The political rights and civil liberties categories contain numerical ratings between one and seven for each country or territory, with one representing the most free and seven the least free. The status designation of "free," "partly free," and "not free," which is determined by the combination of political rights and civil liberties ratings, indicates the general state of freedom in a country or territory. While all Arab countries are classified as "not free," their ratings vary between 7 and 14.

There is a need to control for this variation in democracy ratings among Arab countries. In addition, this study is replicating other efforts to explain variation of national economic performance. Since many of these studies were interested in the effect of democracy, or at least in controlling for it, I perceive that this control is justified.

5-Political Stability: This variable measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism. The scores range between a low of -2.5 to 2.5. But individual country ratings can exceed these boundaries when scores from individual data sources are particularly high or low. Figures come from Worldwide Governance Indicators.[16] I calculated the average of the previous and following years to fill the missing data in years 1997, 1999, and 2001. Including political stability aims at controlling for the time horizon of the regime regarding whether to engage

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[15] Data from 1997 to 2006: Puddington, Arch, Aili Piano, Camille Eiss, and Tyler Roylance. 2007. *Freedom in the World 2007: The Annual Survey of Political Rights & Civil Liberties.* New York and Washington, DC: Freedom House.
Data for 1996: Piano, Aili, and Arch Puddington, eds. 2005. *Freedom in the World: The Annual Survey of Political Rights & Civil Liberties.* New York and DC: Freedom House.
[16] Available at http://www.govindicators.org.

in extractive activities or planning for long-term growth (Islam and Weiner 2004). Since I suspect that the effect of political stability on per capita GDP might take on a quadratic function, I added five to these figures so that all of them become positive.

6-Total Merchandise Trade (sum of imports and exports): This variable is presented in millions of U.S. dollars at current prices. Figures come from the World Trade Organization.

7-Total Trade in Commercial Services (sum of imports and exports): This variable is presented in millions of U.S. dollars at current prices. Figures come from the World Trade Organization.

Including figures on trade aims at controlling for the effect of openness to international trade on growth. Distinguishing between merchandise trade and trade in commercial services intends to understand the effect of openness to the service economy. This openness also reflects diversification beyond merchandise trade. While political stability and trade could be considered endogenous variables, I believe that it is necessary to control for them given their importance in the literature reviewed above. The effect of trade is particularly important since it provides explanation for why small countries in terms of geographic area can achieve high growth rates. I used total figures of trade instead of trade as percentage of GDP to avoid the endogeneity problem. In addition, I care about measuring the effect of trade volume regardless of its relationship to GDP.

8-Arable: The size of arable land is measured in hectares. The data come from the World Development Indicators. While I do not include this variable in the regression equation, I included it in the dataset in order to give further explanations on the effects of geographic size. I found a high correlation between geographic area and size of the arable land (0.725). This means that countries that have small geographic area has an even higher incentive to diversify and engage in international trade since the size of arable land they have for agriculture would be relatively small.

9-Oil: Figures on the combined production of oil, natural gas, plant liquids, and other liquids are measured in thousands of barrels per day. One figure is present for each year from 1996 to 2006 based on the average for that year. Figures come from the Energy Information Administration.

10-OPEC (Organization of Petroleum Exporting Countries): This is a dummy variable for OPEC countries.

11-Colonial: This is a dummy variable for whether the country was a British colony or otherwise. Other than Saudi Arabia and Yemen, which have never been subject to colonial control, the rest of the Arab region fell under British, French, or Italian colonialism (Khalidi 2004). This variable could act as a proxy to highlight the effects of institutions on the regime's time horizon and its ability to use its resources (Olson 2003; Oechslin 2006). La Porta et al. (1998) concluded that a history of British colonialism is correlated with better legal protections of investors given the influence of British common law compared to French, German, and Scandinavian civil law. Joireman (2001) reached similar conclusions through her analysis of post-colonial African countries. British colonialism also is correlated with better education in sub-Saharan Africa (Grier 1999).

On the other hand, there is the argument that Middle Eastern countries had been achieving significant developments in the political, educational, and social domains before the advent of colonial control. Colonialism may have reversed this trend (see for example Khalidi 2004 and Al-Ali 2007). In addition, the strategy of indirect rule that the British followed in most of their colonies led to public disillusionment with the politicians and therefore facilitated military takeover in former British colonies. This led to certain political dynamics, which led to the rise of political Islam (Khalidi 2004). This complicated picture makes it difficult to expect a particular direction for the effect of British colonialism on subsequent economic performance.

Data on the history of Arab countries with colonialism are based on Khalidi (2004) and the CIA World Factbook.

Descriptive Statistics

Table 2 shows the variation of GDP per capita (purchasing power parity in constant 2000 international dollars) by population size. The dividing line between big and small countries is a population of 4.5 million (50th percentile). It is interesting to note that smaller countries (those with smaller populations) have a higher average GDP per capita compared to big countries.

Table 3 summarizes the results for GDP per capita by geographic size. The dividing line between small countries and big countries in terms of area is a size of 174,395 square meters (50th percentile). The results show that smaller countries also have a higher average GDP per capita.

Table 2. GDP per Capita by Population Size in Arab Countries from 1996 to 2006*

	Small States (Less than 4.5 million)	Large States (More than 4.5 million)	Total
Mean	8,791.989	4,683.495	6716.344
Standard Deviation	8,203.042	3,525.577	6,603.442
Minimum	986	757	757
Maximum	23,416	14,769	2,3416

* Numbers are approximated.   *Source: World Development Indicators*

Table 3. GDP per Capita by Size of Geographic Area in Arab Countries from 1996 to 2006

	Small States (Less than 174,395 m²)	Large States (More than 174,395 m²)	Total
Mean	8,447.406	4,985.281	6716.344
Standard Deviation	7,903.144	4,376.525	6,603.442
Minimum	947	757	757
Maximum	23,416	14,769	2,3416

Source: World Development Indicators

Table 4. Summary Statistics

	Mean	Standard Deviation	Min.	Max.
Population	14,100,000	17,300,000	496,567	75,400,000
Fractionalization	1.025	0.55	0.024	1.86
Area	608,690.8	838,269.6	665	2,505,810
Democracy	11.11	1.7	7	14
Political Stability	-0.43	0.83	-2.58	1.04
Merchandise Trade	25,030.34	42,403.63	57	275,790
Commercial Services Trade	5,245.943	6,113.757	46	25,966
Total Trade	29,979.15	45,282.06	117	300,094

Table 4 shows descriptive statistics of the main control variables. There is low variation on the democracy variable (a standard deviation of 1.7).

However, the variation in trade is especially notable (a standard deviation of more than $45 billion). There is also a large variation in population and area.

Regression Results

Table 5. Modeling the Effects on GDP per Capita among Arab Countries (1996-2006)†

Variables	Coefficients
Log Area	-0.063* (0.036)
Log Population	0.063 (.058)
Fractionalization	0.395*** (0.148)
Democracy	-0.0009 (0.0033)
Political Stability	0.169*** (0.053)
Political Stability-Squared	-0.0169*** (0.006)
Merchandise Trade	-0.00000043 (0.0000003)
Trade in Commercial Services	0.000012*** (0.0000017)
Oil	0.00006*** (0.00002)
OPEC	1.4302*** (0.125)
British Colonialism	0.393*** (0.122)
n	153
Log Likelihood	345.7301
Wald Chi2	60996.03

† Five country dummy variables were dropped due to collinearity.
* Statistically significant at the .1 level
** Statistically significant at the .05 level
*** Statistically significant at the .01 level
Standard errors in parentheses.

The results of the regression analysis are shown in table 5. As previously mentioned, five dummy variables were dropped due to correlation with the theoretical variables, which can be considered an indicator of the strength of the model. The effect of area is only marginally significant. Each 1% increase in area leads to a 6.3% decrease in GDP per capita, holding the effect of the other variables in the model constant. As previously explained, this could be due to the fact that small countries need to diversify their production and engage in international trade. Population does not have a statistically significant effect.

On the other hand, the effect of fractionalization is not as expected. Each 1-point increase in the measure of fractionalization leads to 39.5% increase in per capita GDP, holding the effects of other variables in the model constant. This result is significant at the .01 level. While unexpected, this result could be attributed to the following factors:

- All the countries in the model are "not free" according to Freedom House throughout the time period of the study. It could be argued that the decision-making structures in such countries are relatively immune from the effects of a fractionalized population since decisions are made within elite groups that generally are not subject to popular pressures. In other words, being undemocratic means that polarization is not expected to have a direct effect on decision making.
- There is also the interpretation of Easterly (2001), who argues that ethnic conflict interacts with institutional quality to determine whether it leads to destructive results or is contained by the rules of the game. That is, in countries with sufficiently good institutions, ethnic diversity does not lower growth or worsen economic policies. Also Alesina and La Ferrera (2004) argue that there is a tradeoff between the benefits of "variety" and the costs' of heterogeneity of preferences in a multiethnic society.
- There is also the possibility of measurement error. Measures of fractionalization should pay attention to the nature of relations between groups (Posner 2004). This consideration was not factored in the measure of fractionalization used here. I could not find any measure of fractionalization that takes this point into consideration, while covering a wide range of countries and time periods at the same time.

As expected, democracy does not have a statistically significant effect on GDP. The effect of political stability is especially interesting for future research in the region as well as in other regions. Political stability leads to higher GDP per capita, until a certain level when too much political stability

leads to a negative effect. Each 1-point increase in political stability leads to 16.9% increase in GDP per capita. After a certain level, each 1-point increase in political stability leads to 1.7% decrease in GDP per capita. These results are significant at the .01 level.

The results for the effect of trade are relevant particularly for the first hypothesis. Merchandise trade does not have a statistically significant effect on per capita GDP, while trade in commercial services has a statistically significant effect at the .01 level. Each $1 million increase in total trade in commercial services leads to 0.0012% increase in GDP per capita. While this effect might not seem substantial, it is important to remember that the mean of total trade in commercial services is $5 billion in our dataset (see table 4).

Both oil production and membership in OPEC have statistically significant effects on per capita GDP. Each 1,000-barrel increase in average oil production per day for each year in the dataset increases GDP per capita by 0.006%. The effect of OPEC membership is significantly higher. OPEC countries have 143% higher GDPs per capita compared to non-OPEC countries, holding the effects of other variables in the model constant. This could be attributed to the presence of developed institutions for the management of oil production in OPEC as compared to non-OPEC countries. This in turn can be considered a result of the early penetration of international companies into countries that later became members of OPEC. The history of oil companies such as ARAMCO (the Arabian-American Oil Company) and British Petroleum in the Arab Gulf region could be dated back to the late nineteenth and early twentieth centuries (Khalidi 2004; Vitalis 2007). It could be assumed that these companies, backed by their respective governments, played an important role in developing the administrative structure for making the best use of oil resources. In addition, the creation of OPEC as a cartel of oil producers in itself reflects, at least in part, the understanding among its members of the centrality of oil for their economies. If this explanation is correct, then one could conclude that the literature on the resource curse is valid in the Middle East as well. As presented earlier, my main conclusion from this literature was that the effects of a discovery of an important natural resource or the boom in the prices of an already existing one depend, to an important extent, on the institutional environment. This does not mean that there were no effects of oil on corruption or delaying political developments. It only means that the overall effect of the oil endowment in OPEC countries was positive due to the presence of effective economic institutions.

Finally, the effect of British colonialism is positive. This result is significant at the .01 level. This supports the argument that the British legal tradition, as well as the positive effects of the British colonial experience on such social aspects of development as health and education, was conducive to higher growth in former British colonies. Former British colonies in the Arab region have 39.2% higher GDP per capita compared to non-British colonies.

Limitations

The main limitation in this study is reflected in the statistically significant dummy variables for almost all the countries included (excluding the five dropped country dummies). This means that there is more to be explained through looking at the internal dynamics of these countries and adding new variables to the regression model. I discuss the limitations of this study in the following points:

Omitted Variable Bias. Despite the argument that the similarities among Arab countries can control for important confounding variables in explaining variation in economic performance, the differences among these countries are large to the extent that a single model cannot capture the reasons for the high growth variance among them. For example, one important difference among Arab countries concerns the role of leadership, which has often been cited to account for economic success especially in small Gulf countries (Ouis 2002). Other important variables that are not in the model include military power, foreign threats, and foreign labor. I tried to balance the drive to include more variables with the need for parsimony and the conviction that my study is more or less a replication of other studies and theoretical frameworks applied within context of the Arab Middle East. Using fixed effects, however, created controls for possible omitted variables in my model.

Simultaneity. There is also the issue of simultaneity. The lack of democracy for example could be the outcome of low growth in certain countries as well as an outcome of high growth in OPEC countries. There is no way to identify the direction of the relation through the regression analysis.

Measurement Error. Specifically, I have concerns regarding the measurement of fractionalization based on Alesina et al. (2002). Alesina and La Ferrera (2004) and Posner (2004) point out that measures of fractionalization should include more considerations such as the distance between groups and degree of interactions. These considerations were not included in Alesina et al. (2002).

Conclusion

My aim in this study has been to apply theories of size and growth to the situation in the Arab Middle East, taking into consideration its special nature. Therefore, the results of this study are context specific. However, they do contribute to theoretical debates on the effects of size and growth on economic performance. While the study provides further evidence for a number of arguments in the literature regarding the effects of area size, institutions, and diversification on economic performance, it also draws attention to the importance of more in-depth analysis on the effects of a number of variables on the economic situation. First, it highlights the importance of studying fractionalization through an approach that integrates knowledge of the relations among the various groups in society and the nature of decision making. It also directs attention to the issue of vulnerability and its possible effects on economic growth.

Fractionalization had an unexpected statistically significant positive effect on GDP per capita. This result could be attributed to the generally undemocratic nature of the countries in the region and the immunity of their governments from popular pressures. In addition, there is the role of political institutions that can contain ethnic conflict within the "rules of the game" (Easterly 2001). This should direct attention to the importance of studying political institutions, as well as informal channels of power sharing in the Arab world, and their effect on growth. It should also direct attention to studying the special characteristics of diversity in the Arab world. Maybe there is a need to distinguish between various groups in building an index for fractionalization, or there should be weights assigned to the distance between groups (Alesina and La Ferrera 2004).

Regarding vulnerability, the results of the study showed that countries with smaller areas have higher growth rates. This could be attributed to the sense of vulnerability created by limited natural resources (other than oil in oil-rich countries) in addition to vulnerability to outside regional threats (the invasion of the whole of Kuwait in 1990 proves the vulnerability created by a small area in addition to a small population). The sense of vulnerability is also made clear from the dataset that shows a high correlation between area size and arable land (a correlation of 0.73). If smaller countries have less arable lend, they should direct more attention to production and to the service economy, which is expected to have positive effects on economic growth. This sense of vulnerability creates more openness to international trade and a drive to diversify production and trade. While the relationship between area and trade was not examined in this study, it has been

confirmed in the literature examining this relationship on the international level (Alesina and Wacziarg 1998; Armstrong and Read 2002). In addition, the study directs attention to the nature of political stability in the region, and how this nature affects the economic performance of its countries. Specifically, since the stability of the regime is expected to be related to the stability of a small click around the head of the state (given the generally undemocratic nature of the governments in the region), political stability above a certain threshold reduces regime vulnerability and therefore creates little incentive for economic development and planning for long-term growth. Again, this adds to the importance of studying the different effects of vulnerability on economic performance.

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