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Governance and Economic Growth: The Case of Middle East and North African Countries

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Abstract

Using Two-stage Least Square (TSLS) regression for cross-sectional observations of 197 countries for the year 2009, the study estimates the impact of the improvement in the quality of governance on per capita income and the increase in per capita income on the quality of governance. Following Kaufman and Kraay (2000) methodology, the results suggest a positive strong statistical significant causation from quality of governance to per capita income. In addition, the results suggest a positive causation from per capita income to quality of governance. The estimation results are used to interpret the relationship between governance and growth for 22 MENA countries. A striking result suggest that despite the relatively low performance of most of these countries on almost all of the six measures of governance, their estimated levels per capita of income are relatively higher than the rest of the countries in the sample. This implies that most MENA countries have achieved relatively high but fragile standard of living for their citizens that is not based on firm governance. The fragility of standard of living in most these countries was manifested by the latest up rise in Tunis followed by Egypt and Libya. Two policy implications; first development requires a strong intervention in improving governance and secondly, though with a lesser extent, improving governance requires an exogenous increase in income through multilateral aid for instance.

الحوكمة والنمو الاقتصادي:
تطبيق علي بلدان الشرق الأوسط و شمال افريقيا

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ملخص

باستخدام طريقه المربعات الصغرى على مرحلتين لعينه من 197 دولة لعام 2009 ، تقدر الدراسة ان هناك علاقه قويه بين التحسن في الحوكمه و الزياده في نصيب الفرد من الدخل. بالاضافه الي ذلك و بأستخدام منهجية كوفمان و كراي (2000) فأن الزيادة في نصيب الفرد من الدخل تؤثر ايضا على نوعية الحوكمه في الدوله. وتستخدم نتائج التقدير لتفسير العلاقة بين الحوكمه والنمو لعينه من 22 دوله من بلدان منطقة الشرق الاوسط و شمال افريقيا . و من النتائج الملفتة للنظر تشير إلى أنه على الرغم من الانخفاض النسبي للأداء نصيب الاقتصادي لمعظم هذه البلدان على مستوي الست مؤشرات للجوانب المختلفه للحوكمه ، فان متوسط الفرد فيها من الدخل هي أعلى نسبيا من بقية بلدان العينة تحت الدراسه . وهذا يعني أن معظم بلدان المنطقة قد حققت مستويات عاليه نسبيا من المعيشة لمواطنيها ولكنها مستويات هشة غير مبنيه علي حوكمه قويه. و يشتمل المعنى الضمني الرئيسي من هذه الدراسة هو أن هناك حاجة إلى جهود قوية داخل بلدان المنطقة لتحسين نوعية وفعالية الآليات تنظيمية؛ لخفض مستويات الفساد، لتعزيز سيادة القانون، لتحقيق الاستقرار السياسي والحد من العنف الداخلي، وإلى جعل الحكومات أكثر خضوعا للمساءلة أمام مواطنيها الخاصة. وعلاوة على ذلك، توصي الدراسه بالحاجه الي زيادة في المعونات الخارجيه – من خلال المعونة المتعددة الأطراف، على سبيل المثال – و التي بدورها سوف تغذي في الحوكمه على نحو أفضل.

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1. Introduction

From the moment that the first protests erupted in Tunisia in December 2010, following the decision of a vegetable cart owner, Mohamed Bouazizi, to immolate himself over the confiscation of his cart and produce, economic grievances have played a pivotal role in fueling the wave of protests and uprisings in the Arab world that have already toppled the regimes of Tunisian former President Zine El Abedine Ben Ali and Egyptian former President Hosni Mubarak, and more recently Libyan President Muammar El Gaddafi, and have created serious political strife in Bahrain, Yemen, and Syria. With the exception of oil and gas-rich Bahrain, where tensions have been exacerbated by an age-old divide between the country's Shi'a majority and Sunni political and economic elite, every Arab nation whose political foundations have been seriously threatened over the last three months has a per capita income that places it squarely in middle or lower-income status – and often with high income inequality attached. Popular anger over the economic mismanagement demonstrated by various autocratic Arab governments – and the poverty, unemployment, and limited options for upward mobility that have resulted from it – has arguably been as important a factor during the "Arab Spring" in uniting fractious societies in opposition to the status quo as the yearning for greater political freedoms. Likewise, one could argue that, while far from the only motivating factor, economic discontent has played a meaningful role in driving the protest movement in Iran in recent years. This paper considers the historical reasons cited for such failures of governance among MENA states, and seeks to assign relative levels of importance to each of these factors with regards to their harmful effect on both macroeconomic growth, and the actual economic opportunities available to the general populace of these nations.

2. Research Context

By the standards of virtually any significant metric measuring the quality of governance in a particular country, the nations of MENA routinely rank well below the global average. The findings of the World Bank's Worldwide Governance Indicators 〈WGI〉 project provide perhaps the starkest evidence of the mismanagement and misrule produced by many of the region's governments. The WGI project seeks to measure the quality of governance in a particular nation using six metrics: Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. These metrics are measured both by a Governance Score that ranges from −2.5 to +2.5, and a Percentile Rank relative to nations worldwide.

For the Voice and Accountability metric, 19 of the MENA region's 20 largest countries by population were given a negative Governance Score, and ranked in the 36th percentile or lower. 14 out of 20 ranked below the 25th percentile. For the Political Stability metric, 13 out of 20 ranked in the 41st percentile or lower; and two of the nations ranked above the 50th percentile〈Tunisia and Libya〉at the time of the project's last report〈2009〉would likely see their rankings drop in an updated study. For the Government Effectiveness metric, 12 out of 20 nations had negative scores, and 5 out of 20 ranked below the 25th percentile. For Regulatory Quality, 10 out of 20 had negative scores, and 5 out of 20 again ranked below the 25th percentile. For Rule of Law, 11 out of 20 had negative scores, and 4 out of 20 ranked below the 25th percentile. And for Control of Corruption, negative scores were given to 11 out of 20 nations, with 6 out of 20 ranking below the 25th percentile.

3. Objective and Importance of the Study

The main objective of the study is to estimate the causal effect of governance on per capita income. An econometric model is estimated using the cross-sectional data of the 197 countries in 2009. The estimation results are used to interpret the relationship between governance and growth for 22 MENA(1) countries.

4. Hypothesis of the Study

The main hypothesis of the study is that governance has a statistical significant effect on per capita income over the long run. The governance indicator covers six main areas of governance including voice and accountability, political stability, government effectiveness, rule of law, regulatory quality, and control of corruption. The study hypothesis is that the six different areas of governance have a statistical significant impact on per capita income over the long run.

5. Literature Review

The relationship between governance and economic growth is an old one; it dates back to the work of Douglas North and Mancur Oslon. The general agreement among development economists is that good governance leads to good economic performance. For instance, Keefer et al. 〈1997〉 finds good institutions are required for developing countries to catch-up with advanced economies. Using ordinary least squares Campos

and Nugent (1999) find that institution improves economic performance in East Asia and Latin American countries. Similarly, using a cross-sectional study on 150 countries Kaufmann, et al. (1999b) find evidence that there is a causal relationship between governance economic performance. Lastly, using cross-sectional data set on a group of developing countries the study by Chauvet and Collier (2004) finds that good governance is important for the effectiveness of aid offered to fragile African states. The study finds that countries with low levels of governance experience an economic growth of about two percent less than other developing countries in the sample.

Explanations for the failure of the governments of various MENA states to provide the kind of sound governance for their populations that can deliver strong economic growth and meaningful upward mobility have tended to fall into one of three categories: the implementation of misguided economic policies that provided government officials with an excessive amount of authority over the allocation of national resources, dating to the time of the Cold War; the presence of rampant corruption and cronyism throughout the organs of the state; and the lack of accountability caused by a dearth of democracy and political freedoms. For impoverished states with little natural resource income relative to the size of its population, critiques of economic policy have revolved around the socialist, state-driven economic models adopted by many Arab governments from the 1950s onward. These models, with their emphasis on state control of major industries, the delegating of major resource-allocation decisions to central planners, and stringent controls on foreign trade and capital inflows, have been cited as a key reason why resource-poor Arab nations have failed to keep pace with countries possessing more market-oriented economic policies. For nations awash in natural resource wealth, economic policy critiques have shined a light on both the harmful impact of heavy-handed state control by politicians and bureaucrats, and a general disinterest that's often seen with regards to the development of export-oriented industries that are not tied to resource extraction.

The explanations for poor governance that center on institutional corruption, meanwhile, are often quick to point to international studies and rankings that give many MENA states poor marks with regards to corruption and government transparency. The harmful impact of the widespread need for bribes and kickbacks on both the cultivation of domestic industry and the attracting of foreign investment is well-documented, as is the effect of lucrative business deals and favorable regulatory treatment being provided to the cronies and family members of prominent government officials. And researchers have noted that the lack of political liberty not only prevents autocrats and their underlings from being held accountable for their poor economic judgment, by means

of elections, but also prevents critics and whistleblowers from pointing out government incompetence, corruption, and malfeasance to their fellow countrymen.

Considering the impact that the embrace of market reforms, and their implicit reduction of the economic authority of government officials, has had on many developing economies throughout the world, it is not difficult to argue that questionable decision-making by government authorities in MENA countries with statist economic systems has been a major detriment to economic growth. In her paper, Parameters of Economic Reform in North Africa, Karen Pfeifer takes account of the economic damage done to Tunisia by its bloated, inefficient public sector enterprises (PSEs), which grew in number from 25 in the 1960s to 400 by 1989 (448), and the government diktats that kept them in this state. With PSEs "assigned objectives other than profit-maximization such as producing import substitutes...and not free to fire workers or raise prices," their losses ended up accounting for 20% of government outlays between 1977 and 1981 (449). The failures of Tunisia's PSEs, and the laws that left them in a particularly woeful state, undoubtedly played a large role in Tunisia's GDP per capita growth declining from an annual rate of 5.1% from 1970-1980 to merely 1.1% from 1980-1990 (449).

Egypt was also criticized by Pfeifer for its heavy-handed support of PSEs. In Egypt's case, not only did massive state investment in PSEs have a detrimental effect on the domestic economy due to their inefficiency, they required enormous imports of capital, technology, and other inputs in order to functions – thereby ironically thwarting the Egyptian government's stated goal of import substitution. Moreover, as the Egyptian government officials took an active role in managing quantities and prices for various inputs and outputs, Pfeifer notes that "central planning became very complex (442)." After achieving 5.7% annual growth from 1970-1980, Egypt's per capita GDP grew only 2.4% per year from 1980-1990, and declined by 0.5% per year from 1990-1995. As with many other developing economies, a state-driven approach to industrializing what was initially a predominantly agrarian economy yielded healthy economic growth at first, but then witnessed increasingly diminishing returns due to inefficient capital spending and general mismanagement.

That corruption and arbitrary rule-enforcement is widespread and deeply institutionalized in many MENA countries is undeniable. Relying on ten indicators from several major think tanks, economist Tarik M. Yousef sought to compare "Institutional Quality," which measures factors such as corruption, the size of the black market, the enforcement of rules and rights, and the quality of bureaucracy, in the OECD and six different sets of developing nations, sorted by geography. In Yousef's study, found in

his 2004 paper Development, Growth and Policy Reform in the Middle East and North Africa since 1950, the MENA region was given an Institutional Quality score of −0.32 – ahead of only South Asia and Sub-Saharan Africa, and well behind the OECD, which had a score of 1.38 (98). To make matters worse, with a score of −0.78, the MENA region ranked last (by far) in Yousef's rankings of "Public Accountability," which measured factors such as political participation, civil liberties, and government transparency and responsiveness. OECD nations, by contrast, reported a score of 1.89 (98). Needless to say, Yousef's findings dovetail very well with the WGI project's ratings of MENA nations in the areas of Voice and Accountability, Regulatory Quality, and Government Effectiveness.

However, the endemic corruption found within many governments cannot merely be attributed to the failings of autocratic governments: in many situations, cultural factors also appear to play an important role. In his paper, Expecting the Unexpected: The Cultural Components of Arab Governance, Lawrence Rosen remarks that "Arabs tend to characterize corruption not as abuse of some formal set of criteria associated with a given position but as the failure to share whatever largesse comes one's way with those to whom one has forged ties of obligation (171)." Rosen goes on to note how certain informants of his half-jokingly remarked that "corruption is our form of democracy," since it allows individuals to disregard an autocrat's rules in exchange for a bribe. Thus, "corruption" can sometimes take on a whole different meaning than what it is typically viewed as in the West, with the Western concept of corruption being sometimes tolerated, depending on the circumstances. And so, while potentially detrimental to economic growth, corruption in the Western sense of the term could remain in place to some extent even if political elites show a commitment to clean, transparent government.

The historical "democracy deficit" of the MENA states has clearly kept many autocrats (and until recently, a couple of others) from being held to account for their failure to deliver economic growth, as well as major improvement in other human development indicators. The chilling effect of the broader lack of political freedoms in a number of countries in the region, as manifested by the widespread reports of journalists, writers, and activists being arrested and/or beaten, has also contributed to the lack of accountability for poor governance, as many potential critics are frightened into silence, lest they run afoul of the state. And on a micro level, evidence appears to exist that a lack of political freedom has a strongly negative effect on the governing competence of the state. In their paper, Civil Liberties, Democracy, and the Performance of Government Projects, Jonathan Isham, Daniel Kaufmann, and Lant H. Pritchett sought to examine the relative

effectiveness of World Bank-financed government projects in nations that do and don't possess civil liberties, human rights achievement, media pluralism, and the freedom to organize, after controlling for economic, project, and regional variables. While the study found little relationship between the freedom to organize and performance, it found a moderately positive relationship with human rights achievement, and a highly positive relationship with civil liberties and media pluralism (229-230).

Given the evidence, sound arguments exist for all three of the analyzed factors – unsound economics doctrines, rampant corruption, and a lack of political accountability – having a harmful effect on the quality of governance in MENA countries, and thereby damaging economic growth. But at first glance at least, economic policy appears to be the largest culprit, given that it can be harmful not only in its own right, but to the extent that it can aggravate the other two factors. Given the extent of the cultural roots of corruptions in many MENA nations, it could be argued that the most effective solution for minimizing its economic impact is to migrate away from a centrally-planned economy and thereby eliminating the power of fallible government officials to "manage" the economy. And to the extent that misguided economic policies can stunt socioeconomic development, they can also inhibit a variety of factors (higher education levels, a more developed civil society, greater exposure to the outside world) that serve to increase the demand for political reform. Thus, while the effects of an improved economic policy on the general quality of governance may vary tremendously from nation to nation, its positive ripple effects are likely to be considerable.

One of the important concerns in estimating the governance growth relationship is the reverse causality problem. The work of Chong and Calderon (2000) shows that poor economic performance leads to poor institutional development. In other words, the relationship between growth and governance is a two-way causation and the correct estimation of this relationship requires the correct methodology that picks up this reverse causality. The econometric model presented in the next section will deal with such simultaneous causality problem.

6. Econometric Model

Using the Ordinary Least Squares (OLS) and the Two-stages Least Squares (TSLS) methodologies, the causal effect of governance on per capita income is estimated with a cross-sectional data set of 197 countries in 2009. Next, the estimation results are used to interpret the relationship between governance and growth for 22 MENA[(2)] countries.

Following Kaufmann and Kraay (2002), equation (1) below provides a parsimonious specification of the model;

$$pgdp_i = \alpha + \beta \quad gov_i + e_i \qquad (1)$$

Where pgdp is the log per capita income, gov is governance, e represents all the other factors not included in this parsimonious equation, and finally the subscripts i represents the cross sections, or countries.

The above model is complemented with the following equation;

$$gov_i^* = gov_i + u_i \qquad (2)$$

Where gov* refers to the observed governance which is a noisy measure of actual governance and with a measurement error u. The measurement error is assumed to have a zero mean and variance σ^2_u .

The main aim of the model above is to estimate the impact of governance on per capita income over the long run. The governance indicator covers six main areas of governance including voice and accountability, political stability, government effectiveness, rule of law, regulatory quality, and control of corruption. Accordingly, equation (1) above is estimated six times for each type of governance in a turn.

The second part of the empirical model aims at estimating the reverse causality, the impact of income per capita on governance. This relationship is represented by equation (3) as follows;

$$gov_i = \mu + \gamma \quad pgdp_i + \delta \quad x_i + \upsilon_i \qquad (3)$$

Where gov and pgdp are as defined above and x represents geographic location measured in latitudes. Similar to e in equation (1) above, υ is the measurement error term with zero mean and a variance σ^2_v and it captures all other factors not included in this simple parsimonious model. Following Kauffman and Kraay (2002), it is assumed that the error terms, or the omitted variables, of equations (1) and (3) could be correlated together such that $E[e.v] = \rho.\sigma_e.\sigma_v$ and this allows for the possibility that other factors affecting income per capita could be related with other factors affecting governance.
Finally, as in equation (2) above, the observed level of per capita income $pgdp^*$ is a noisy measure of actual per capita income such that;

$$pgdp^{*}_{i} = pgdp_{i} + w_{i} \quad (4)$$

where w refers to the measurement error with zero mean and variance σ^2_w The leading study by Acemoglu et al. (2001) uses settler mortality as an instrument for institutions assuming a high the settler mortality in a country is an indication of bad institutions. Hall and Jones (1999) have used colonial origin measured by the percentage of the population speaking a major European language. Kaufman and Kraay (2002) in their sample of 156 countries, use tropical location and colonial origin to impute the missing values of Acemoglu's settler mortality data that is only available for 56 countries. Moreover, Easterly and Levine (2003) find that tropics, germs, and crops have an indirect effect on development that passes through institutions.

Based on previous empirical literature on institutions, geographic location or tropical location is proved to be correlated with the level of governance and can be assumed as an exogenous variable in equation (3), or not correlated with other factors affecting per capita GDP of equation (1). Accordingly, without going through the relevance and exogeneity tests it is fair to assume that x is a valid instrument for governance.

Regarding the data set used in this study, it consists of cross-sectional observations for 197 countries for the latest available data on governance in 2009. The parsimonious model under study includes economic growth as the dependent variable measured as the log of per capita GDP (constant 2000 US$) and taken from the World Development Indicators (WDI) of the World Bank database. Data on the six areas of governance including voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and corruption are all taken from the Worldwide Governance Indicators (WGI) project, World Bank database and constructed by Kaufman, Aary, and Massimo (2012). Finally, data on latitudes were taken from the CEPII research center databases(3).

7. Estimation of the Econometric Model

The main aim of the model represented in equation (1) is to estimate the impact of different areas of governance on economic growth. The equation was estimated six times with the log of per capita GDP as the dependent variable each time and the six

types of governance as regressors each one in a turn. Table (1) below shows the results of estimating equation (1) using both the Ordinary Least Squares (OLS) as well as Two-stage Least Squares (TSLS). In line with previous empirical research, our results confirm the positive impact of improving governance on log of per capita GDP. All the coefficients show a positive and a statistical significant impact of governance on economic growth. For instance, using OLS Column (1) shows that a one standard deviation increase in regulatory quality measure increases per capita income by nearly threefold in the very long run. Similar magnitude is shown for the impact of rule of law measure on per capita income.

Using country latitudes as the selected instrument, Column (2) of Table (1) shows the results of the TSLS. Two things to notice about the results; first the signs of all the six governance measures are positive and statistically significant confirming the results of the OLS. Secondly, in line with Kaufmann and Kraay (2002), the estimated coefficients of the TSLS are larger than the OLS. For instance, using the TSLS, the impact of one standard deviation increase in the rule of law measure leads to eight fold increase in per capita income in the very long run as compared with only three folds using OLS.

The second part of this section is concerned with estimating the reverse causality from per capita income to governance. The main idea behind this estimation is to check whether the increase in income can lead to a better improvement in governance or not. By observing the performance of developed countries for instance, it is expected that countries with high income levels are also able to buy high quality governance. Table 2 below shows the results of estimating equation (3) six times with each governance indicator as the dependent variable in a turn and per capita income and latitudes as independent variables. For the sake of brevity, column (1) of the table below shows the estimates of γ in equation (3). As obvious from the results, the increase in per capita income has a positive and a statistically significant impact on all governance measures. For instance, if an economy is to double its per capita income, it can increase the voice and accountability measure by about 0.28 points. Similarly, doubling per capita income leads to around 0.34 increases in government effectiveness measure(4).

Table 〈1〉: The Causal Effect of Governance on Income Per Capita

Regressors	Ordinary Least Squares 〈1〉	Two-stage Least Squares 〈2〉
Intercept	7.932 〈0.091〉	7.987 〈0.199〉
Voice and Accountability	0.992 〈0.093〉	3.422 〈1.168〉
No. of observation	189	189
R^2	0.38	0.38
Intercept	7.938 〈0.091〉	8.025 〈0.248〉
Political Stability	1.037 〈0.095〉	4.256 〈1.789〉
No. of observation	189	189
R^2	0.39	0.39
Intercept	7.883 〈0.065〉	7.880 〈0.071〉
Government Effectiveness	1.353 〈0.067〉	1.747 〈0.217〉
No. of observation	188	188
R^2	0.69	0.63
Intercept	7.868 〈0.074〉	7.859 〈0.079〉
Regulatory Quality	1.279 〈0.077〉	1.660 〈0.230〉
No. of observation	188	188
R^2	0.59	0.54
Intercept	7.929 〈0.068〉	7.936 〈0.077〉
Rule of Law	1.327 〈0.070〉	1.836 〈0.244〉
No. of observation	189	189
R^2	0.66	0.56
Intercept	7.894 〈0.078〉	7.891 〈0.110〉
Control of Corruption	1.178 〈0.079〉	2.242 〈0.434〉
No. of observation	188	188
R^2	0.55	0.10

Notes: The dependent variable is log per capita GDP. The table summarizes the results of running six different regressions. The numbers in parentheses are the standard errors.

The results of the reverse causality suggest that there is also a feedback from income to governance. An exogenous increase in income, from multilateral aids for instance, leads to better governance. Thus the results suggest the presence of simultaneous causality between income and governance such that economic growth feeds in enhanced institutions.

Table 〈2〉: The Causal Effect of Income Per Capita on Governance

Dependent Variables	Ordinary Least Squares	No. of observations	R^2
Voice and Accountability	0.380 (0.036)	189	0.38
Political Stability	0.377 (0.034)	189	0.39
Government Effectiveness	0.510 (0.025)	188	0.69
Regulatory Quality	0.465 (0.028)	188	0.59
Rule of Law	0.497 (0.026)	189	0.66
Control of Corruption	0.464 (0.031)	188	0.55

Notes: The numbers in parentheses are the standard errors.

Given the fact that finding an instrument for per capita GDP is not an easy task, Kaufmann and Kraay 〈2002〉[5] methodology is used to infer the slope of the effect of income on governance indirectly through comparison of OLS and IV results.

Using sample information, the parameters μ, γ, δ, and σ^2_v of the reverse causality 〈equation 3〉 are estimated using the estimated intercepts, slopes, and variance of the error terms of the first and second stage regressions of the impact of governance on income . To do this, Equations 4 and 5 of Kaufmann and Kraay 〈2002〉 are written in a reduced form in terms of observables as shown below,

$$g_i^* = (1-\gamma\beta)^{-1}.(\mu + \gamma.\alpha + \delta\ x_i + \gamma\ e_i + v_i) + u_i \quad \langle 5 \rangle$$

$$y_i^* = (1-\gamma\beta)^{-1}.(\alpha + \beta\mu + \beta\delta\ x_i + e_i + \beta\ v_i) + w_i \quad \langle 6 \rangle$$

$$y_i^* = \alpha + \beta\ g_i^* + e_i - \beta\ u_i + w_i \quad \langle 7 \rangle$$

Table (3): Definitions of Parameters

Parameter	Definition
μ,γ, and δ	Intercept, income slope, geographic location slope of Equation 2. Those three intercepts we need to find them using other parameters, or sample information.
σ^2_v	Variance of the error term of Equation 2.
α, β	Intercept and slope respectively of the second-stage regression (Equation 1)
ρ	Correlation between the error terms in equation (1) and (3). Estimated to range from −0.20 to 0.20
σ^2_e	Variance of the residual of the second stage regression which, from Equation 7, is equal to $\sigma^2_e + \beta^2\sigma^2_u + \sigma^2_w$
σ^2_u	Variance of the measurement error in governance (From the data rule of law index has a standard deviation equal to 0.17). Parameters are estimated using a range from 0.17 to 0.34
σ^2_w	Variance of the measurement error in log per capita GDP, assumed equal to 0.20
π_0, π_1	Intercept and slope of the first stage regression of governance on the instrument x, or the latitude variable.
σ^2_2	Variance of the residual of the first stage regression of governance on the instrument x or the latitude variable.
β_{OLS}	Slope coefficient of the OLS regression of log per capita GDP on governance.
σ^2_x	Variance of the instrument or the variance of the latitude variable

Source: Author research

Solving the above three equations with variances and covariances, the Kaufmann and Kraay (2002) get the following three parameters,

$$\hat{\pi}_1 = \frac{\delta}{1-\gamma\beta} \qquad (8)$$

$$\hat{\sigma}_2^2 = \frac{\gamma^2\sigma_e^2 + 2\gamma\rho\sigma_e\sigma_v + \sigma_v^2}{1-\gamma\beta} + \sigma_u^2 \qquad (9)$$

$$\hat{\beta}_{OLS} = \frac{\delta^2\beta\sigma_x^2 + \gamma\sigma_e^2 + \beta\sigma_v^2 + (1+\gamma\beta)\rho\sigma_e\sigma_v}{\delta^2\sigma_x^2 + \gamma^2\sigma_e^2 + \sigma_v^2 + 2\gamma\rho\sigma_e\sigma_v + (1-\gamma\beta)^2\sigma_u^2} \qquad (10)$$

Where π_1 is the slope coefficient of the first stage regression, β_{OLS} is the slope coefficient of the OLS regression of log per capita GDP on governance, and σ^2_2 is the variance of the residual of the first stage regression of governance on the instrument x or the latitude variable. Finally the intercept coefficient μ, of the reverse causality regression can be computed from the estimated coefficient as equal to $\mu = [\hat{\pi}_o(1-\gamma\beta)] - \gamma\alpha$. For convenience, the definitions of all parameters are shown in Table 3 below.

Having equations (8) through (10) at hand and assuming values for the variance of the measurement error in governance, σ^2_u, and the correlation between the error terms of equation (1) and (3), ρ, the parameters γ, δ, and σ^2_v, and can be estimated as shown in Tables 4 and 5 below.

Following Kaufmann and Kraay (2002), given the high correlation between the rule of law index and the other governance indicators, it is used in running the experiments below. From the data, rule of law index has a standard deviation,σ_{uRL}, equal to 0.17. As shown in Table 4, the first experiment is run assuming a range for σ_{uRL}, from 0.17 to 0.34 holding the coefficient ρ constant at zero.

Table (4): Estimating the Coefficients of the Second Stage Regression (holding$\rho = 0$)

Estimated Parameters	Assigned Values To σ_{uRL}						
$\rho = 0$	0.17	0.198	0.226	0.254	0.282	0.310	0.34
γ	0.1056	0.0984	0.0915	0.0847	0.0784	0.0724	0.0658
δ	0.0153	0.0151	0.0149	0.0148	0.0146	0.0145	0.0143
σ_v	1.0204	1.0227	1.0258	1.0298	1.0347	1.0404	1.0470

Source: Author calculation

The results of Table 4 shows that holding ρ constant at zero, over the range of values for σ_{uRL} the impact of the log of per capita GDP on the governance indicator is positive though with a small magnitude. In other words, as the measurement error in the rule of law index increases from 0.17 to 0.34, the impact of per capita income on governance decreases from about 0.11 to 0.07. Furthermore, as the measurement error in rule of law increases, the impact of geography on governance,δ, decreases and the variance of the error term, σ_v, increases.

Next the second experiment is undertaken assuming hypothetical values for ρ, ranging from −0.20 to 0.20, holding σ_{uRL} constant at 0.17. As shown in Table 5, the higher the correlation between the error terms of the per capita income equation and the governance equation, the higher is the estimated magnitude of per capita income on governance, the higher is the estimated impact of geography on governance, and the higher is the variance of the error term.

Table 〈5〉: Estimating the Coefficients of the Second Stage Regression
〈holding σ_{uRL}= 0.17〉

Assigned Values To ρ					
σ_{uRL}= 0.17	−0.20	−0.10	0	0.10	0.20
γ	0.0147	0.0590	0.1056	0.1560	0.2121
δ	0.0131	0.0142	0.0153	0.0165	0.0178
σ_v	0.9623	0.9864	1.0204	1.0663	1.1271

Source: Author calculation

The calibrated results of Tables 4 and 5 confirms that the reverse causality from per capita income to governance is positive however, and as expected, the magnitudes are much smaller as compared to the estimated of Table 2 using OLS. According to the estimates of Table 2, the effect of per capita income on the different areas of governance ranges from 0.38 for the voice and accountability index, to 0.510 for the government effectiveness index. Comparing these magnitudes to the calibrated results, In addition, if we assume that the measurement error in the rule of law index is at its assumed highest value of 0.34, the impact of per capita income on governance is still positive reaching a minimum of 0.0658. In addition, in worst case scenario when the correlation between the error terms reaches its highest at 0.20 the impact of per capita income on governance does not exceed 0.2121.

Comparing the results of the estimation versus the calibration of the reverse causality, the results of the estimation, Table 2, suggest that an exogenous doubling income leads to about 0.35 increase in the rule of law index while the calibration suggests that the increase in the index ranges from 0.04 to 0.07 depending on the degree of this index measurement error, and ranges from 0.01 to 0.15 depending on the degree of correlation between the error terms of equations 〈1〉 and 〈3〉. In any case, the calibration

proved that the results of Table (2) are picking up the simultaneous causality between the per capita income and governance such that the factors affecting per capita income are also affecting governance. Furthermore, the calibration of the parameters prove that increasing per capita income has a relatively small impact on improving governance, represented by the rule of law. This implies, depending on income only to improve governance in developing countries is not enough but a direct intervention in improving governance in developing is required.

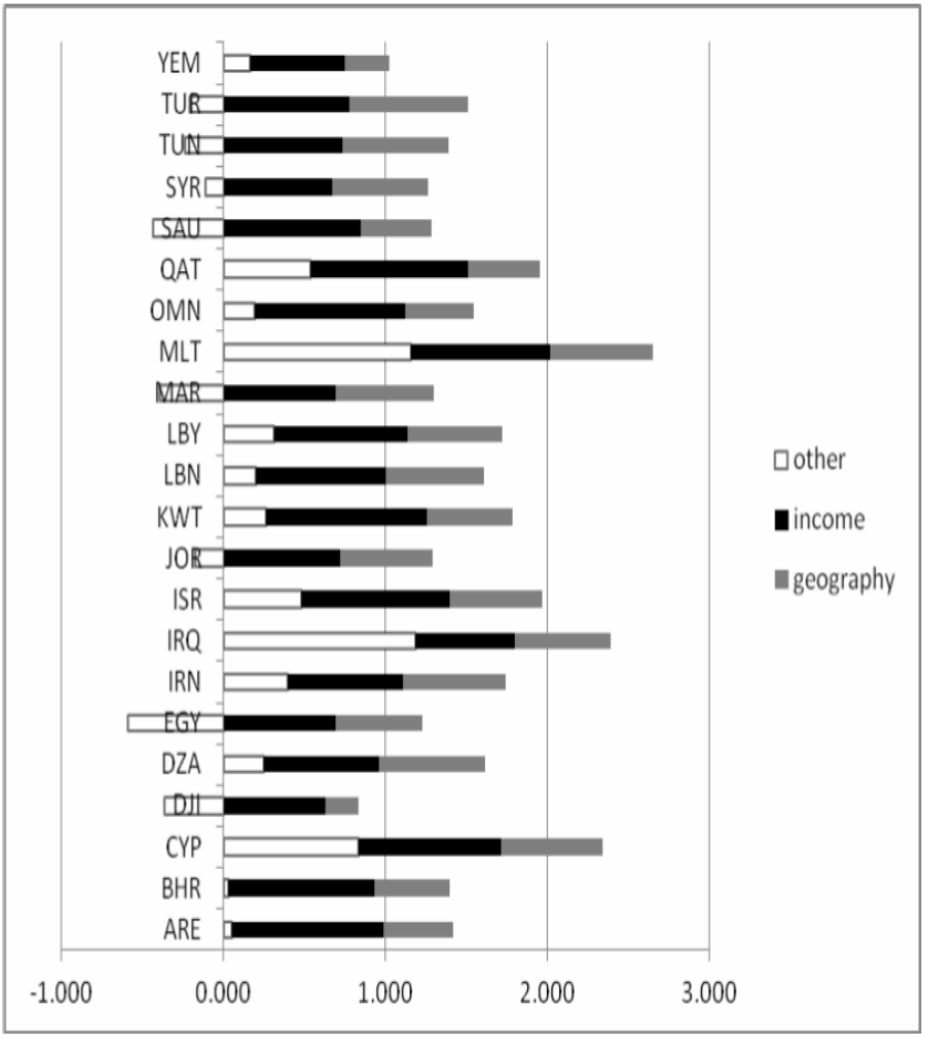
8. Analysis of the Results: The Case of MENA countries

Most MENA countries have low levels of governance for their per capita income levels. In other words, with their given governance levels, MENA countries are performing above the average income levels for all countries in the sample. Using the estimated coefficients for Equation (3), the income effect, geography effect, and the effect of other factors are computed in Table (2) of the appendix. As the table shows, the income effect is positive implying a one unit increase in the log of GDP per capita improves governance. Similarly the geography effect is positive for all MENA countries, as expected. The effect of other factors ranges from positive to negative impacts on governance.

The results of Table (2) of the appendix are graphical represented in Figure (1) below where the impact of income and geography on rule of law, as a proxy for governance, is estimated. As shown on the bar chart, the impact of income on governance is positive for all MENA countries where share of income in explaining governance was the highest for Kuwait, Quatar, United Arab Emirates, Oman, and Israel.

Furthermore, Figure (1) shows that the impact of geography on governance is positive with the highest impact in Turkey, Tunisia, Algeria, Malta, and Iran. Finally, the combined effect of other factors such as culture, life expectancy, population size, trade openness, peace years, unemployment rate, and exchange rate on governance ranges between positive and negative impacts with the highest positive impact in Malta and Iraq, and highest negative impact in Egypt.

Figure (1)
Estimating Reverse Causality in MENA Countries

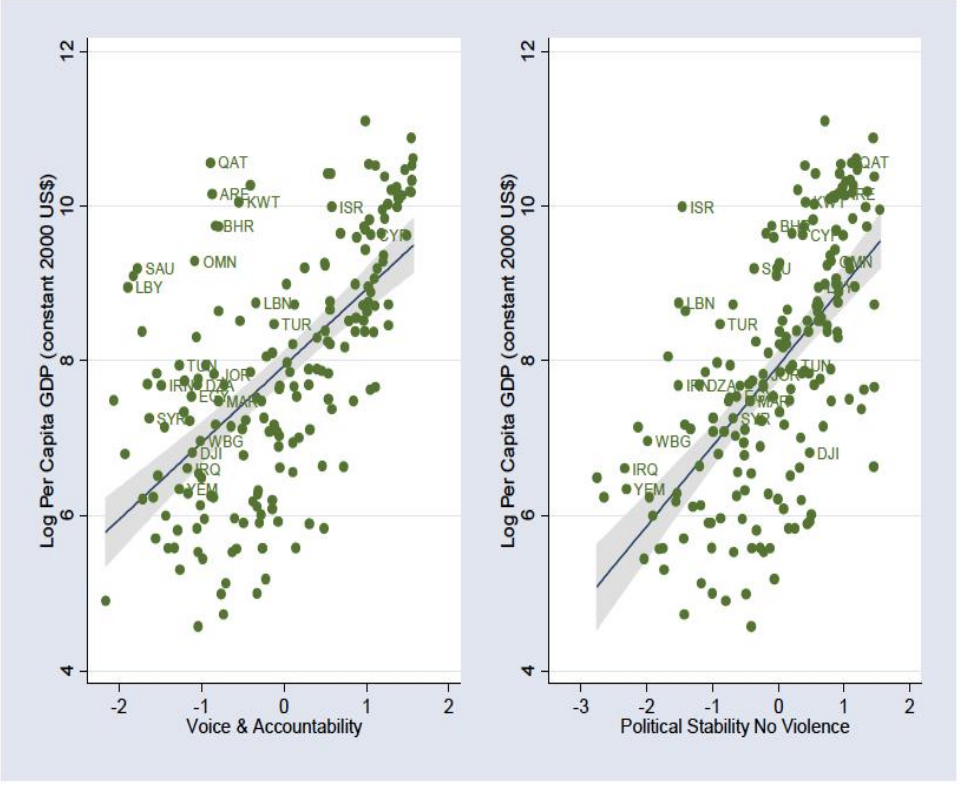


Figures 2 through 4 show the estimation of log per capita income regression on the six governance measures with a 95% confidence interval. Concerning the voice and accountability measure, as obvious from the graph on the left of Figure 1, almost all MENA states lie above the average estimated income per capita for all the countries in the sample. This is very obvious for countries such as Qatar, Bahrain, Kuwait, Oman, Libya,

and Saudi Arabia. Few countries in the MENA region performed below the average of the 197 countries in the sample in terms of the voice and accountability measure. More specifically, only three countries out of the 22 MENA countries, namely Djibouti, Iraq, and Yemen, lie below the regression line. Similarly, with the exception of Djibouti and Yemen, most of the MENA states lie above the average of the 197 countries in terms of political stability measure.

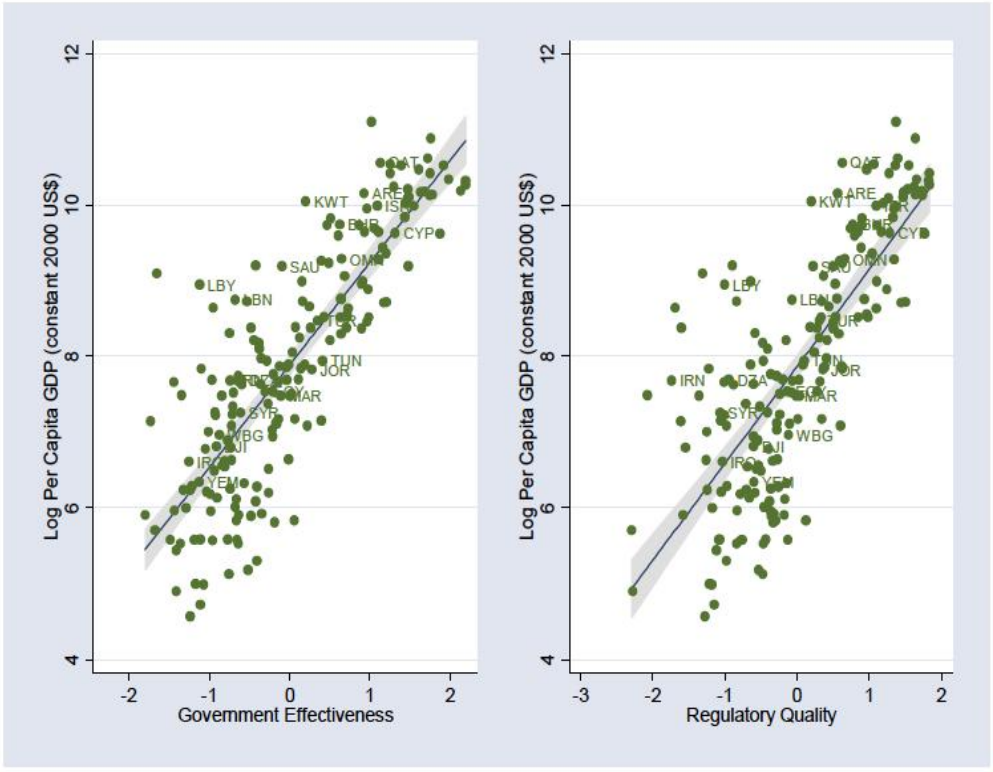
A striking feature of this figure suggest that except for only two countries, namely Cyprus and Israel, all of the MENA countries have a below zero of the voice and accountability measure. Moreover, except for Libya, Oman, Qatar, United Arab Emirates, all countries are around the zero political stability no violence measure. This feature suggests that for many MENA countries, the estimated high per capita income is derived from other sources other than firm governance.

Figure 2: Voice & Accountability and Political Stability MENA countries



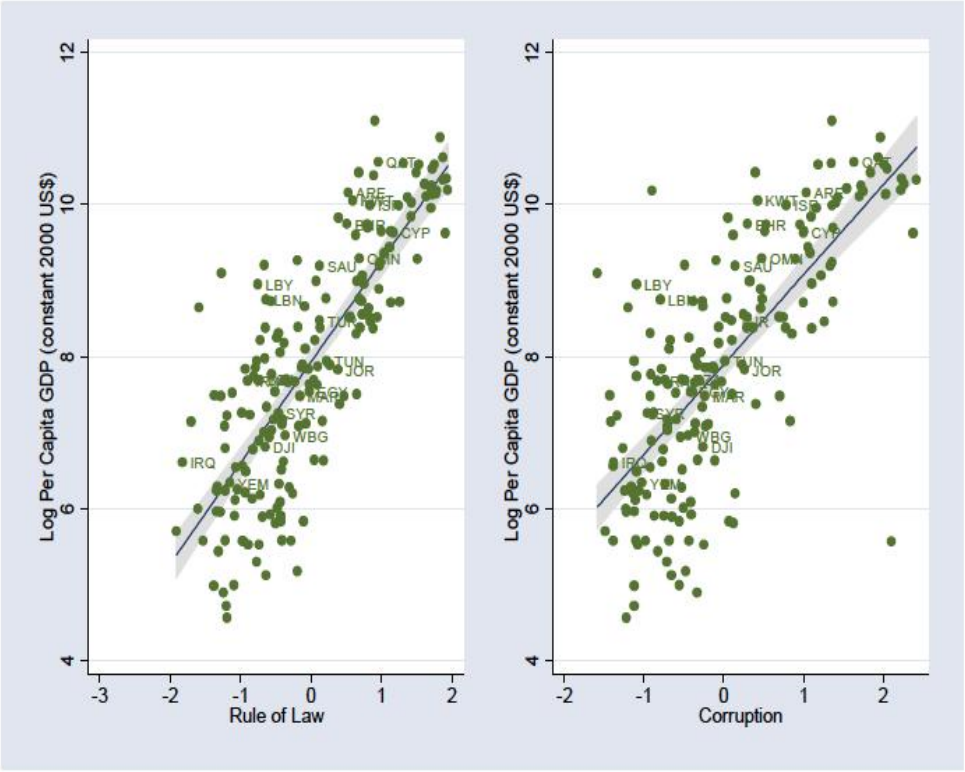
countries namely Cyprus Jordan, Morocco, and Tunisia, all the MENA states perform on or above the fitted per capita regression line. A country such as Libya with a low measure of government effectiveness performs a way above the average of the sample per capita income. Similarly, regarding the regulatory quality measure, Libya is a way above the average of the sample per capita income while countries such as Egypt, Tunis, and Yemen perform relatively below the average per capita income of all the countries in the sample.

Figure 3: Government Effectiveness and Regulatory Quality in MENA countries



Next, regarding the performance of MENA countries in the rule of law measure, as obvious from the left panel of Figure 3, despite the fact that only ten countries in the MENA region are scoring above zero on the rule of law measure, the majority of the sample are performing above the fitted regression line. For example, countries such as Lebanon and Libya with a rule of law score of only −0.63 and −0.75 respectively are performing highly above the regression line.

Figure 4: Rule of Law and Corruption in MENA countries



Finally, despite the fact that almost half of the MENA countries are performing poorly on the corruption measure only five countries (namely Djibouti, Jordan, Morocco, West Bank and Gaza and Yemen) are performing below the regression line.

9. Conclusion & Recommendation

A variety of factors have been responsible for the failure of the governments of various MENA states to provide the kind of sound governance for their populations that can deliver strong economic growth and meaningful upward mobility. As previously noted, the largest of these factors include the implementation of misguided economic policies that distorted resource allocation; rampant corruption and cronyism; and a general lack of accountability caused in large part by a shortage of democracy and political freedom.

Nonetheless, in spite of these crippling factors, numerous MENA countries have estimated per capita income levels that are above the estimated average for the 197 countries in the sample. This implies that many MENA countries have achieved a relatively high standard of living for their citizens thanks to other factors, such as an abundance of natural resources. Libya, Saudi Arabia, Kuwait, Oman, Bahrain, and United Arab Emirates depend on oil exports as their main source of income. Meanwhile, major sources of income for Egypt include tourism, remittances from Egyptians working abroad, revenues from the Suez Canal, and oil. Progress towards the formation of democratic institutions that could produce greater government accountability, as well as a more stable foundation for an elevated standard of living, has been very slow in most MENA countries, with citizens enjoying relatively limited amounts of social, economic, and political freedom. A fragile standard of living, easily upended by economic shocks such as rising food costs, was a key factor behind the Tunisian, Egyptian, and Libyan uprisings.

The main implication of this study is that strong efforts are needed within MENA countries to improve the quality and effectiveness of regulatory mechanisms; to bring down corruption levels, to strengthen the rule of law, to achieve political stability and reduce internal violence; and to make governments more accountable to their own citizens. Furthermore, an exogenous increase in income – through multilateral aid, for instance – will feed in better governance. A future extension of this study will work on testing the effect of multilateral aid in improving governance in the MENA countries.

Footnotes

〈1〉 Algeria, Bahrain, Cyprus, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates, West Bank and Gaza, and Yemen.
〈2〉 Algeria, Bahrain, Cyprus, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates, West Bank and Gaza, and Yemen.
〈3〉 Centre d›Etudes Prospectives et d›Informations Internationales 〈EPII〉 http://www.cepii.fr/anglaisgraph/bdd/bdd.htm
〈4〉 Doubling per capita income implies computing log 〈2〉 which is equal to 0.69, then multiplied by the γ coefficient of equation 〈3〉.
〈5〉 More details on the model are available on Kaufmann and Kraay 〈2002〉 paper.

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APPENDIX

Table ⟨6⟩: List of MENA Countries in the Sample

	country	Code
1	Algeria	DZA
2	Bahrain	BHR
3	Cyprus	CYP
4	Djibouti	DJI
5	Egypt	EGY
6	Iran	IRN
7	Iraq	IRQ
8	Israel	ISR
9	Jordan	JOR
10	Kuwait	KWT
11	Lebanon	LBN
12	Libyan Arab Jamahiriya	LBY
13	Malta	MLT
14	Morocco	MAR
15	Oman	OMN
16	Qatar	QAT
17	Saudi Arabia	SAU
18	Syrian Arab Republic	SYR
19	Tunisia	TUN
20	Turkey	TUR
21	United Arab Emirates	ARE
22	Yemen	YEM

Table 〈7〉: Estimating the Reverse Causality Regression for MENA countries Using Sample Information

Countries	Per-Capita Income	Geography 〈Latitude〉	Estimated Rule of Law	Estimated Error Term
ALGERIA	0.708	0.656	-0.482	0.250
BAHRAIN	0.901	0.466	-0.479	0.029
DJIBOUTI	0.887	0.626	-0.333	0.830
EGYPT	0.627	0.206	-1.012	-0.363
IRAN	0.694	0.535	-0.616	-0.590
IRAQ	0.708	0.635	-0.503	0.398
ISRAEL	0.609	0.593	-0.643	1.187
JORDAN	0.920	0.571	-0.354	0.479
KUWAIT	0.721	0.569	-0.556	-0.178
LEBANON	0.996	0.522	-0.327	0.263
LIBYA	0.806	0.603	-0.437	0.199
MALTA	0.824	0.583	-0.439	0.314
MOROCCO	0.855	0.639	-0.352	1.159
OMAN	0.689	0.606	-0.550	-0.393
QATAR	0.933	0.420	-0.492	0.191
SAUDI ARABIA	0.972	0.449	-0.424	0.535
SYRIA	0.847	0.439	-0.560	-0.436
TUNISIA	0.668	0.596	-0.581	-0.115
UNITED ARAB EMIRATES	0.731	0.656	-0.459	-0.240
YEMEN	0.780	0.730	-0.335	-0.213

Source: Author calculation