

## Exploring the Relationship between Democracy, Corruption and Economic Growth in MENA countries

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**Abstract:** The objective of this paper is to estimate an econometric model for analyzing the interrelationship among democracy, corruption and economic growth in 12 MENA countries by using simultaneous-equation models over the period 1998–2011. Our empirical results show that there is bi-directional causal relationship between democracy and economic growth, as well as corruption and economic growth, and there is unidirectional causal relationship running from democracy to corruption for the region as a whole.

**Keywords:** democracy; corruption; economic growth; simultaneous-equation models

**JEL Classification Code:** B22; C36; D73

### 1. Introduction

The main potential role of government is to guarantee its citizens the enjoyment of civil, cultural, economic, political and social rights. Democracy goes hand in hand with an effective, honest, transparent and freely chosen government.

For some countries; wealth, democracy and low or moderate levels of corruption are mutually reinforced, while for others, it is noted that; poverty, undemocratic political institutions and high levels of corruption constitute a vicious circle. Therefore, we can say that economic growth, corruption and democratization are closely related.

In the third world countries, abuse of political and administrative power at the expense of citizens remains a problem. The abuse of public office takes many forms. In particular, the receipt of direct payments for political favors by adopting

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laws for the manipulation of elections, the expenditure of public money for private purposes for groups of friends and voters.

At the international level, corruption is considered a major problem that must be addressed urgently, especially in developing countries. It tends to impede investment and economic growth (Shleifer and Vishny, 1993; Sekkat Méon, 2005), exacerbates the problems of underground economies (Friedman et al. 2000; Dreher et al. 2009; Bjørnskov, 2011;), exacerbate the difference between the rich and the poor (Gupta et al. 2002; Uslaner, 2008), create barriers to economic and political reforms (Hellman et al. 2003; Shleifer, 1997), and may, in the long run, lead to substantial losses for human well-being (Kaufmann et al. 2005).

The theoretical literature in political sciences and economics has made numerous efforts in this context and stressed the importance of the political institutions in shaping the patterns of the government corruption. However, the corresponding empirical literature is relatively rare. Democracy can be defined as an institutional mechanism where citizens express their preferences through elections (Schumpeter, 1950). In general, the theory predicts that democracy reduces corruption (Rose-Ackerman, 1999) protects civil liberties and sets up an independent judiciary system that can reduce Corruption (Schwartz, 1999; Treisman, 2000; Moran, 2001; Adserà et al. 2003; Saha et al. 2009; Go Kotera et al. 2012). Thanks to democracy, multiple monitoring instruments, such as free and independent media, free and proper elections will work well, so that the brake and counterweight against corruption by politicians and bureaucrats improve.

In a tradition dating back to the modernization of literature, researchers have suggested that the social, economic and cultural conditions make democratization likely to happen. Therefore, we had better check if economic development leads to democracy (Acemoglu et al. 2008; Benhabib et al. 2011; Yi Che et al. 2013; Moral-Benito and Bartolucci, 2012; Benedikt Heid et al. 2012) or democracy generates and provides the best conditions to promote economic growth (Rodrik and Wazciarg, 2005; Persson and Tabellini, 2006; Papaioannou and Siourounis, 2008). The theory of modernity stated by Lipset (1959) is still relevant in the recent studies, such as (Acemoglu et al. 2009, Glaeser et al. 2007; Freeman and Quin, 2012). Leading journals legitimize our study which has not yet been conducted on panel data of African countries, and mainly the Middle East and North Africa (MENA).

## **2. Literature Review**

Several existing works on the nexus between democracy, corruption and economic growth carried out on a piecemeal basis without a comprehensive model in mind ignore the potential interaction between the series. Thus this paper reviews the literature under three subsections, i.e., (1) economic growth and democracy; (2) economic growth and corruption (3) democracy and corruption. We discuss them below.

### **2.1. Economic Growth and Democracy**

The relationship between economic growth and democracy has been intensively analyzed empirically over the past two decades.

A proposition of major and perennial interest to both economists and political scientists is if economic development promotes democracy. Many studies have reported a positive association between income per capita and the degree of democracy (see, for example, Lipset, 1959; Barro, 1997, 1999; Papaioannou and Siourounis, 2008). However, establishing the causal impact of economic development on democracy is challenging, because there could be unobserved factors influencing both economic development and democracy (i.e., the omitted variables issue), and there may also be reverse causality running from democracy to economic development. We see many different studies in the literature which analyze the dimension of the relationship between economic growth and democracy. There are many scholars who admit Lipset's assertions and many others who do not. Friedman, who claims that there is a reciprocal relationship between the two, sees democracy as a positive supporter of economic development where more democratic rules will bring more liberal economic rules, which contributes to more economic development. As long as scholars develop new statistical measurement techniques and more reliable data sets regarding democracy and economic growth, the results vary evenly. In this regard, I demonstrate the conflicts and findings in the literature.

Several empirical studies tend to confirm the advantage of the authoritarian regimes in the process of economic development (Gerring et al. 2005; Booth, 2012; Kelsall and Booth, 2013). However, others suggest a beneficial effect of democracy on economic growth (Tavares and Wacziarg, 1997; Rodrik and Wacziarg, 2005; Persson and Tabellini, 2008; Fayad et al. 2012; Acemoglu et al. 2014). On the others hand, others only able to include any influence of democracy on economic growth. This is proved, for example, through the work of Efendic et al. (2011) who have synthesized meta-analysis the results of previous tests that analyze the effect of democracy on economic growth and have concluded the absence of an agreed outcome.

The assumption of modernization theory says that economic development and education are indispensable conditions for democracy (Lipset, 1959, 1994). Wealth and education can influence the likelihood of democratization through many channels. Since the pioneering work of Lipset (1959), economic growth has stimulated the democratization of political regimes (Przeworski et al. 1997; Barro, 1999; Przeworski et al. 2000; Epstein et al. 2006; Papaioannou et al. 2008; Acemoglu et al. 2008; Boix, 2011).

The non-linearity in the relationship between economic growth and democracy (Acemoglu et al. (2008)) is evident against the hypothesis supported by (Gundlach and Paldam, 2009; Benhabib et al. 2011; Treisman, 2011). We argue that the effect of economic growth on democracy may be different for different levels of economic growth. This could be explained by the fact that the stability of institutions is strongly correlated with economic performance (eg, North, 1990; Cheng and Feng, 1996; Jong-A-Pin, 2009). Therefore, democracy in poor countries with weaker institutions will be affected by changes in economic development. For this reason, the relationship between economic growth and democracy in developing countries is nonlinear. However, in rich countries, where institutions are more stable, the evolution of the economic development has no effect on the level of democracy, which shows that this relationship is linear in the developed countries.

We will therefore seek the prerequisites of democracy and analyze the role that economic development can have in the political structure.

The question is whether the authoritarian political regimes if the countries in the MENA region have survived the waves through democratic growth and economic development.

As already shown above, economic growth depends on democracy (Rodrik and Wazciarg, 2005; Persson and Tabellini, 2006; Papaioannou and Siourounis, 2008). Thus, democracy depends on GDP (Acemoglu et al. 2008; Benhabib et al. 2011; Benedikt Heid et al. 2012; Moral-Benito and Bartolucci, 2012; Yi Che et al. 2013). Indeed, these variables are endogenous. We therefore believe that a model of simultaneous equations is more appropriate to address the problem of endogeneity.

#### **a. Economic Growth and Corruption**

Not only corruption affects economic growth but also economic growth is likely to act on corruption. Economic development enables the authorities to have the necessary resources for the development of good institutions and the fight against corruption (Knack, 1999). The expected negative correlation between economic growth and corruption was documented by empirical research. Most studies that deal with corruption include economic development as an independent and critical variable.

Usually, studies have found a strong negative correlation between economic growth and corruption (Ades and Di Tella, 1999; La Porta et al. 1997, 1999; Treisman, 2000; Fisman and Gatti, 2002; Persson et al. 2003; Serra, 2006). Only a few studies in the literature contradict these findings (Braun and Di Tella, 2004; Fréchette, 2004) arguing that economic growth increases corruption. Difficulty has been established within the meaning of causality between economic growth and corruption. In order to control potential endogeneity, Treisman (2000) argues that the levels of the perception of low corruption are high in economic development. A similar strong negative correlation between economic development and corruption is obtained by La Porta et al. (1999).

Ades and Di Tella (1999) found that such a relationship is bidirectional, meaning that economic performance itself is affected by the quality of institutions.

Similarly, Serra (2006) and Seldadyo and de Haan (2005, 2006) used reliable methods to control the sensitivity of the estimates of the regressions with alterations in the target information. They found a strong association between strong growth and low corruption.

#### **b. Democracy and Corruption**

Across the world, the evidence shows that there is an inverse relationship between democracy and corruption. With democratic governments, countries lean towards low levels of corruption. The idea that democracy has a negative impact on corruption seems indisputable (Sung, 2004).

However, the degree of influence of democratic reform at the level of corruption is not simple and uniform. The main reason for the disagreement between researchers lies in the characteristics of the multidimensional nature of “democracy” and “democratization” (Coppedge, 2002; Sung, 2004).

Yet, empirical analyzes mainly support the negative association between democracy and corruption (Goldsmith, 1999; Sandholtz and Koetzle, 2000; Treisman, 2000; Montinola and Jackman, 2002; Sung, 2004; Bohara et al. 2004), but some of these analyzes are different.

For example, studies have considered democracy as freedom of expression that feeds the investigative journalism and exposes and discourages corrupted public activities (Giglioli, 1996; Brunetti and Weder, 2003). Alternatively, other studies show that the relationship between democracy and corruption is nonlinear. Despite the increase if corruption in the intermediate democracies, consolidation of advanced democratic institutions can reduce corruption. On the other hand, the initial political conditions and final democratic achievements determine the extent of political corruption (Montinola and Jackman, 2002; Sung, 2004). In addition, Treisman (2000) points out that long exposure to democracy reduces corruption.

However, Ades and Di Tella (1999) found that democracy has no significant effect on corruption, because countries, such as Hong Kong and Singapore, are experiencing very low levels of corruption, even if they do not have enough moderate political rights.

## 2.2. Data and Model Specification

The objective of this paper is to analyze the causality between democracy index, CPI, and economic growth using the production function whereby the GDP depends on endogenous variables including CPI and democracy index. This extended production function provides a meaningful framework to explore the three-way linkages between the three variables as additional factors of production.

These simultaneous-equation models are also constructed on the basis of the theoretical and empirical insights from the existing literature. The causal links between democracy– corruption and economic growth, are estimated through physical capital (K), human capital (H), labor capital (L), energy consumption (ENERG), unemployment (UNEM), government size (SIZE), and foreign direct investment (FDI) which included as instrumental variables.

$$\text{GDP} = f(\text{CPI}, \text{DEM}, \text{H}, \text{K}, \text{L}, \text{UNEM}, \text{FDI}) \quad (1)$$

This essentially states that economic growth is a function of index of perception of corruption (CPI), Democracy Index (DEM), human capital (H), capital stock (K), labor force (L), unemployment (UNEM), and foreign direct investment (FDI). We write Eq. (1) in a growth form with a time series specification, as follows:

$$\log(\text{GDP})_t = \alpha_0 + \alpha_1 \text{CPI}_t + \alpha_2 \text{DEM}_t + \alpha_3 \log(\text{H})_t + \alpha_4 \log(\text{K})_t + \alpha_5 \log(\text{L})_t + \alpha_6 \log(\text{UNEM})_t + \alpha_7 \log(\text{FDI})_t + \varepsilon_t \quad (2)$$

Since our study is a panel data study, Eq. (2) can be written in panel data form as follows:

$$\log(\text{GDP})_{i,t} = \alpha_0 + \alpha_{1i} \text{CPI}_{i,t} + \alpha_2 \text{DEM}_{i,t} + \alpha_3 \log(\text{H})_{i,t} + \alpha_4 \log(\text{K})_{i,t} + \alpha_5 \log(\text{L})_{i,t} + \alpha_6 \log(\text{UNEM})_{i,t} + \alpha_7 \log(\text{FDI})_{i,t} + \varepsilon_{i,t} \quad (3)$$

The three-way linkages between Institutional quality–democratization–growth are empirically examined by making use of the following three equations:

$$\log(\text{GDP})_{i,t} = \alpha_0 + \alpha_1 \text{CPI}_{i,t} + \alpha_{2i} \text{DEM}_{i,t} + \alpha_{3i} \log(\text{H})_{i,t} + \alpha_{4i} \log(\text{K})_{i,t} + \alpha_{5i} \log(\text{L})_{i,t} + \alpha_{6i} \log(\text{UNEM})_{i,t} + \alpha_{7i} \log(\text{FDI})_{i,t} + \varepsilon_{i,t} \quad (4)$$

$$\text{CPI}_{i,t} = \alpha_0 + \alpha_{1i} \log(\text{GDP})_{i,t} + \alpha_{2i} \text{DEM}_{i,t} + \alpha_{3i} \log(\text{SIZE})_{i,t} + \varepsilon_{i,t} \quad (5)$$

$$\text{DEM}_{i,t} = \alpha_0 + \alpha_{1i} \log(\text{GDP})_{i,t} + \alpha_{2i} \text{CPI}_{i,t} + \alpha_{3i} \log(\text{ENERG})_{i,t} + \varepsilon_{i,t} \quad (6)$$

Where  $i$  represents the country (in our study, we have 12 countries<sup>1</sup>);  $t$  represents time (our time frame is 1998–2011). The annual data on gross domestic product (GDP) in constant US dollars are used as a proxy for economic growth (GDP). The corruption perception index (CPI) represents the index of perceived corruption published by Transparency International, and the index ranking countries on a scale from 10 to zero, according to the perceived level of corruption. A score of 10 represents a reputedly total honest country, while a zero indicates that the country is perceived as completely corrupt. The democracy index (DEM) which was built by Freedom House, takes the average of the political rights and civil liberties. This variable is rescaled so that the value is stored from 1 (most democratic) and 7 (less democratic). The human capital (H) is measured by gross enrolment in secondary school, the physical capital stock (K) as a proxy gross capital formation (% of GDP) because it took into account the inventory change, and labor capital (L) measured by the rate of participation in the total active population (% of total population aged 15 and over). Unemployment in (% of population), energy use in kg of oil equivalent are used as a proxy for natural resources (ENERG), size of government measured by final consumption expenditure of general government (% of GDP), and (FDI) is the foreign direct investment (%GDP).

**Eqs. (4) to (6)** were estimated simultaneously by means of the generalized method of moments (GMM). The GMM is the estimation method the most commonly used in models with panel data and in the three-way linkages between some variables. This method uses a set of instrumental variables to solve the endogeneity problem. It is well-known that the GMM method provides consistent and efficient estimates in the presence of arbitrary heteroskedasticity. Moreover, most of the diagnostic tests discussed in this study can be cast in a GMM framework. Sargan test was used to test the overidentifying restrictions in order to provide some evidence of the instruments' validity. The instrument validity is tested using Sargan test which cannot reject the null hypothesis of overidentifying restrictions. In other words, the null hypothesis of the instruments appropriateness cannot be rejected. The Durbin–Wu–Hausman test was used to test endogeneity. The null hypothesis was rejected, suggesting that the ordinary least squares estimates might be biased and inconsistent and hence the OLS was not an appropriate estimation technique. The GMM estimation with panel data proves to be advantageous to the OLS approach in a number of ways.

### 2.3. Analysis and Results

Our simultaneous equations are estimated by making use of two-stage least squares (2SLS), three stage least squares (3SLS) and the generalized method of moments (GMM). In what follows, we report the results of only GMM estimation. While the parameter estimates remained similar in magnitude and sign, the GMM estimation

<sup>1</sup> Algeria, Libya, Morocco, Egypt, Kuwait, Iran, Arabia, Jordan, Bahrain, Lebanon, Oman

results were generally found to be statistically more robust. We estimated the three-way linkage between democracy, corruption and economic growth; while the other variables were used as instruments. To do this, we used panel data from 12 MENA countries during 1998–2011. The correlation between the dependent and independent variables is presented in Table 2. Its coefficients suggest that the reported regression models will not be seriously distorted by multicollinearity. The real GDP correlates positively with the democracy, physical capital, human capital and labor capital, but correlates negatively with the index of corruption perception, unemployment and the stock of foreign investment. Then, CPI positively correlates with the size of government, and negatively with the index of democracy. Finally, democracy correlates positively with the energy production.

**Table 1. Correlation matrix**

		1	2	3	4	5	6	7	8	9	10
1	Ln(GDP)	1									
2	CPI	-0.575	1								
3	DEM	0.389	-0.263	1							
4	Ln(H)	0.034	0.239	0.278	1						
5	Ln(K)	0.005	-0.335	-0.003	-0.268	1					
6	Ln(L)	0.226	0.276	-0.437	0.033	-0.411	1				
7	Ln(ENERG)	0.800	-0.301	0.457	0.436	-0.222	0.284	1			
8	Ln(UNEM)	-0.287	-0.184	0.327	-0.385	0.414	-0.824	-0.386	1		
9	Ln(FDI)	-0.352	0.108	-0.018	0.172	0.090	-0.367	-0.410	0.182	1	
10	Ln(SIZE)	-0.553	0.634	-0.403	-0.043	0.233	0.138	-0.558	-0.057	0.128	1

The empirical results about Eq. (4) are presented in Table 2, which shows that the effect of the index of corruption perception and that index of democracy on economic growth in the MENA countries is positive and statistically significant.

#### GMM estimation of simultaneous equations.

**Table 2. Results for the equation 4**

	Eq.(4)
	Dependent variable
	Economic growth
CPI	-0.368(0.038)**
DEM	1.733(0.000)*
Ln(H)	-1.686(0.014)**
Ln(K)	0.827(0.045)**
Ln(L)	2.811(0.042)**
Ln(UNEM)	-0.875(0.009)*
Ln(FDI)	0.013(0.597)
Constant	12.744(0.082)***
Sargan test (p value)	0.000
DWH test (p value)	0.000



Notes: Values in parenthesis are the estimated p-values. Sargan-test refers to the over-identification test for the restrictions in GMM estimation. DWH test—Durbin–Wu–Hausman endogeneity test.

\*Indicate significance at 1% level.

\*\* Indicate significance at 5% level.

\*\*\* Indicate significance at 10% level.

**Table 3. Results for the equation 5**

	Eq.(5)
	Dependent variable
	Corruption
Ln(GDP)	-0.284(0.009)*
DEM	0.099(0.536)
Ln(SIZE)	1.250(0.000)*
Constant	7.021(0.026)**
Sargan test (p value)	0.000
DWH test (p value)	0.003

Notes: Values in parenthesis are the estimated p-values. Sargan-test refers to the over-identification test for the restrictions in GMM estimation. DWH test—Durbin–Wu–Hausman endogeneity test.

\*Indicate significance at 1% level.

\*\* Indicate significance at 5% level.

\*\*\* Indicate significance at 10% level.

**Table 4. Results for the equation 6**

	Eq.(6)
	Dependent variable
	Democracy
Ln(GDP)	-0.854(0.002)*
CPI	-0.495(0.002)*
Ln(ENERG)	0.295(0.000)*
Constant	25.566(0.000)*
Sargan test (p value)	0.000
DWH test (p value)	0.000

Notes: Values in parenthesis are the estimated p-values. Sargan-test refers to the over-identification test for the restrictions in GMM estimation. DWH test—Durbin–Wu–Hausman endogeneity test.

\*Indicate significance at 1% level.

\*\* Indicate significance at 5% level.

\*\*\* Indicate significance at 10% level.

**Eq. (4)** shows that the impact of corruption on economic growth is negative and significant at a rate of 5%. The coefficient is -0.368, which indicates that when corruption increases by 1%, economic growth declines by about 37%. This result reinforces the idea of Blackburn et al. (2008), Dzhumashev (2009), and Avnimelech Zelekha (2011), and also Fiorino et al. (2012) that corruption leads to

an increase in inflation, which in turn reduces capital accumulation and economic growth.

To find an explanation of the differences between the countries of the world, we will try to find institutional justifications for economic growth. Some institutional and policy variables were previously used as, for example, respect for property rights in Clague, Keefer and Olson (1996), Democracy in Barro (1996) and political instability in Alesina and Perotti (1994). For this reason, we choose the index of democracy as an institutional variable that determines economic growth. It must first be noted that the DEM proxy used in our model as the measure of democracy is inversely related to the latter, that is to say an increase in DEM indicates an increase in the autocracy and the country is becoming less free.

The DEM variable is positively and significantly related to the variable real GDP at a rate of 1%, that is to say, the more we approach the authoritarian regime, the more economic growth improves. Then, we can say that a relatively low level of democracy in the countries of the MENA region is a determinant of a better economic performance. This is affirmed by Karl Schweinitz (1959) which provides that the least developed countries “must grow economically and limit participation in political affairs”.

In fact, maintaining a more or less authoritarian practice is considered essential for the preservation of strong economic growth for the country to benefit from greater prosperity and greater stability. This result corroborates those of Haan and Siermann (1995), Bhagwati (2002), Drury et al. (2006), Kelsall and Booth (2013) and Booth (2012) which provide that non-democratic countries can achieve economic growth.

This is also consistent with the work of Barro (1996) who found that democracy has a negative effect on economic growth after considering the empirical link for 100 countries over a period which runs between 1960 and 1990. Actually, he demonstrated that “too little” and “too much” democracy disadvantage economic growth through reducing the rate of accumulation of physical capital and increased public spending. Peev and Mueller (2012) show that democracy can have a negative effect on economic growth by increasing the size of the public sector and the public deficit may lead to higher taxes. The study notes that the former communist countries that were in transition to democracy have experienced higher levels of growth. Their results also suggest that democracy brings with it certain institutional changes that hinder economic growth. Democracy is also unable to implement measures to increase investment, because it forces people to reduce their consumption levels. However, authoritarian regimes are able to take such measures (Rao, 1985). Moreover, proponents of this view argue that democracies are often unable to limit public social spending to stimulate growth distribution dealing with pressures (Haggard, 1990).

Furthermore, Przeworski and Limongi (1993) find that democracy undermines property rights of security by allowing some groups that have political power to make wealth of property owners. Therefore, this process leads to economic uncertainty and reduces economic growth. Therefore, it may be that the form of government adopted by the countries of the MENA region has been particularly favorable to economic growth. This cuts the overall impression of a strong confidence in the democratic institutions of these countries, and a search for stability and economic development through authoritarian regimes.

Based on the increased Solow model, the variable of physical capital (K) is positively related to economic growth. The same is valid for Chen and Fleisher (1996), Gundlach (1997), Li et al. (1998) and Li and Choi (2000) Henderson et al. (2007). This makes us say that physical capital is found to have a leading role in economic growth in the MENA region, and the physical capital investments help build infrastructure capable of stimulating economic growth.

Thus, working capital (L) has a positive impact on economic growth in the MENA region in the sense that it is in this cycle as the development of skills feels about economic growth. In addition, the results are consistent with the theory of economic growth, and show that the labor capital and physical capital are two crucial factors in economic growth.

The variable “human capital” coefficient is negative and significant at 5% indicating that this variable is not able to explain the evolution of the economies of the MENA region, since labor productivity in these countries is weak. The negative impact exerted by the gross secondary enrollment growth of most economies in the MENA region should encourage governments in the region to spend an important part of public spending on education. For Aghion and Cohen (2004), developing countries need to invest more in primary and secondary education.

Finally, the unemployment variable (ln UNEM) is negatively and significantly correlated with economic growth. In other words, two variables vary in opposite directions to each other when unemployment rate increases by 1%, economic growth falls by 87%. In fact, when unemployment is high and persistent, there are economic costs that can become detrimental to long-term growth. Unemployment is not only a high social cost for the individual but also a high economic cost for the society (Sanchis-i-Marco, 2011). This result is consistent with that of Herwartz and Niebuhr (2011), and Mauro Carmeci (2003); Okun (1962) which state that deep economic reforms are needed to create jobs and spur economic growth.

According to **Eq. (5)** economic growth is negatively and significantly related to corruption at a rate of 1%. This empirical result can be an explanation for economic growth that may be the favored vector of developments towards the establishment of democratic regimes and reduction of corruption in the MENA countries (Knack, 1999; Serra, 2006; de Haan and Seldadyo, 2006).

The coefficient of the index of democratic accountability is not statistically significant. This is explained by the fact that developing countries are characterized by less democratic political institutions and sometimes undemocratic which, do not influence corruption. This means that in these countries, less democratic political institutions, high levels of corruption and low levels of life together form a vicious circle. Therefore, among the reasons for the high level of corruption that eventually cause the poor economic performance of the developing countries, is the presence of less democratic or sometimes undemocratic political institutions in developing countries (Ades and Di Tella, 1999).

The relationship between the government variable size and the perception index of corruption is positive and significant at 1%. However, this variable is approximated to the final consumption of public administrations of countries in the MENA region where the government is deemed by low wages for public officials, which leads to corruption. Poorly paid officials manage demand programs, budgets, taxes, customs regulations ... and there is an almost irresistible temptation to impose bribes (Goel and Nelson, 1998; Ali and Isse 2003; Alesina and Angeletos, 2005; Zhou and Tao, 2009).

**Eq. (6)** shows that the ratio of real GDP is significantly negative as expected based on the theory of modern Lipset (1959). The negative sign shows that with increasing economic growth, DEM variable, which is inversely related to democracy, decreases. This empirical result shows that the economic performance of countries in the MENA region led to a strengthening of democracy and that it is only possible after prior stage of development as often asserted by authoritarian states. In fact, the statement by Moore (1966), which says “no bourgeoisie- no democracy” again confirms what we have shown empirically.

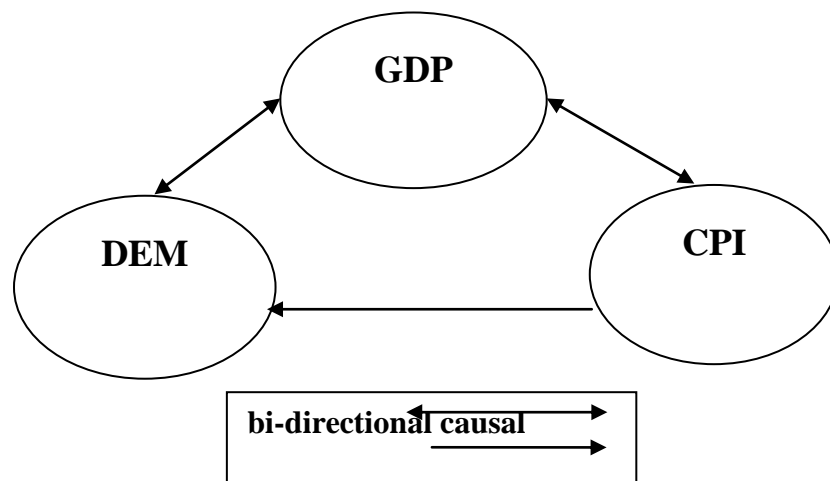
A general increase in economic growth has made improvements in institutions. Stability and institutional quality are highly correlated with economic performance (eg, North, 1990; Cheng and Feng, 1996; Jong-A-Pin, 2009). Therefore, democracy in poor countries with weakest institutions will be affected by changes in economic growth. However, in rich and developed countries, institutions are more stable and thus the evolution of economic growth has no effect on the level of democracy. Over 70% of all democratic relapses occur during economic stagnation. In fact, economic downturns also present dangers for democracies. Therefore, signs of economic stress because of their potential impact on Africa's ability to maintain a positive democratic impulse.

The strong conclusion, which is politically important in our results, is that developing countries are likely to transform their political systems to democracy by increasing real GDP. Actually, this does not mean that all countries become democratic once they have reached a certain level of development, but a political change towards democracy as countries become richer and the improvement of

living standards, measured by real GDP, increases the chance of a country to adopt a democratic system. The empirical results show that economic growth is one of the essential pillars of democracy. It would become possible and also essential beyond a certain level of economic development. These results also confirm the modernization theory which shows that higher levels of prosperity will predict when and to what extent countries are ready to leave authoritarianism and become stable democracies.

The variable measuring the production of energy, which is the variable that measures approximately natural resources, is positively correlated with the index of democracy.

It has already been known that the countries of the MENA region are rich in natural resources, and are assisted to the accompaniment of political violence and the income from this wealth has been used by public policymakers to block the establishment of democracy (Jensen and Wantchekon, 2004). In other words, the exploitation of natural resources leads to annuity catches by policy makers who establish institutions interested in ensuring the expropriation of these annuities for their own profits at the expense of the whole society and perverse political incentives. Thus, the rich natural resources exacerbate competition for takeover, synonymous with the control of these resources. This confirms, for example the results of Atkinson and Hamilton (2003) Bulte et al. (2005) Brunnschweiler (2008), Barma et al. (2012) and Ross (2012).



**Figure 1. Interrelationship among GDP, CPI and DEM for MENA countries**

Therefore, according to the overall results, we can conclude that: (1) there is a two-way causal relationship between economic growth and democracy; (2) there is bidirectional causality from economic growth to the index of perception of

corruption; and (3) there is unidirectional causal relationship between democracy and the index of corruption perception for the region as a whole. Fig. 1 summarizes the GMM panel data results of Table 2, 3 and 4. These results support a three-way link between economic growth, corruption and democracy over the period of 1998-2011 study.

### 3. Conclusion and Policy Implications

While the literature on the causality links between democracy, corruption and economic growth for individual countries and for panels of countries has increased over the last few years, there is no study that examines this interrelationship using a growth framework and simultaneous equation models. The objective of the present work is to fill this research gap by examining the above interaction for 12 MENA countries over the period 1998–2011.

Our analysis suggests that (i) there is bi-directional causal relationship between economic growth and democracy; (ii) there is bi-directional causal relationship between economic growth and the index of perception of corruption; and (iii) there is a uni-directional causal relationship from democracy to index of perception of corruption.

The main new policy implications of our study are as follows.

Regarding the impact of economic growth on corruption, we found that this relationship is negative and significant for the MENA countries through this; we can say that economic growth may be the favored vector of development towards the establishment of democratic regimes and the reduction of corruption in the MENA countries.

The high level of corruption subsequently causing poor economic performance of developing countries is due to the presence of non-democratic institutions. This notifies that in these countries, non-democratic political institutions, high levels of corruption, public expenditure, which are subject to rent-seeking and low living standards, evolve in parallel. It is therefore necessary to implement the reforms that stimulate policy development and the need to reflect on progress, challenges and prospects of the project of democracy and good governance for the countries of the MENA region.

Ultimately, we can confirm that our analysis helps to encourage the governments of the MENA region to implement programs for economic growth similar to the Chinese one to increase the chances of transforming authoritarian regimes in to democratic systems. Through this change, they will fight corruption that hinders the proper functioning of institutions, the efficiency of public spending, so that the resources that come from the government serve the purpose for which they were

intended and should achieve high rates of economic growth and stop to think that the lack of democracy is an obstacle to their own development.

We believe that future research should explore issues of civil conflict, religion and economic crises that may also play a key role in the democratization of countries.

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