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## What Drives Stock Market Development in the Middle East and Central Asia— Institutions, Remittances, or Natural Resources?

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**IMF Working Paper**

Middle East and Central Asia Department

**What Drives Stock Market Development in the Middle East and Central Asia—  
Institutions, Remittances, or Natural Resources?**

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**Abstract**

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In this paper, we assess the macroeconomic determinants of stock market capitalization in a panel of 17 countries in the Middle East and Central Asia, including both hydrocarbon-rich countries and economies without sizeable natural resource wealth. In addition to traditional variables, we include an institutional variable and remittances among the regressors. We find that (i) both institutions and remittances have a positive and significant impact on market capitalization; and (ii) both regressors matter, especially in countries without significant hydrocarbon sectors; whereas (iii) in resource-rich countries, stock market capitalization is mainly driven by the oil price.

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## I. INTRODUCTION

Over the last decade, stock markets have received a great deal of attention, both as a source of financial development and ultimately economic growth, and in the context of large swings in stock market valuation. The depth of a stock market—as captured by the market capitalization—is an important measure of one aspect of financial development, much in the same way as monetization or the amount of private sector credit measure the depth of financial intermediation. In fact, commercial banking and stock markets both contribute in a major way to the transformation of savings into investment, thereby enabling financial development and economic growth. However, it is not clear, *a priori*, whether these two types of financial markets should be considered complements or substitutes.

From a geographical perspective, relatively little of the recent research interest in financial markets has been directed at the Middle East and Central Asia, a region that comprises some of the richest countries in the world, endowed with vast resources of oil and gas, but also relatively “new” countries with substantially lower *per capita* income on the territory of the former Soviet Union (FSU), many of which do not dispose of a natural resource endowment. In the resource-rich Middle East, stock markets have experienced large fluctuations over the last few years.<sup>2</sup> Economies in Central Asia, have also seen a rise in stock market capitalization but have come under some scrutiny for unprecedented banking credit booms, an issue we will not pursue further here.<sup>3</sup>

To better understand what drives stock market development in this region, we explore in this paper the macroeconomic determinants of stock market capitalization in a panel of 17 economies that form part of the IMF’s Middle East and Central Asia Department (MCD). In addition to traditional regressors encountered in the literature (stock market turnover, income, saving/investment, domestic credit), we are interested in whether three additional factors are of particular relevance in this context.

First, we focus on the effect of hydrocarbon wealth on stock market capitalization. We refrain, however, from using estimated hydrocarbon wealth as a regressor, chiefly due to the data weaknesses associated with this variable (variation over time due to new discoveries, oil price changes, etc.). Instead, we distinguish between oil-rich and other economies simply by means of splitting the country sample into hydrocarbon-exporting and importing countries.<sup>4</sup>

Second, since the FSU economies have existed for only about 15 years, one might expect that their rather “new” institutions may play a different role than those in the Middle East. Furthermore, we expect “good” institutions to have a positive impact, not only on stock

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<sup>2</sup> See Billmeier and Massa (2007) for a case study of the Egyptian stock market. Saadi-Sedik and Petri (2006) review developments in Jordan.

<sup>3</sup> See, e.g., Billmeier and Ding (2006) for a review of the credit boom in Georgia.

<sup>4</sup> In the remainder of the paper, we understand “oil economies/exporters” to mean economies that are rich in hydrocarbon resources, be it oil or natural gas.

market investors, who feel more confident—for example regarding property rights and information transparency, but also on firms, which may consider equity as a potential source of financing.

Third, the region is characterized by two supranational labor markets, driven by hydrocarbon resource endowments, inducing large remittance flows. While many Egyptians, Moroccans, and Pakistani nationals seek economic fortune in the Gulf, a similar type of regional labor mobility exists between FSU economies. These regional movements of labor result in remittances that can play a major role in enhancing disposable income of those in the home country. In Jordan, for example, remittances transferred through the banking system amounted to 18 percent of GDP in 2002; unofficial remittances may add 50 percent or more on top of recorded flows.<sup>5</sup> Most of these remittances are, as part of disposable income, likely to be spent immediately, chiefly on consumption. Some share, however, may be used to smooth consumption over time, and spending could in fact be delayed via saving and investing in the stock market, especially if typical vehicles for asset accumulation, such as pension funds, are underdeveloped or not deemed trustworthy. As more investment in the stock market leads ultimately to a rise in market capitalization, we expect remittances to have a positive impact on stock market development.

We find that, next to a set of traditional regressors, institutions and remittances have significant explanatory power for stock market capitalization in our panel, which is consistent with our expectations. The impact, however, is dramatically different between oil and non-oil economies: while, in the latter, both institutions and remittances contribute to explaining stock market capitalization, the impact of these variables is muted when only resource-rich countries are considered. In their case, only the oil price appears to have explanatory power for stock market capitalization.

The remainder of the paper is structured as follows. Section II provides a brief literature review of macroeconomic and institutional driving forces for stock market capitalization. Section III presents our panel regressions for stock market capitalization. We pay particular attention to the distinction between economies with a sizeable hydrocarbon endowment and those without. Section IV offers some conclusions and policy recommendations.

## **II. DETERMINANTS OF STOCK MARKET DEVELOPMENT: A BRIEF LITERATURE REVIEW**

In the literature, a causal relationship between financial development and economic growth has been argued along three lines: (i) financial deepening promotes economic growth; (ii) economic growth stimulates financial development; and (iii) financial development and economic growth influence each other.<sup>6</sup> Against this background, exploring what determines

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<sup>5</sup> See World Bank (2006), p. xiii and p. 85.

<sup>6</sup> The relationship between economic growth and financial development is well documented in the literature; see, for example, Shan, Morris, and Sun (2001), and Khan and Senhadji (2007) for overviews, as well as Levine (2005) for a comprehensive review. McKinnon (1973), Shaw (1973), and King and Levine (1993) argue the link from financial deepening to growth, Gurley and Shaw (1967), and Goldsmith (1969) support the opposite  
(continued...)

stock market development has become a prominent research topic in recent years. In this literature, institutional and macroeconomic factors have been found to be the most important driving forces for the development of capital markets, while geographical factors (in the sense of resource endowment) have only been investigated in the broader context of economic growth. We discuss these factors in turn.

First, a large body of evidence has documented the importance of institutions for stock market development. Legal systems characterized by transparency, contract enforcement, as well as protection of property rights are crucial for the development of capital markets. Pagano (1993), for example, argues that the existence of transparency and regulations increases investor confidence and has a large impact on the development of financial markets. La Porta and others (1997 and 1998) show also that legal traditions influence the degree of protection of creditors and shareholders, and the efficiency of contract enforcement, thus affecting financial systems. Looking at a sample of transition economies, Pistor, Raiser, and Gelfer (2000) highlight that not only the quality of legal frameworks but also the effectiveness of legal institutions are crucial for financial development. Similarly, the importance of institutional quality is stressed by Lombardo and Pagano (2000), who show that total stock market returns are positively correlated with the respect for law, the lack of government corruption, the efficiency of the judicial system, the quality of accounting standards, and a low risk of contract repudiation and nationalization. Moreover, Mayer and Sussman (2001) highlight that regulations on information disclosure, accounting standards, and permissible practices of banks affect financial development. The relationship between liberalization, privatization, and financial deepening is investigated by Levine and Zervos (1998) and Perotti and van Oijen (2001). The former find that the liberalization of restrictions on capital and dividend flows leads to larger stock markets while the latter, looking at a sample of emerging markets, argue that there is a positive relationship between privatization programs and stock market development. Finally, Creane and others (2004) confirm the significance of institutional quality, such as the degree of property right protection and government involvement in banking and finance as measured by the Heritage Foundation's index, for the financial sector development in the Middle East and North Africa (MENA) region.

Second, there is a substantial amount of research aiming to identify the impact of macroeconomic variables on stock market development. Garcia and Liu (1999), for example, show that macroeconomic factors such as income, saving rate, financial intermediary development, and stock market liquidity are important determinants of financial development. Most of these results are confirmed by Naceur, Ghazouani, and Omran (2005) for a panel of countries in the MENA region. Huybens and Smith (1999), theoretically, and Boyd, Levine and Smith (2001), empirically, show that higher levels of inflation are associated with smaller, less active, and less efficient stock markets. Ghazouani and Naceur (2005) confirm this result for financial markets in the MENA region. Moreover, Do and Levchenko (2004) and Huang and Temple (2005) find that trade openness tends to boost

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direction. On the two-way causality between financial development and economic growth, see Luintel and Khan (1999) and Shan, Morris, and Sun (2001).

financial development. The importance of foreign direct investment and remittances for stock market development has also been discussed by Claessens, Klingebiel, and Schmukler (2001), who find that foreign direct investment is positively correlated with stock market capitalization and value traded, and more recently by Aggarwal, Demirgüç-Kunt, and Martinez Peria (2006), who find that remittances promote financial development in a sample of 99 developing countries. Gupta, Patillo, and Wagh (2007) come to a similar conclusion for Sub-Saharan Africa.

Finally, the impact of resource endowment has mainly been investigated in the context of economic growth in general, but not so much with regard to stock market development. Sachs and Warner (1999) find that there is a negative relationship between natural resource endowment and economic growth. This finding is confirmed by a number of historical case studies reported by Auty (2001). Traditionally, four explanations of the resource “curse” have been proposed: (i) rent-seeking; (ii) slower industrial growth due to real exchange rate appreciation (Dutch disease); (iii) increased volatility of commodity prices; and (iv) weakened institutional quality because “ruling coalitions” (in the sense of North (2001)) have less incentive to promote industrial growth given the advantages they draw from resource rents; see, for example, Sala-i-Martin and Subramanian (2003).

### III. WHAT DRIVES STOCK MARKET DEVELOPMENT IN MCD COUNTRIES ?

#### A. Methodology and Data

In our analysis we use a fixed-effect panel regression on pooled data from 17 economies across the Middle East and Central Asia region from 1995 to 2005 for a maximum 187 year observations.<sup>7, 8</sup> The dependent variable is missing in 46 cases, leaving us with 141 year observations for the whole sample. We run the following regression:

$$y_{it} = \alpha_i + \beta_1 \text{Institutions}_{it} + \beta_2 \text{Remittances}_{it} + \beta_3 X_{it} + \varepsilon_{it} \quad (1)$$

where the dependent variable is (the log of) *stock market capitalization* as a share of GDP. Although stock market development has more dimensions than market capitalization (e.g., efficiency, or infrastructural aspects), we use this measure consistent with the literature, as it is considered a better and less arbitrary proxy than a composite financial index that includes selected dimensions of financial deepening such as the banking and nonbanking sector.<sup>9</sup> The

<sup>7</sup> The panel consists of Armenia, Bahrain, Egypt, Georgia, Iran, Jordan, Kazakhstan, Kuwait, Kyrgyz Republic, Lebanon, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Tunisia, and United Arab Emirates. Given the sometimes limited availability of data, the panel is unbalanced.

<sup>8</sup> A Hausman test was used to select whether a fixed or random effect model was appropriate. As the test rejected the hypothesis that the individual effects were uncorrelated with the other regressors for most specifications at the 1-percent level, we present evidence for the fixed effect model. Using a joint F test, we find that our sets of variables are jointly significant in all specifications presented below.

<sup>9</sup> Moreover, Demirgüç-Kunt and Levine (1996) have found that other individual measures and indexes of financial deepening are highly correlated with stock market capitalization. For studies with stock market capitalization as a dependent variable, see, e.g., La Porta and others (1997), Demirgüç-Kunt and Maksimovic

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main explanatory variables we are interested in are *institutions* and *remittances*. We also include a matrix  $X$  of independent variables used in previous studies. Most regressors (remittances, investment, domestic credit, and stocks traded) are normalized by GDP and, consistent with the literature, the lagged values of income, investment, and stocks traded are used to reduce the endogeneity bias.<sup>10</sup> The data stem from the Fund's *International Financial Statistics* and *World Economic Outlook* databases and from the country desks of MCD. We briefly explain the rationale behind the choice of our regressors.

*Institutions* can be interpreted either as the set of rules and norms that shape the social, political, and economic interactions among the members of a society, or as organizational institutions such as political, economic, social, and educational bodies.<sup>11</sup> Institutions may affect stock market development in two ways. First, better institutions—which are associated with more transparency, less corruption, and better protection of property rights—foster investor confidence, thus leading to high demand for securities and larger stock markets. Second, better institutions promote economic growth in general, thus enhancing market fundamentals that lead to highly developed stock markets. As a proxy for the quality of institutions, we use the Heritage Foundation's Index of Economic Freedom, 2007 edition (Heritage Foundation, 2007). This index aggregates 10 components with equal weight: trade policy, fiscal burden, government intervention, monetary policy, capital flows and foreign investment, banking and finance, property rights, wages and prices, regulation, and black market. The index assigns a score (0-100) to each country's performance and higher scores correspond to higher levels of institutional quality. Notwithstanding some interpretational difficulties—is economic freedom always consistent with institutional quality?—we chose this index over others for three reasons. First, compared with other governance indicators, it has the advantage that it covers almost all the MCD countries for a sufficient time span and at annual frequency.<sup>12</sup> Second, it seeks to provide a quite broad assessment of institutional quality and is not time invariant. Finally, this index has been used repeatedly in the recent literature as a proxy for institutional quality.<sup>13</sup>

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(1998), Levine and Zervos (1998), Garcia and Liu (1999), Bekaert, Harvey, and Lundblad (2001), Naceur, Ghazouani, and Omran (2005), and Li (2007). A large degree of public ownership—not unlikely in some of the countries contained in our sample—could bias stock market capitalization to not fully represent the true degree of stock market development.

<sup>10</sup> Most of the results hold up if we use the lagged value of saving rather than investment. While the quality of institutions has been found to be, to some degree, endogenous to economic growth in the very long run, we do not expect institutions to be endogenous to stock market capitalization, in particular not over the rather short time span considered in this paper (11 years).

<sup>11</sup> See North (2001). While the former are, of course, a key determinant of the latter, we are in principle somewhat more interested in the impact of the former on stock market capitalization. Note, however, that it is hard to distinguish empirically between the two angles. In the end, most indicators will measure the combined institutional quality outcome, independently of whether this is due to the rules and norms perspective or the organizational angle.

<sup>12</sup> Only West Bank and Gaza was dropped from the panel because the institutional indicator is not available.

<sup>13</sup> See, for example, Creane and others (2004), Sahay and Goyal (2006), Lejour, Solanic, and Tang (2006), and Boatman (2007).

*Remittances* play an important role in the Middle East and Central Asia, where, in some countries, they have become a larger source of external financing than foreign direct investment flows. Remittances are particularly relevant in countries like Egypt, Morocco, Jordan, Pakistan, and Tunisia, where a sizeable share of the workforce has been migrating to those countries in the region that dispose of large oil and natural gas reserves. In the literature, many incentives have been identified for sending money home: solidarity, attachment to homeland, desire for portfolio diversification, and exchange rate movements.<sup>14</sup> Regarding the impact of remittances on economic development more generally, they are believed to reduce poverty; promote entrepreneurship; and improve children's level of education and lower infant mortality by alleviating household constraints.<sup>15</sup> The effect of remittances on economic growth, however, is still an open question.<sup>16</sup> Moreover, as mentioned above, there appears to be a consensus in the literature that remittances promote financial development in developing countries as they increase both disposable income and the aggregate level of deposits and credit intermediated by the local banking sector. In fact, a large share of remittance transfers occur through more or less formal money transfer systems. From an institutional perspective, there is evidence that the banks and other agents that operate the money transfer systems grow with the amount transferred and contribute to professionalizing the financial sector in the recipient country. Moreover, recipients do not necessarily consume all of the received transfer, and the residual may remain in an account with the transferring entity (in case it is a deposit-taking bank).<sup>17</sup> For these reasons, we include net amount of workers' remittances as a share of GDP as an explanatory variable of stock market capitalization.

The vector  $X_t$  in equation (1) includes the following additional regressors commonly encountered in the literature:<sup>18</sup>

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<sup>14</sup> Bougha-Hagbe (2006) finds that altruism is a crucial determinant of remittance flows in a sample of selected countries in the Middle East and Central Asia.

<sup>15</sup> See Adams (2004) on the poverty link; Massey and Parrado (1998) investigate entrepreneurship in Mexico and Yang (2005) in the Philippines; on education and mortality, see, among others, Cox and Ureta (2003) on El Salvador, and Hildebrandt and McKenzie (2005) on Mexico.

<sup>16</sup> Chami, Connel, and Samir (2003) find that remittances reduce the incentive to work in recipient countries thus having a negative effect on economic growth. Conversely, Solimano (2003) argues that remittance flows have a positive impact on recipient country growth as they finance both consumption and investment and ease the balance of payments situation in foreign-exchange constrained economies. While in International Monetary Fund (2005) no relationship at the country level between remittances and growth is found in a worldwide sample of about 100 countries over the period 1970–2003, Giuliano and Ruiz-Arranz (2006) find, in a sample of about 100 developing countries for the same period, that the impact of remittances on economic growth is inversely correlated to financial sector development in the recipient country.

<sup>17</sup> See World Bank (2006) for an exhaustive review of issues related to remittances.

<sup>18</sup> See, e.g., Garcia and Liu (1999) and Naceur, Ghazouani, and Omran (2005).

- *Income* has been found to have a positive and significant impact on stock market capitalization, including because higher income is usually associated with better institutions—an effect that we control for separately—and the usual business cycle mechanics; that is, the more flourishing companies that are quoted on the stock market, the higher the propensity to invest in the stock market by consumers. The income level is measured as GDP in constant 2000 U.S. dollars.
- *Investment* is considered an important determinant of stock market capitalization as stock markets constitute one way to intermediate saving to investment projects. Investment is measured as the ratio of gross fixed capital formation to GDP.
- *Inflation change* is commonly included as a measure of macroeconomic stability. Consistent with the literature, we chose inflation changes rather than inflation itself because stable and, in our sample, moderate inflation levels may represent macroeconomic stability better than moderate but rather volatile levels of inflation. Due to an elevated degree of uncertainty in stock markets in the presence of high volatility of the price level, people will have less incentive to trade in stock markets. Inflation changes are measured as the second difference of the CPI level.
- *Domestic credit* measures the role of banks in providing long-term financing to the private sector and it is used as an indicator of financial intermediary development. In the literature, the relationship between financial intermediaries and stock markets—whether they are strategic complements or substitutes—is still an open question.<sup>19</sup> In the panel, we use domestic credit to the private sector as a share of GDP.
- *Stocks traded value* is a measure of stock market liquidity. With a more liquid stock market, the amount traded and the saving invested increase. We measure this variable as the total stock value traded over GDP.

We also include two explanatory variables often overlooked in the literature—the oil price and the federal funds rate. As the *oil price index*, we use an average of Dubai, UK Brent, and West Texas intermediate. Many countries in the Middle East are among the biggest oil (and gas) exporters in the world. Introducing the oil price index as an independent variable allows us to measure the impact that fluctuations in world oil prices may have on the regional stock markets as well as the interaction between oil prices and other regressors. Also, we include the U.S. *federal funds rate* as a measure of global liquidity conditions to test whether the opportunity cost of investing is critical for stock markets in the region.

To address one of our main questions—the impact of natural resource endowments on stock market development—we split the countries into hydrocarbon exporters versus non-exporters of hydrocarbon products in some of the regressions reported below. The hydrocarbon exporter countries are: Bahrain, Egypt, Iran, Kazakhstan, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates. The other group comprises Armenia, Georgia, Jordan,

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<sup>19</sup> See, for example, Boyd and Smith (1996), Demirgüç-Kunt and Levine (1996), and Garcia (1986).

Kyrgyz Republic, Lebanon, Morocco, Pakistan, and Tunisia. Splitting the sample in this way leads to 75 oil and 66 non-oil observations. While Egypt traditionally does not figure among the hydrocarbon exporters, the decision to split the sample in this way is driven by the fact that the share of hydrocarbon-related activities in Egypt's GDP was between 5 percent in the mid-1990s and 15 percent at the end of the sample period—substantially less than traditional oil and gas exporters, but still significantly different from zero.<sup>20</sup>

Table 1 reports some descriptive statistics for selected variables over the sample period, highlighting differences among oil and non-oil countries. As expected, stock market capitalization is, on average, higher in oil countries than in non-oil countries. The latter, indeed, account for some of the more recent financial markets in the sample due to the fact that the corresponding countries emerged barely 15 years ago. At the same time, however, the non-oil countries are responsible for the lowest and highest market capitalization.

Table 1. Selected Middle East and Central Asia Economies: Descriptive Statistics for Regression Variables, 1995–2005

	Full sample				Oil economies				Nonoil economies			
	Mean	S.D	Min	Max	Mean	S.D.	Min	Max	Mean	S.D.	Min	Max
Market Capitalization 1/	46.3	51.2	0.3	295.9	61.5	52.3	2.5	254.3	29.3	45.6	0.3	295.9
Institutions 2/	59.9	8.5	33.0	80.8	60.3	10.8	33.0	80.8	59.5	4.8	50.5	67.7
Remittances 3/	0.7	8.1	-16.2	18.8	-5.1	5.2	-16.2	5.5	7.3	5.4	0.1	18.8
Income 4/	43.2	49.2	1.3	215.0	60.8	58.6	6.2	215.0	23.2	23.2	1.3	87.8
Investment 5/	20.5	5.2	10.5	33.6	19.1	5.1	10.5	33.6	22.2	4.8	13.8	33.3
Domestic Credit 6/	42.7	20.5	3.8	88.7	40.5	12.2	11.8	63.9	45.3	27.0	3.8	88.7
Stocks Traded 7/	12.1	25.3	0.0	189.0	15.4	31.1	0.1	189.0	8.3	16.0	0.0	79.7

Sources: International Monetary Fund, *International Financial Statistics (IFS)* and *World Economic Outlook* databases; IMF desk economists; and authors' calculations.

1/ Market capitalization as a share of GDP.

2/ Institutional quality corresponds to the score of the Heritage Foundation Index, 2007 edition.

3/ Remittances are measured as the net workers' remittances over GDP.

4/ Income is last year's real GDP in 2000 US\$ billions.

5/ Investment corresponds to the last year's gross fixed capital formation over GDP.

6/ Domestic credit is expressed in terms of GDP.

7/ Stocks traded is the last year's total stocks value traded over GDP.

According to the institutional index, institutional quality in the whole sample is borderline good.<sup>21</sup> Splitting the sample reveals that, on average, institutions in oil and non-oil countries display a comparable level of institutional quality, but that the standard deviation in oil countries is larger than in non-oil countries. The former account for the worst and best

<sup>20</sup> Aided by higher oil prices, Egypt switched in 2002/03 from being a net petroleum importer to a (marginal) net exporter. In 2005/06, however, it started to export a sizeable amount of natural gas, increasing its stature as net exporter of hydrocarbon materials. The results are very similar if Egypt is shifted to the other group. Consistent with expectations, however, some coefficients tend to be less significant when the sample size of hydrocarbon observations shrinks. These results have been omitted but are available from the authors.

<sup>21</sup> The Heritage Foundation considers countries that score in the range of 80-100 as having the best ("most free") institutions; those in the range 70-79.9 have good institutions and countries in the range 60-69.9 have moderately good institutions. Countries in the 50-59.9 range are characterized by mostly weak institutions, and countries that score in the range 0-49.9 have the weakest institutions.

scores, whereas non-oil countries are more homogenous around the mean.<sup>22</sup> Figure 1 displays the proxy for institutional quality for the countries in the sample (as available), documenting the sizeable “within” variation in many countries masked by the “between” statistics in Table 1. Splitting the sample illustrates the substantial role remittance flows play in both oil and non-oil countries, where on average they account for -5.1 and 7.3 percent of GDP, respectively. In both subsamples, the means for investment and domestic credit stay around the value of 20 and 40 percent of GDP, respectively. The value of stocks traded in oil countries, instead, is almost twice the value in non-oil countries, consistent with a higher market capitalization in the former.

## B. Panel Regression Results

Table 2 shows the results of the panel regressions. In the first specification, column (1), we tested the impact of *institutions* and *remittances* on the evolution of market capitalization for the whole sample. Both turn out to have a positive and significant impact on the dependent variable. The coefficients for lagged *income* and lagged *investment* are positive and significant as well, while *domestic credit* has a weaker impact than found in the literature. Similarly, lagged total *value traded* is significant and has a positive effect on market capitalization, in line with Naceur, Ghazouani, and Omran (2005). *Inflation change*, which had been interpreted in the literature as an (negative) indicator for quality of institutions and macroeconomic stability, has a positive but not significant influence on the dependent variable in our sample—no surprise as we control for institutional quality directly.<sup>23</sup> In what follows, we discard this regressor.<sup>24</sup>

Columns (2) through (4) provide more details on the importance of institutions by splitting the sample into two groups as described above: hydrocarbon exporters and importers.<sup>25</sup>

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<sup>22</sup> This is consistent with the literature where there is some evidence that resource-rich economies may be associated with a weaker institutional framework; see, e.g., Sala-i-Martin and Subramanian (2003) on Nigeria, and Bulte, Damania, and Deacon (2005).

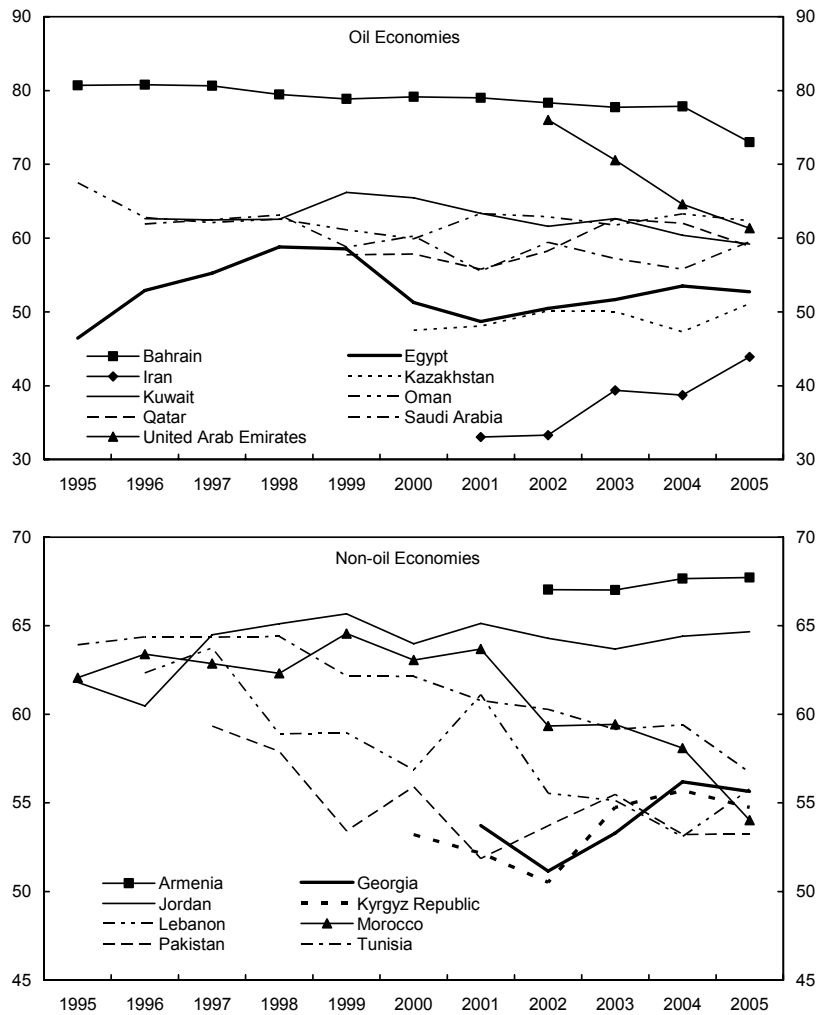
<sup>23</sup> The *level* of inflation has been found to have a negative effect on stock market capitalization; see, e.g., Boyd, Levine, and Smith (2001) and Khan, Senhadji, and Smith (2006). However, if stock market investment is interpreted as an alternative form of (real) investment instead of holding cash, higher inflation could also be associated with higher market capitalization. If we include the inflation level as a regressor in our sample, the coefficient is usually positive and in some regressions (especially using the subsample of hydrocarbon economies) significant. The main results change little, except for a slight increase in the significance of institutions in the hydrocarbon exporter subsample. The results are available on request.

<sup>24</sup> Another reason for discarding our measure of inflation changes would be that the Heritage index already includes a monetary policy variable. However, the monetary component of the index relates to inflation (in levels, not differences) and also includes a price control component. Consistent with Sahay and Goyal (2006), we found the monetary index to be of minor qualitative importance for the overall index, moderating our initial concerns of “double counting.” Similar arguments hold for other subindices: while they may appear to be collinear to some of the regressors contained in  $X_t$ , they are very different in nature upon closer inspection.

<sup>25</sup> Column (2) applies to the whole sample, while column (3) uses only hydrocarbon exporter countries, and column (4) non-oil countries.

Omitting inflation change does not change the results much (column (2)), but splitting the country sample does: in oil exporters, *institutions* and *remittances* lose significance in explaining stock market capitalization, whereas the same variables are strongly significant in the non-hydrocarbon countries. Also, the sample split causes lagged income to lose significance in non-hydrocarbon countries; at the same time, lagged investment is no longer significant for stock market capitalization in non-oil countries. The same holds for lagged total value traded in resource-rich economies. The strong impact of remittances on market capitalization in non-oil countries does not come as a surprise, as they are largely additional household income that, on the margin, can be saved/invested in the stock market. We have not found evidence in the literature of our main result, namely that the quality of institutions does not appear to have a significant impact on stock market development in oil countries. Hence, the finding warrants some further attention.

Figure 1. Selected Middle East and Central Asia Economies:  
Proxy Score for Institutional Quality, 1995–2005 1/



Source: Heritage Foundation; [www.heritage.org/research/features/index/](http://www.heritage.org/research/features/index/).

1/ An increase in the score indicates an improvement.

As a first robustness check, we re-estimated the previous specifications using non-hydrocarbon GDP as a measure of the income level and as a denominator for those regressors scaled by GDP. The results—columns (5) through (7)—are similar to the previous estimates, and confirm the result that institutions and remittances only matter in the non-oil countries. Domestic credit and last year’s total value traded now have a significant and positive impact on stock market capitalization in oil countries in line with the literature.

As a second robustness test, we add two explanatory variables (the level of the *oil price*, and the U.S. federal funds rate, *ffr*) to the original specifications—columns (8) through (10)—to analyze the possible interactions and effects that these external factors could have on market capitalization. As expected, the *oil price* has a positive impact and is strongly significant in the whole sample. The *ffr* has a negative, but mostly insignificant, impact on the market capitalization of the panel countries. This is broadly consistent with anecdotal evidence that the *ffr* reflects the opportunity cost of investing in some of the markets captured in the panel, including in the context of possible “carry trades” as many countries in the region maintain a de facto peg to the U.S. dollar. Splitting the sample between oil and other countries confirms that *institutions* matter only in the non-oil countries. Moreover, the oil price level becomes the only significant explanatory variable of stock market capitalization in the oil countries.

Finally, we repeat, in columns (11)–(13), the estimation based on non-oil GDP as a normalization for the regressors but including the two auxiliary variables. Again, *institutions* remain highly significant, as do lagged *investment*, lagged *stocks traded*, and the *oil price*. Lagged *income* is borderline significant, while the *ffr* again shows no significance. Comparing column (12) to column (6) shows that stock market development in hydrocarbon countries does not exclusively hinge on an oil price increase as witnessed over the past few years, as even controlling for oil prices, other regressors still remain significant, notably investment.<sup>26</sup> Column (13) is identical to column (10) as the exclusion of oil GDP does not have any impact on non-oil economies.

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<sup>26</sup> The small sample complicates significantly the estimation via robust versions of the fixed effect estimator to reduce endogeneity concerns. Applying the Arellano-Bond (1991) estimator, for example, we are forced to use the minimum feasible number of instruments; even doing so, however, we exceed the suggested threshold represented by the number of countries. Splitting the two groups worsens the situation. The output is available from the authors upon request. Moreover, some of the variables may be co-trended, but due to the small, short, and unbalanced panel, we were not able to conduct meaningful unit root tests. A first-difference specification did not yield meaningful results. When introducing time-fixed effects, the significance of institutions holds whereas the impact of remittances on stock market capitalization is weakened. This is mainly related to the chronologically second half of the panel, when oil prices rose drastically.

Table 2. Selected Middle East and Central Asia Economies: Panel Regression Results, 1995-2005

Regressor	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Institutions	0.0415 (3.10)	0.0415 (3.12)	0.0210 (1.27)	0.0819 (3.18)	0.0306 (2.33)	0.0013 (0.09)	0.0818 (3.18)	0.0525 (4.21)	0.0276 (1.79)	0.0958 (4.03)	0.0411 (3.41)	0.0117 (0.88)	0.0958 (4.03)
Remittances	0.0532 (2.71)	0.0533 (2.72)	0.0393 (0.91)	0.0625 (2.66)	0.0471 (2.75)	0.0340 (1.28)	0.0625 (2.66)	0.0155 (0.79)	0.0116 (0.28)	0.0268 (1.14)	0.0195 (1.18)	0.0247 (1.05)	0.0268 (1.14)
Last year Income	0.0261 (4.35)	0.0261 (4.39)	0.0264 (3.88)	0.0391 (1.38)	0.0288 (3.54)	0.0210 (2.60)	0.0391 (1.38)	0.0134 (2.18)	0.0131 (1.67)	-0.0039 (-0.14)	0.0158 (1.99)	0.0135 (1.77)	-0.0039 (-0.14)
Last year Income Non-Oil	0.0343 (2.90)	0.0347 (3.01)	0.0441 (2.71)	0.0304 (1.85)	0.0104 (2.05)	0.0136 (2.54)	0.0040 (0.39)	0.0293 (2.75)	0.0263 (1.64)	0.0417 (2.66)	0.0215 (3.04)	0.0213 (2.58)	0.0417 (2.66)
Domestic Credit	0.0094 (1.41)	0.0093 (1.41)	0.0099 (0.96)	0.0040 (0.39)	0.0104 (2.05)	0.0136 (2.54)	0.0040 (0.39)	0.0027 (0.43)	0.0109 (1.12)	-0.0035 (-0.36)	0.0013 (0.26)	0.0043 (0.83)	-0.0035 (-0.36)
Domestic Credit Non-Oil	0.0048 (2.32)	0.0047 (2.33)	0.0026 (1.21)	0.0154 (2.41)	0.0033 (3.05)	0.0024 (2.28)	0.0154 (2.41)	0.0047 (2.50)	0.0030 (1.45)	0.0136 (2.31)	0.0032 (3.29)	0.0023 (2.51)	0.0136 (2.31)
Oil Price Index								0.0053 (4.82)	0.0053 (3.37)	0.0057 (3.33)	0.0057 (5.44)	0.0060 (4.44)	0.0057 (3.33)
US Federal Fund Rates								-0.0233 (-1.11)	-0.0076 (-0.26)	-0.0676 (-2.01)	-0.0098 (-0.50)	0.0036 (0.15)	-0.0676 (-2.01)
Inflation change	0.00003 (0.19)												
R-square	0.47	0.47	0.57	0.46	0.49	0.65	0.46	0.56	0.64	0.57	0.60	0.74	0.57
Observations	141	141	75	66	141	75	66	141	75	66	141	75	66
Number of Countries	17	17	9	8	17	9	8	17	9	8	17	9	8

Sources: Country authorities, IMF, /FS, Heritage Foundation, IMF desk economists, and authors' estimates.

Notes: Dependent variable: log of Market Capitalization as a share of GDP. The table contains coefficients with t-statistics in parenthesis. R-square corresponds to the within estimation of the fixed effect regression. All regressions include a constant not reported. The panel is not balanced.



To conclude, both our regressors of choice, *institutions* and *remittances*, matter in the overall regional sample and in the subsample of countries without resource endowment, but have no significant impact on stock market capitalization in resource-rich economies. Moreover, the data indirectly confirm that the size of *remittances* is driven by migration to the Gulf countries as they lose significance once the *oil price* is included. We interpret this as evidence that high oil prices have been a major contributor to the recent stock market boom all around, either directly in resource-rich economies, or indirectly through remittance effects in countries without such endowments. Regarding the other variables, we confirm previous findings that give a positive and strong role in determining stock market capitalization to the total value of *stocks traded*. *Domestic credit* has a positive sign—underlining the argument in Naceur, Ghazouani, and Omran (2005) that financial intermediation seems to be a complement rather than a substitute for stock market development—but remains often insignificant. Consistent with the work by Garcia and Liu (1999), *investment* and lagged *income* appear to have some explanatory power.

We investigated briefly how well this model can explain the recent stock market developments in many countries in the Middle East—with mixed results. Even for those countries where the model works reasonably well for other parts of the sample period—that is, predicted stock market capitalization comes close to the actual—it appears to fail during the last two sample years, 2004 and 2005, when actual stock market capitalization deviated significantly from the predicted value in many countries. We suspect that the extraordinary stock market booms in several economies in the region—including Saudi Arabia, Jordan, and Egypt—were, hence, driven by factors other than those analyzed above, but refrain from investigating this phenomenon further in the present context.<sup>27</sup>

#### IV. CONCLUSIONS AND POLICY IMPLICATIONS

Stock market development is an integral part of financial development, which is, in turn, associated with economic growth. In this paper, we have highlighted the role of selected variables—quality of institutions and remittances—in explaining stock market development. We analyzed a panel of 17 countries in the IMF’s Middle East and Central Asia Department for which data were available. As the sample comprises both resource-rich economies and countries without a significant resource endowment, we have investigated whether the effect of institutions and remittances on stock market development is different in oil versus non-oil economies.

In the average country contained in our panel of Middle East and Central Asia economies, good institutions and remittances contribute significantly to stock market development. Notably, this holds true especially in countries without a sizeable natural resource endowment. In hydrocarbon-rich economies, instead, oil prices explain most of the stock market boom, while neither institutions nor remittances are significant. We also broadly confirm previous results for other regressors commonly encountered in the literature.

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<sup>27</sup> See Billmeier and Massa (2007) for evidence on the Egyptian stock market; Saadi-Sedik and Petri (2006) review developments in Jordan.

These results underline the importance of remittances, not only to improve living conditions but also as a source of private saving by means of investing in the stock market. From a policy perspective, governments should encourage and facilitate to the extent possible the uninterrupted flow of these private transfers as they contribute to financial and economic development in the longer run.

We interpret the evidence regarding institutions as an indication that stock market development in resource-rich countries has been benefiting from booming oil revenues, and did not have to rely as much on government efforts to improve institutions. This does not mean that oil-exporting countries can neglect the quality of their institutions. Indeed, in the considered time span, hydrocarbon economies in the region have had a competitive advantage with respect to countries without a large resource endowment as their institutions were already of relatively high quality. As they have realized windfall gains related to rising oil prices, investor interest has increased in these stock markets, which are particularly attractive due to the opportunities in a high-income environment. Moreover, the credible U.S. dollar peg in many Gulf economies removes one additional layer of investment risk—exchange rate fluctuations. This competitive advantage, however, should not be taken for granted. Some non-hydrocarbon countries (e.g., Georgia and Pakistan) are catching up quickly to the level of institutional quality in hydrocarbon economies, and oil prices could decrease going forward. The negative impact of a decrease in oil prices will depend on the ability of each economy to diversify away from hydrocarbon-related activities to maintain a vibrant financial sector.<sup>28</sup> Moreover, countries without a large resource endowment have seen the need to improve the quality of institutions as a successful strategy to attract foreign investment, including in the stock market. To further stock market development, countries in the region should continue to privatize state-owned firms, thereby reinvigorating economic diversification efforts away from hydrocarbon resources and encouraging investor activity in their stock markets.

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<sup>28</sup> See Fasano-Filho and Iqbal (2003) and Gray and Blejer (2007).

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