# A Study on the Relationship Between Democracy and Corruption in Mena Countries by Using DGMM Model

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**Abstract**

The purpose of this study is to investigate the relationship between democracy and corruption using a Dynamic Generalized Method of Moments (DGMM) during the period 1984-2013 for 13 MENA countries, namely Algeria, Bahrain, Egypt, Iraq, Iran, Kuwait, Lebanon, Morocco, Qatar, Saudi Arabia, Tunisia, Turkey and United Arab Emirates.Our results captured the GDP per capita as the feeding corruption factor in MENA countries in a way that a rise of one percent of per capita GDP leads corruption to rise by about 0.73 particularly in MENA net oil and gas exporting countries except for United Arab Emirates **(**See Omgba (2015); Haber and Menaldo (2011*).* In this context, the richest oil exporting countries have not been able to decrease their corruption level, **(**See Jetter (2015), Rachdi and Saidi (2014). Conversely, the magnitude of impact for non-oil producing countries happen to be less related to corruption over the last decade compared to the two early decades. Finally, our findings present a positive and a significant association between democracy and corruption; the influence of positive feedback is around 0.5 points. According to this estimation, lower democratization process in MENA countries is highly influenced by high levels of corruption.

**Keywords:** Corruption, Democracy, MENA Countries, Panel GMM

**GEL Classification**: D73, K42, P16

## 1-Introduction

Much attention has focused these last decades to the relationship between democracy and corruption in all countries. In most empirical studies, results are mixed. Some papers found a negative relationship, when democratic institutions fall, corruption level rises and the opposite is true, when a country applies democratic rules, there is less corruption. Others provide inverted U curve suggesting that in newly democratized countries, corruption rises in the first time before it starts to decrease following a generalized implementation of democratic institutions, Mohatdi and Roe (2003), Schneider and Schmitter (2004), Rock (2007). Conversely, some papers fail to capture any relationship between corruption and democracy, Ades and Di Tella (1999), Fisman and Gatti (2002), Lambsdorff (2005).

MENA countries appear to be newly democratized countries and have been witnessing rapid movements of reforms as the Arab spring*,* security crises and as well as a strong attitude to fight extremism. In this case, it is necessary to distinguish between transition and consolidation democracy. The latter depends upon competitive elections, institutional transparency as well as processes and values brought about by political classes without any control and intervention of the army, Gunther et al (1995), Schneider and Schmitter (2004). Democratic transition survived in countries that substituted authoritarian regimes by democratic governments like Latin America and MENA regions; O'Donnell and Schmitter (1986) Scott Mainwaring (1989), Faulenbach (2007).

The recent World Bank study ranks the strong democracies in MENA region as Tunisia, Turkey, Lebanon, and Kuwait, whilst Algeria, Egypt, Iran, Iraq, Morocco and the GCC countries are included in the second classification of democratic MENA countries.

In this situation, we shall try to check a combination between two indicators, expecting that it may exhibit an inverted U curve. In figure 1, we plot this relationship during the period 1984-2013. In this context, the general apparent curve shows that Iraq and some GCC countries fail to establish a link between a rise in democracy and a reduced corruption. Morocco seems relatively undemocratic with high corruption level compared to Iraq, Qatar, UAE and Bahrain, while Kuwait, Tunisia, Algeria and Egypt were successful in achieving a relative acceptable level of democracy as a powerful tool to reducing corruption that is still high.

Figure-1. Corruption and democracy in MENA countries (1983-2013)
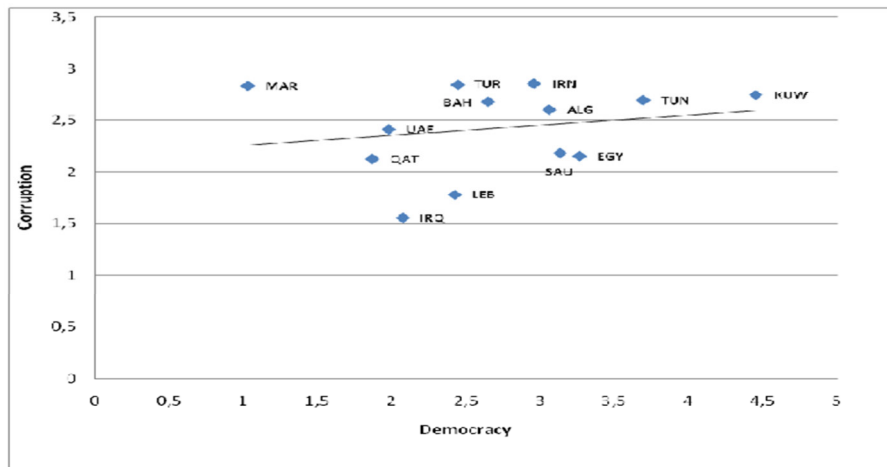


Using panel data for MENA countries for the period span 1984 to 2013, we show in Figure 2 the existence of an inverted U pattern Kaufmann, et al. (2007).  The impact of democracy on corruption exhibiting a partial inverted U curve, may be clear but moves to the left when using a consolidated democracy with Rock's, (2007) democracy figure.

Figure-02. Corruption and democracy: An Inverted U
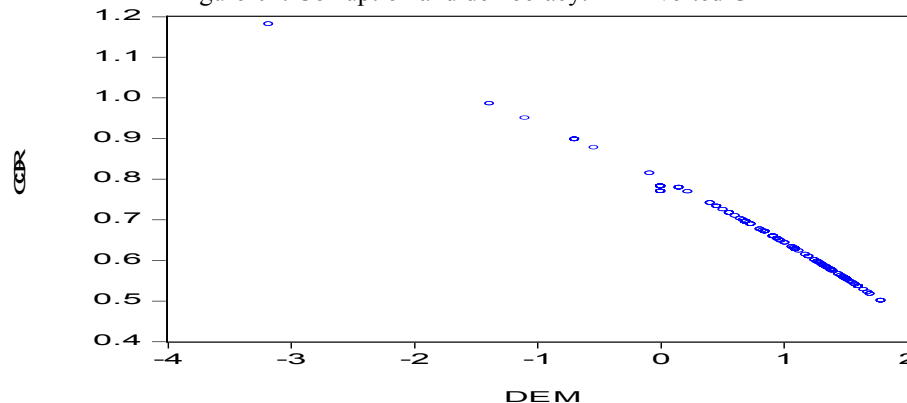


The relationship between democracy and corruption is still not obvious, and the two are rarely associated together. In this study, democracy-corruption nexus can be explained by several endogenous variables such as rule of law, bureaucracy, Military in Politics, Religion in Politics and GDP per capita.

The goal of this study is to investigate the relationship between democracy and corruption in 13 MENA countries through an empirical analysis using a panel GMM dynamic during the period 1984-2013.

The rest of the paper is organized as follows. In section 2, we shall present a literature review on the impact. Section 3 deals with the model and the methodology, followed by the results and discussion in Section 4, and finally, section 5 sets out the main findings.

**2-Literature review**
Jetter et al (2015) reported the ambiguous relationship between democracy and corruption during the period 1998-2012 using a 3SLS framework. Their results confirmed that democracy reduces corruption in countries with higher per capita GDP and increases corruption in the poorer nations.

More specifically, Billger and Goel (2009) consider that greater democracy and more economic freedom can reduce corruption in the least corrupt nations and fail in highly corrupt countries. Kurzman et al., 2002 tested the role of government consumption to GDP ratio on democracy and found positive effect (Baum and Lake, 2003; Helliwell, 1994).

Rota (2015) documented the relationship between military spending and democracy over the period 1880-1938 through a Pooled regression. This study establishes positive association between military spending and the components of democracy in the long run. Aisen and Veiga (2013) indicated a small negative effect of political instability on democracy using GMM model for 169 countries.

Many studies highlighted the relationship between democracy and   religion. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997, 1999) studied the correlation between religious affiliation and corruption.  In this context, several papers achieved similar results of negative relationship between Islam and democracy see Barro

(1993) Huntington1984, 1991; Lipset 1994). Midlarsky (1998) pointed in his study that Muslim countries are less democratic than non-Muslim states. However, on the contrary, Toros (2010) observed a good relationship between Islam and democracy in turkey. In other regions and exactly in Central Asia, Collins and Owen (2016) focused on this relationship and show that Muslims want democracy.

Saha et al (2014) point out in their analysis that high-income inequality, tertiary level of education and unemployment has led to increased corruption during the period from 1995 to 2008. Kotera et al (2012) examined the effect of government size on corruption using annual data of 82 countries between 1995 and 2008. This study showed, from one side, positive effect of government size on corruption in countries characterized by a high democracy level, and from another side, negative effect in less democratic countries Treisman 2000, Fisman and Gatti (2002), Adserà et al 2003. Serra (2006) tested the main determinants of corruption in 62 countries over the period (1950–1995) by using 16 variables including four economic variable, five socio-cultural and seven political variables. She found significant impact of economic development, Protestant religion, British colonial heritage and democracy on corruption.

Ross (2001) investigated democracy in Middle East oil Countries using pooled time-series on cross-national data for 113 countries between 1971 and 1997. He found a negative correlation between oil and democracy, in that oil resources are not exploited to boost political reforms. In the same sense, Jensen and Wantchekon (2004) supported Ross results when they found that oil and mining countries fail to democratize their political systems. Saidi and Rachdi (2015) examined the effect of democracy on economic growth from 1983 by applying a panel and GMM methodologies in 17 MENA countries. They found a negative impact of democracy on economic growth.

As far as transition economies are concerned, Iwasaki and Suzuki (2012) use panel data for 32 transition economies from 1998 to 2006 and end up by presenting the progress of structural reforms, comprising marketization, rule of law, and democratization as determinant factors for a reduced or increased corruption. On the basis of these studies, we shall present hereafter the model and methodology that may help us understand the relationship between Corruption and Democracy.

## 3-Model and Methodology
### 3.1-Data source
The sample comprises 30 annual data for the period 1984 – 2013.Sources of GDP per capita, government expenditure and education variables are collected from different issues of International financial statistics and world development indicators. The sample of economic freedom is unbalanced as it begins in 1996. It comes from the Heritage Foundation, where the remaining variables as democracy, Corruption … are collected from International Country Risk Guide.

Our study covers the following sample of 13 countries in MENA region: Algeria, Bahrain, Egypt, Iraq, Iran, Kuwait, Lebanon, Morocco, Qatar, Saudi Arabia, Tunisia, Turkey and United Arab Emirates.

### 3.2-Definition of the model
To check the relationship between democracy and corruption in MENA countries, we use Dynamic Generalized Method of Moments (DGMM) proposed by Arellano and Bond (1991). The Generalized method of moments (DGMM) can help avoid serial correlation among variables with the use of the least square method (GLS), Crakovic and Levine (2002). Also, this approach sidesteps the need for structural modeling by treating every endogenous variable in the system as a function of the lagged values of all the endogenous variables in the system. Indeed, the GMM method can  help avoid false results through stationary time series and spurious regression by using instrumental variables with their own lagged values.Arellano and Bond (1991), Nkurunziza and Bates (2003), Buonanno (2005).
The mathematical representation of our specification is:

$$CPI_{it} = \alpha + \beta 1\, dem_{it} + \beta 2 lngdp_{it} + \beta 3 ef_{it} + \beta 4\, govz_{it} + \beta 5\, er_{it} + \beta 6\, law_{it} + \beta 7\, rel_{it}$$
$$+ \beta 8\, bur_{it} + \beta 9\, mil_{it} + \varepsilon_{it} \quad .......(1)$$

Where:
- (CPI) is Corruption Perception Index.
- (Dem) is a democracy variable, (Law) is Law and Order.
- (Bur), (mil) and (Rel) are bureaucracy, Military in Politics and Religion in Politics (all these indices below range from zero to 6).
- ( lngdp) represents GDP per capita,
- (Govz) measure government  expenditure as percent of GDP,
- (Er) is Gross enrollment ratio.
- the Index of Economic Freedom (Ef) ranges from 0 to 100 and calculus is based on10 quantitative and qualitative factors ((property rights, freedom from corruption, fiscal freedom, government spending, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, financial

freedom.
- ε is the disturbance term, i and t represent countries and time.

## 4.-Results and discussion

Table- 01. Democracy and corruption using DGMM approach

| corruption | | | democracy | | |
|---|---|---|---|---|---|
| variable | confessions | P-value | variable | confessions | P-value |
| DGDPPH | 0.73 | 2.15 ** | DCPI | 0.46 | 2.55** |
| DDMC | 0.54 | 3.85** | DGDPPH | -0.32 | -2,63** |
| DEF | -0,45 | -2,25** | DEF | 2.93 | 1.68* |
| DBUR | 0.57 | 2,45** | DBUR | 1.77 | 1.91* |
| DGOV | -0.01 | 1,81* | DGOV | -0.14 | -2.95** |
| DLAW | 0.29 | 1.74* | DLAW | -0.56 | -1.90* |
| DRELG | -0.30 | -2.05** | DRELG | 1.13 | 2.65** |
| Constant | -0.12 | -3.68** | Constant | 0.04 | 0.85** |
| AR (2) | -1.588 | | AR (2) | -1.403 | |
| P-value | 0.112 | | P-value | 0.161 | |
| Sargan test | 218 | | Sargan test | 24.97 | |
| P-value | 0,99 | | P-value | 0,99 | |
| Wald χ2 | 27.78 | | Wald χ2 | 27.78 | |
| Number of instruments | 17 | | Number of instruments | 9 | |

* and **indicate statistical significance at the 10% and 5% level.

- In Column 2 and 5 are reported the coefficient effects on corruption and democracy respectively where column 3 and 6 exhibit P-value. Our results help highlight the importance of GDP per capita as the feeding corruption factor in MENA countries,where one percent increase of per capita GDP leads to 0.73 rise in corruption level and a decrease of more than 2 points in the 0–6 corruption index in MENA net oil and gas exporting countries[1], except for United Arab Emirates. In this context, the magnitude of impact for non-oil producing countries happen to be less related to corruption over the last decade compared to the two early decades.

- Columns 1 and 2 present a positive and significant association between democracy and corruption. We observe that the sign of the coefficients is broadly unchanged, indicating the influence of positive feedback around 0.5 points in the regressors. According to this estimation, the lower democratization process in MENA countries is affected by high levels of corruption. As a result, a certain level of democracy in oil exporting countries, especially the high-income group would not have contributed to decrease corruption level, (See Jetter (2015), Rachdi and Saidi (2014).

- The government size is statistically significant and relatively near to zero. This may reveal a small expenditure composite on GDP (less than 15% except for GCC countries) that does not have any effect on corruption. Furthermore, the inefficient government spending and a continual improvement on education spending have only a slight impact on corruption.

- We also note that the quality of bureaucracy does not reduce corruption (significantly positive), when one standard deviation of bureaucracy tends to increase corruption by 0.57. (See Mauro (1998), Treisman (2000), Anderson& Gray (2006), Brown et al. (2007), Prasch (2007)…)

- Furthermore, the Index of economic freedom presents a significant and negative sign. This may help explain how economic freedom impacts CPI (especially in Qatar, turkey, UAE) through many channels including market competition improvement, private business boosting and investment flows in these regions except for Iran and Iraq. Indeed, Economic Freedom tends to produce 1.6 points loss in corruption index; see: Paldam, 2002b; Shen and Williamson, 2005; Carden and Verdon, 2010; Pieroni and d'Agostino 2013.

- However, law and order variable has an important impact on corruption. In this case, the strong relationship between high corruption and weak law and order can explain the ineffectiveness of MENA legal and judicial systems to reduce corruption level during the period 1984 to 2013, Levin and Satarov (2000), Jain (2001), T. Herzfeld C. Weiss (2003)

- Finally, religion has a negative significance on corruption index and proves to reduce 0.3% of corruption against one percent use of Islam (Sunnite and Shiites Muslims) as a proxy of religion in MENA countries, La Porta etal. (1997), Lambsdorff (2005), Samanta (2011), though a paradox exists

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[1]these countries are Algeria, Bahrain, Iraq, Iran, Kuwait, Qatar and Saudi Arabia

between some corrupted Islamic countries and less corrupted non-Islamic ones.
- In the democracy column, the effect of GDP per capita on democracy indicate that an increase of 10% growth reduces democracy by about 3% in MENA countries over the period 1984 to 2013. This can be explained by the large use of oil rent to buy social peace, generalize clientelism and engage in the implementation of neo patrimonial state Karl 1999;Ross (2001),Ngodi, 2005; Tsui (2010), Haber and Menaldo (2011)
- Thus, the non-oil producing countries in MENA region such as Tunisia, Turkey, Lebanon and Egypt do not present higher per capita income compared to the other countries and are not less democratic countries in MENA compared to the following countries namely: Algeria, Bahrain, Iraq, Iran, Kuwait, Saudi Arabia, and United Arab Emirates.
- The study reveals the existence of the same negative sign as a negative impact of government size, law and order variables on democracy. The weak rule of competency and government expenditure are incompatible with well-functioning democracy in MENA countries. Therefore, we note that religion and economic freedom are relatively very significant and have larger effect on democracy (full elasticity). Both democracy and religion have the same direction of association with liberal democracy in Lebanon, Morocco, Tunisia and turkey, while in countries presenting Islamic militancy form s Iraq and Iran cannot boost democracy and equality and improve transparency in their institutions (Lewis,1994; Midlarsky, 1998). The evidence of economic freedom allows nourishing democracy in many MENA countries in recent year as Bahrain, Kuwait and turkey. On the contrary, a free society in Qatar or Saudi Arabia cannot give life to democracy.
- Finally, expansive bureaucracy is positively associated with lower democracy in MENA countries, which indicates a one standard of bureaucracy causes 1.77 standard deviation of MENA democracy.

Our results, using Sargan test and AR (2) test of Arellano and Bond (1991), seem to be good with high P-values exceeding 5 percent, meaning an absence of serial-correlation. According to the Wald tests results, when low p-values appear significant and lower than 5%, good estimation allows us to determine whether the instrumental variables can significantly affect dependent and regressors variables.

**5.-Conclusion**
This study attempts to check the relationship between corruption and democracy using DGMM model during the period 1984-2013 in 13 MENA countries. Our findings show that the oil resource does not boost democracy reforms and consequently a certain level of democracy in oil exporting countries increases the level of corruption. In this context, the magnitude of impact for non-oil producing countries happen to be less related to corruption over the last decade compared to the two early decades. Also, we found a fragile negative relationship between government size and corruption.

Finally, we note that religion and economic freedom are strong consensus on this relationship with democracy and corruption.

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