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THE RELATION BETWEEN GOVERNMENT SIZE AND CORRUPTION IN MIDDLE EAST COUNTRIES AND NORTH OF AFRICA (MENA) EMPHASIZING ON IRAN

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ABSTRACT

This study uses annual pooled data over 2003-2010 for Mena countries emphasizing on Iran to examine the relation between government size and corruption. In this regard, some government size indicators were defined to examine whether these indicators matters more in their impacts on corruption, and a comparison has been done between Iran and the average of other Mena countries' function. The results show that government size indicators do matter through important ways in its impact on corruption. Greater economic prosperity, democracy, openness and better governance lead to lower corruption.

Keywords: Government Size; Corruption; Panel Data

INTRODUCTION

There are many definitions of corruption. One of the simplest definitions is abuse of public services for private gain. Corruption is a clandestine phenomenon which has struck root in different layers of public sectors (Rose-Ackerman, 1975). According to Wishny and Schlifer (1993), corruption is an illegal and immoral action, which usually takes place based on clandestine essence. Montesquieu believes that, corruption can turn a good and proper system into an indecent and incongruous one. It also as a social problem expresses the fact that the government officials are taking advantage of their government, economic and religious authorities on behalf of their own benefits, rather than fulfilling government expectations. Corruption includes not only public sectors, but also in some cases it goes as far as abusing private sectors which are under the control and supervision of the government. Corruption is one of the crucial obstacles in economic development and it has been under so much consideration during the last decades to an extent that it can result into government inefficiency and also expenditure augmentation.

Studies indicate that, corruption can lead into a decline of investment, and as a result, it would propel economic activities towards rent-seeking and underground activities instead of being productive. Tanzi and Davoodi (1997) have discovered that, corruption can increase public investment, but on the other hand it would decrease it`s productivity. Public investment can be controlled and supervised through supreme chief criteria, or authoritative politics. Therefore, it would provide opportunities for authorities to take advantage of those investments. It can also deviate the combination of public expenditures from the necessary activities of exploiting and conserving installation, and propel them towards purchasing new equipment. For this respect, it decreases public investment productivity, specially, in fundamental sectors. Corruption is thought to enlarge total public expenditure as a part of GDP (Tanzi, 1998). Corruption raises the cost of expenditure and reduces the quantity of output provided by the state (Shleifer and Vishny, 1993). Corruption diminishes the impact of public spending on social outcomes and alters the quality of public services. corruption affects some given economic sectors expenditure as a share of GDP: it has a negative impact on the part of human capital investment (Ehrlich and Lui, 1999) and more precisely on education (Mauro, 1997), and a positive one on military spending (Gupta *et al.,* 2001). It reduces education and health expenditure as a percentage of GDP (Mauro, 1998, and Gupta *et al.,* 2000).

According to Beker (1968), individuals compare the proportional costs and benefits of an illegal activity, so that they can have a rational choice. These costs and benefits take benefits of exogenous factors which contain cultural and social environment and the role of government as well. In such cases, different type of government intervention in economy, specially regulatory intervention and via legislating rules and

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restrictions are able to supply more opportunities for bribe takers and bribe givers and also for government rent-seekers (Osborn, 2002; Goel and Nelson, 2008). Most of the government interventions are related to regulations involving licenses and permits, control over procurement contracts, control over public investment contracts such as roads and airports, programs related to the provision of tax incentive, subsidized credit and overvalued foreign exchange, control over hiring and promotions, and control over access to underpriced public services, e.g., electricity, telephone and water. Public sector wages, a system of recruitment and promotion and size of the bureaucracy determine the willingness of public officials to artificially create regulations that cause corruption (Alam, 1995). Therefore it can be assumed that there is a significant and positive relationship between corruption and government size.

But according to some other researchers, the role of government can come into play in ways that can make corruption "hard to find" (Lambsdorff 2006b; also Rose-Ackerman, 1999). For example, a large government might contribute to corruption by increasing red tape (Goel and Nelson, 1998) or promulgating regulations that induce individuals to seek illegal means to circumvent those rules (Graeff and Mehlkop, 2003).

Large governments, of course, may also have the depth of resources to monitor for corrupt government activities via extensive policing and enforcement of good governance standards (La Porta *et al.,* 1999; May *et al.,* 2002).

 In some more democratic countries, there is lees focus on supremacy and power seeking, but in some other semi-democratic countries which are more authoritarian based, the role of government effectiveness on corruption is different. Because, in such countries besides the role of government, the role of governance in creating corruption is remarkably effective as well. Therefore, the effect of variables on corruption in such countries would differ. Therefore, the relation between government size and corruption is sensitive towards the definition of government size. Hence, 6 indicators are considered for government size, in order to discover the sensitivity of corruption towards government size. The main cause of corruption is government size. As it can be expected, the larger the government becomes, the more corruption prevails. Government size can be defined based on indices such as, government expenditure as a percentage of GDP, public sector transfers share of GDP, tax revenue as a percentage of GDP and so on. Therefore, the relation between government size and corruption is sensitive to the definition of the government size.

This paper examine the relation between government size and corruption using cross-country regression model for about 17 countries in Middle East and North of Africa (Mena) over 2003-2010. Corruption index data is required via International Transparency Organization (TI) and government size indicators data is based on World Development Indicators.

And on the other hand it seems as if, there is a significant difference between the function of Iran and the average of other countries in the region. Therefore, this hypothesis would also be taken into account.

The countries that are studied are as follow:

Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, Emirate and Yemen.

Data and model: Researcher who have been studying corruption, have applied different measurements of the costs and benefits of corruption to discover which factors can be significant. Anyhow, very little agreement has been reached over factors, determining corruption in literature (Goal and Budack, 2006). In this research, great effort has been made to study and investigate the relevant variables to corruption, considering them being in access. Since, the studied countries are all developing countries, this research is confronted with some obstacles, such as the accessibility and updating of data. Thus, the number for variables which are applied in this research, are confronted with some strains. Overall, the general equation format would be as follows:

$CORRUPTION_{it} = f(GOVT\ SIZE_{it},\ ECONOMIC\ PROSPERITY_{it},\ DEMOCRACY_{it},\ GOOD\ GOVERNANCE_{it},\ OPENNESS_{it})$ (2-1)

$i = 1,....., n; t = 2003-2010.$

Subscript *i* denotes a country and t denotes time.

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Corruption index (COR) is extracted from International Transparency organization, which is considered a perceived index. Transparency International's CPI (Corruption Perception Index) is a composite of various corruption indicators. It ranks countries on a zero to ten scale, with a score of zero representing very high corruption. One of the problems of this independent variable relevant to explanatory variables in this equation may possibly be the way it's been ranked. In a manner, as if the corruption rating in a country should be increased based on it's corruption scale, where has been rated in a vice versa method. Thus, the relation between economic prosperity compared to corruption is shown in a positive way. To resolve this problem, all COR sample data, should be subtracted from 10, so that the corruption procedure and ranking could move in one direction.

6 indices have been considered to measure government size. Total government expenditure as a percentage of GDP (TGE/GDP) is acquired via the total government consumption expenditure plus government investment expenditure. Investment expenditure (capital formation) is also divided into 2: Gross investment (gross capital formation) and gross fixed investment (gross fixed capital formation), which by adding each one of them with government consumption expenditure, a new index would be obtained. These indexes in a random order are recognized, being addressed TGE1 and TGE2. According to WDI, definition of gross capital formation and gross fixed capital formation are as follow:

Gross capital formation: Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and "work in progress."

Gross fixed capital formation: Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.

Government consumption expenditure share total consumption expenditure (GCE/TCE) is another index for GOVT SIZE in equation (2-1), which is considered to measure government size. Amongst developing countries, countries which possess natural resources (such as oil), government expenditure raise along with the increase of oil income. On the other hand, when GDP in some countries is significantly raised, there is a possibility that government expenditure would not increase in proportion to GDP percentage augmentation. In such situation, although total government expenditure increase, but this index might display a smaller government size. The superiority of this index compared to the total government expenditure index is what is concealed in this epigram, because government consumption expenditure - which is a part of the total government expenditure is not evaluated with the proportion of GDP, and by increasing government revenue, government size accruing on this index does not necessarily increase.

The forth index for GOVT SIZE is the tax revenue as a percentage of GDP. Since, this index amongst developing countries is very low, it does not reflect a proper perspective of government size. However, with a more broad perspective, in such countries, tax system has low efficiency and tax revenue collection as a share of GDP in such countries is low (Iman and Jacobs, 2007). Some studies have shown that corruption negatively affects overall revenue from taxation. Papers by Tanzi and Davoodi (1997) and Friedman, Johnson, Kaufmann, and Zoido-Lobaton (2000), for example, have provided evidence that countries with more corruption tend to collect fewer tax revenues in relation to GDP, all else being equal.

 These 4 exploited indices have been used for government size based on the current unit, which are derived by every country's currency. Data of these indices has been driven from WDI.

 A complex index has also been extracted for government size from the Fraser Institute, under various titles of: Size of Government: Expenditures, Taxes, and Enterprises. This index contains below cases:

A. General government consumption spending as a percentage of total consumption
B. Transfers and subsidies as a percentage of GDP

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C. Government enterprises and investment

D. Top marginal tax rate

i. Top marginal income tax rate

ii. Top marginal income and payroll tax rates

This index is rated from 0 to 10 which 0 indicates maximum government size and The 10 denotes minimum government size.

The 5 above mentioned indices are the quantitative measurements of government size. These indices, somehow, present government intervention in economy. However in developing countries, the size and scope of government activities is in the extreme. In fact, the size and scope of government activity in such countries are lot more than what quantitative measurements indicate. Government interventions such as controlling prices and wages, bureaucracy, business restrictions in these countries are far too high. The more governments interfere in economy, the more they diminish individual's economic freedom. For this respect, economic freedom index from Heritage Foundation has is used as a government intervention in economy. This index ranges from 0 to 100 percent. High scores approaching 100 represent higher levels of freedom. The higher the score on a factor, the lower the level of government interference in the economy. This index consists of 10 indicators.

The ECONOMIC PROSPERITY index is the second independent variable in the model. Per capita GDP index is used as economic prosperity index. The Economic prosperity has almost been exploited in all studies considering corruption. Higher values of this index signify more literacy, greater prosperity and a longer life expectancy in a country. Greater degree of economic prosperity in a country lowers corruption in all cases, suggesting that as countries become wealthier, the level of corruption goes down. This makes sense as better off individuals, both bribe takers and bribe givers, have relatively smaller discount rates to engage in illegal activities. Moreover, a person's opportunity cost of punishment increases when the person is better off. More prosperous countries are also able to spend more to educate their populations. A relatively well educated population not only likely to be more aware of its rights and duties and less likely to engage in corrupt practices, it is probably in a better position to amenable and understanding of anti-corruption policies and procedures (Goel and Nelson, 2008). This index is obtained from WDI based on fixed price 2000US$.

DEMOCRACY is the third independent variable in the model. Political rights and civil liberties index (PC) from Freedom House is used as democracy. Political rights comprise a democratic election, legislator authority, opposing parties, civil liberties such as free and independent media, freedom of speech, which are strongly against corruption. This index, based on the ranking scale is rated between 1 to 7, which the 1 scale indicates the maximum freedom rate and the 7 expresses the lowest amount of freedom. In order to estimate a precise relation between this variable and corruption, the numerical amount of this index should be subtracted from 8.

The size of the government does not necessarily control for the quality of government. Government quality may be measured, for example, by the strength of governance (Budak and Goel, 2004b; May *et al.,* 2002). According to the governmental structure of these countries and greater role of governance as compare with government, index of GOOD GOVERNANCE is applied in the model. World Bank has defined governance based on the features:

1- Vice and Accountability.

2- Political Stability and Absence of Violence

3- Government Effectiveness: Government Efficiency in pursuing its duties.

4- Regularity Quality.

5- Rule of Law

6- Control of Corruption

In good governance index, the function of government is evaluated. In fact, corruption should be somehow considered as a weak government fundamental structure, which is far too weak in pursuing its duties. When freedom of speech exists in a country, and when the law is equally and clearly executed for everyone, then the rate for corruption would drop down, and it would act as a deterrent.

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Governments can discharge great role in decreasing corruption. One of these roles could be "openness". Diverse types of indexes could be performed for "openness". In this index, a number of "Internet Users" per 100 population is participated for openness. The role of government in increasing the number of Internet users, could be augmented via providing more services such as increasing the speed for transferring the information and declining the costs of using internet and so on. Usually, in most developing countries, the cost of using internet is way too expensive, and also in some less democratic countries there are other types of problems such as filteriazation of information. Such weaknesses could result into fewer internet users. Moreover, the more the number of the internet users would get, the more educated population would be and it provokes people's sensitivity towards corruption. In other words, it would increase the cost of corrupt activities. This index is extracted from WDI.

Model estimation and analyzing the result:In this section, the effect of the explanatory variables, which is introduced based on model, is investigated on corruption. Thus, the effect of different government size indices as well as other explanatory variables such as: per capita GDP, good governance, democracy and openness on corruption have been estimated. It has been observed that corruption over this period and amongst countries has had an upward trend. Hence, Time variable (TREND) is applied in the equation to show the effect of variables properly. A comparison has been done between Iran and the average of other Mena countries' function. To display the difference, a dummy variable has been exploited.

Hausman Test: In error term regression, it is assumed that $E(U_{it}/X_{it})=0$. In other words, the error term (which represents individual effects) is independent from explanatory variables. In random effect model,

X_{it} is independent from μ_i , because μ_i have been placed in the error term.

Table1: Findings of model estimation (dependent variable: COR)

Variable	Equation (3-1-1)	Equation (3-1-2)	Equation (3-1-3)	Equation (3-1-4)	Equation (3-1-5)	Equation (3-1-6)
C	10.19*	10.81*	9.38*	5.37*	11.66*	9.79*
TGE1	-0.025*					
TGE2		-0.058*				
GCE			-0.010			
ETE				0.28*		
TG					-0.021	
EF						-0.01
TGE1*DUM	0.009*					
TGE2* DUM		0.014**				
GCE* DUM			-0.011			
ETE*DUM				-0.06*		
TG*DUM					0.11*	
EF* DUM						0.00006
log(GC)	-0.37**	-0.31**	-0.34***	-0.24*	-0.48**	-0.38***
GI	-0.87**	-0.80**	-0.79***	-1.94*	-0.69**	-1.00**
PC	-0.18	-0.16	-0.25***	-0.05	-0.49*	-0.22
IN	-0.012*	0.013*	-0.011*	-0.007	-0.009	-0.0006
TREND	0.13*	0.013*	0.13*	0.10***	0.09**	0.09*
Adj-R^2	0.48	0.52	0.40	0.81	0.25	0.51
F$_{test}$	42.74	28.73	42.24	40.79	132.25	32.51
H$_{test}$	0.00	0.00	0.00	0.00	0.00	0.00
Estimation Method	R.E.	R.E.	R.E.	R.E.	R.E.	R.E.
N	16	16	16	12	11	17

*Note: *, ** and *** are significant respectively at the rate of 1, 5 and 10 percent.*

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Therefore in the random effect model it can be assumed that E(Uit/Xit)=0. But in the fixed effect model,

this assumption is not true, because it's been proven that $\boldsymbol{\mu_i}$ are correlated with X_{it}. Therefore, we can't precisely judge beforehand to select the random effect model or fixed effect model. To diagnose and identify the right model, whether it should be of random effect or fixed effect, Hausman Test has been exploited.

RESULTS AND DISCUSSION
Result
All equations have been implemented based on the model (1-2) using panel data methods. The number of countries in this study includes 17 but they are different from each other in some equations. For all equations, two tests have been implemented: "F" and "Hassman" tests. The F test has been conducted to select between the ordinary least square method and fixed effects. Results indicate that all equations have been estimated via the fixed effect. After that, to select from fixed effect or a random effect, Hassman test has been conducted. Table (3-1) reports results that compare the effects of different government size indices on corruption.

To estimate the equation (3-1-1), 16 countries have been studied. In this estimation, the coefficient of total government expenditure 1 share GDP (TGE1) is negative and statistically significant at the 1% level of significance. That is to say that, by increasing government expenditure, corruption decreases. In fact, the sign for this coefficient is versus to what has been assumed. To consider dummy variable effect (Iran's function), we should add the coefficient of dummy variable with the coefficient of TGE1 which yield to -0.016. It means that the relation between government size and corruption in Iran does not differ much with the average of other Mena countries' function. Coefficients in GI, log (GC) and IN are negative and statistically significant at the presented level. It indicates that, by increasing per capita GDP, a better governance and more freedom, corruption drops down. The "PC" variable also has the anticipated sign. However, it's not statistically significant at the given level, which means that by augmenting democracy, corruption faces away in the studied countries. Time variable is also positive and statistically significant. It can be perceived that with the passage of time, corruption has increased. In fact, this variable is the effect of other variables which has caused more corruption and has not been cited in the model.

In equation (3-1-2), the effect of the total government expenditure 2 share GDP (TGE2) has been shown in table (3-1). A number of 16 countries have been studied in this equation. The TGE2 coefficient shows that by one percent increase in government size, corruption rate decreases to as much as 58% on average. The amount of the dummy variable coefficient for government size equals 0.014, which a total of -0.044 is acquired via the government expenditure coefficient, which doesn't appear a significant difference between government size and corruption in Iran compared to other countries in the region. Other variables have the expected signs.

The effect of government consumption expenditure share total consumption expenditure (GCE) has been presented in equation (3-1-3). The coefficient of this variable equals -0.010, although this coefficient is not statistically significant. This scale expresses that by an increase of %1 of the government consumption expenditure, corruption would decrease in an average of 0.010%. By adding the coefficient of dummy variable and GCE a total of -0.021 is obtained. It indicates that there is not much difference between the relation between government size and corruption in Iran with an average of other countries. Other variables have the anticipated signs.

Equation (3-1-4) presents the effect of government size (ETE) on corruption. The relation between government size and corruption is positive and statistically significant at the rate of 1%. It indicates that, the more government interferes in the economy, the higher is the level of corruption. There is not much difference between Iran the average of other country.

Equation (5-1-3) reveals the effect of tax (TG) on corruption and 11 countries have been studied. The amount of TG coefficient is -0.021. It is not statistically significant at the presumed levels. It means that by increasing tax during this period, corruption has decreased. In fact, corruption arises from the low

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share of tax revenue. By adding the coefficient of dummy variable and TG, a total of 0.09 is obtained which is considered positive. This indicates that there is a positive relation between tax revenue and corruption in Iran and a negative relation between Iran and the average function of other countries. In fact, by increasing the tax revenue in Iran, corruption would increase. On this account, some points should be quoted. The amount of tax revenue in Iran is so low. The tax system in Iran is inefficient and the tax-paying system is yet the old- fashioned method, which tax corruption usually appears more in high tax income.

Therefore, as long as the tax system in Iran does not improve, the blanket for more corruption would be better provided. Other variables contain the anticipated signs, although governance and democracy variables are not statistically significant.

In equation (3-1-6) 17 countries have been studied, where the effect of economic freedom (EF) has been estimated over corruption. The negative amount of this coefficient shows that by increasing economic freedom, (decreasing government interventions) corruption would decline, although it is not statistically significant. On the other hand, considering the amount of 0.00006 for Iran, There is not much difference between Iran and the average function of other countries. Other coefficients also have the anticipated signs.

The purpose of this research is to examine the relation between government size and corruption in the countries of Middle East and North of African (Mena) emphasizing on Iran, during the years 2003-2010. In this regard, a number of 17 countries have been studied using cross-section regression model and panel data method.

The result shows that, some of these government size indices, such as the total government expenditure (1) and (2) have had a positive impact on corruption reduction. The economic freedom index has had negative impacts on corruption, although it was not statistically significant in the given levels. Inspite the negative relation between tax and corruption, but it was not statistically significant in the given levels. But, this relation for Iran has been positive and statistically significant. Per capita GDP, governance, Democracy, openness and time have had positive effect on corruption. Findings of this research can be considered in some different aspects. There is empirical literature stating that the size and scope of government activities in such countries are lot more than what quantitative measurements indicate. The size and scope of government activities in these countries are in the extreme. A large government might contribute to corruption due to greater bureaucratic red tape, bureaucratic taxes and licenses or promulgating regulations that induce individuals to seek illegal means to circumvent the rules. Government interventions such as controlling prices and wages, bureaucracy, business restrictions in these countries are far too high. The government intervention index (economic freedom) as well approves of Goal and Nelson's (2009) accomplishments. Because, more government intervention increases corruption. The government size complex index (ETE) has shown a positive relation with corruption, where as it has not been significant. This index expresses 4 Types of government activities: general government consumption spending, transfers and subsidies, government enterprises and investment, top marginal tax rate. It seems as if government consumption spending has not had much impact on corruption augmentation. However, 3 other components can potentially cause an increase in corruption. By combining these 3 compilations and their relation with corruption, a positive relation between the 3 variables is attained.

Considering the per capita GDP, democracy and governance can play an important role in diminishing corruption. It indicates that low income, a poor government structure and the lack of civil liberties in such countries can be very effective in manifestation of corrupt activities.

By reviewing the 6 equations, only in the equation (5-1-3) there is a significant difference between Iran's function and other countries in the region. The relation between tax and corruption amongst the under studied countries has been negative, where as for Iran it has been positive and significant. In the developing countries, specially in most Middle East countries, the role of governance against government is very insignificant. In fact, government and governance should be distinct. Because, in these countries, government mainly allocated to an executive authority, whereas governance contains all 3 forces of:

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executive power, legislative power and juridical power. It would be advised that the role of governance in such countries would be investigated as well.

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