

Economic growth and Corruption

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Abstract: *This paper aims to study the effect of corruption on investment and economic growth of 11 countries from the MENA region over the period 2000-2009, through the use of a dynamic panel data model. The main statements issued from this empirical test stipulate a positive effect of political institutions on investment and growth and a negative effect of corruption on investment and economic growth.*

Key words: *political institutions; corruption; investment; economic growth; dynamic panel.*

JEL: *O43, O47, C23.*

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Introduction:

In last few years, the relationship between corruption and business performances has been the subject of several theoretical and empirical works.

In this works corruption is seen as one of the causes of low income and is believed to play a critical role in generating poverty traps (e.g. ANDVIG and MOENE, 1990; BLACKBURN et al, 2006, 2008).

In short, corruption, according to this view, “sands” the wheels of development and it makes economic and political transitions difficult.

According the World Bank’s estimations over 10 US dollars are annually lost due to corruption, representing 5% of the world GDP.

The African Union estimates that due to corruption, African continent loses 25% of its GDP.

Corruption is a global phenomenon that affects all aspects of social and economic life. In fact, defined as abuse of public power for private benefit or sale of government property for private gain, corruption is a persistent feature of human societies that include the sale of government property by public officials, bribery, embezzlement of public funds, patronage and nepotism.

Yet, societies in which corruption thrives at one point in time are not necessarily destined to that state forever.

So, in the last few years, more and more organizations, national and international institutions, research and ONG institutes make inquiries about corruption to evaluate its cost and consequences, to draw fighting measures against it, and to raise awareness among the rulers, decision-makers and others (public opinion, civil society, private sector) about the necessity to put an end to this epidemic.

To study the effect of corruption on investment and economic growth, we shall carry out within the framework of this study a dynamic panel data model relating to a sample of 11 countries from the MENA region over the period 2000-2009.

The effect of corruption on the contribution of investment to the economic growth will be the subject of a second empirical study relating to the same sample.

Before embarking on the economic studies, it is proper to start under a first section with a review of the empirical literature concerning the relationship between corruption and economic performance.

Then focus will shift to the choice of variables and their sources, the interpretations of estimations’ results and the study of interaction between institutions and investment under a second section.

1. Review of the Empirical literature

The empirical studies trying to check the economic impact of corruption, using transnational data provided by study organizations, on the risks, seem indeed to indicate that corruption causes high damage to private investment and to economic growth.

As a synonym of institutional failure, these studies have shown that the relationship between corruption on the one hand and transparency, responsibility and the supremacy of the rule of law on the other hand is opposite, that is, as long as the mechanisms of responsibility for example become efficient, corruption decreases and some progress is achieved.

MAURO. P (1995) has proven a negative correlation between corruption and the rate of investment and between corruption and the growth rate for 67 countries during the period 1960-1985.

To this end, he collected 9 indexes; political and institutional change, political and social stability, the opposition's capacity to take over the rule, employment stability, relations with the neighboring countries, terrorism, judicial system, bureaucracy, red tape and corruption, in three indexes: the index of political stability, which is the simple average of the first three indexes, the index of bureaucratic efficiency, which is the simple average of the last three indexes and the index of institutional efficiency which is the simple average of these nine indexes.

The author has found that corruption is strongly linked negatively to the rate of investment. Corruption and the index of bureaucratic efficiency are, however, associated negatively and significantly with the average growth of GDP/capita during the period 1960-1985, the study shows that if a country like Egypt improved its administrative efficiency and cut its corruption down to the level of that of Argentina (which corresponds to a 6/10 mark instead of 4/10), its rate of investment would increase by 3% and its growth rate by 0.5 %.

According to Mauro, the result wouldn't be different if we correlated the small or the big corruption (respectively the improvement of investment by 2.6 % and by 3.4 %).

In another study, Mauro (1996) shows that an improvement in the standard deviation of the corruption index permits a 4.2 % increase of the investment rate and 0.6 % increase of the GNP per capita.

The author shows in parallel that corruption modifies the makeup of political expenditures and that in particular that corrupt public regimes devote less expenditure to education, hence on health, and probably more on public investment to the fact that corruption affects the structure of these expenditures in favor of programs that facilitate the levying of bribery (for example, in the big international transactions the purchase of High tech material « custom » is privileged because the absence of market prices restricts comparative checkings).

The analysis shows, however, that it's especially via private investment that corruption reduces growth; that is, the bulk of the corruption effects on growth is transmitted through its effects on the sum total of investment, this impact represents at least one third of its negative global effect, the rest operating necessarily through other channels and forms of institutional inefficiency such as political instability, administrative obstacles, or weak legislative and judicial systems.

But, is it possible to demonstrate that corruption alone, rather than other factors with which it correlates, explains the weakness of economic growth?

According to Mauro, an econometric study shows, in part, that-after neutralizing other forms of institutional inefficiency such as political instability-we can also prove that corruption reduces economic growth.

Nevertheless, as Mauro concludes, it is difficult to demonstrate in a convincing way that corruption is the unique cause of the problem.

In fact, there are other institutional problems which are closely linked to corruption and which cause low growth rates.

GUPTA. S, DAVOODI. H and ALONSO-TERME. R, (1998) have tried to analyze the empirical correlation between, on the one hand, corruption and the distribution of revenue, and on the other hand corruption and poverty.

The main conclusion that they have reached is that corruption is strongly associated to the inequality of revenues, a deterioration in one country's corruption index (2.52 points on a scale from 0 to 10) is associated to a rise of almost 4.4 points in the GINI coefficient.

According to the authors, corruption may affect the inequality of revenues and poverty through its effect on growth, on fiscality and the targeting of social programs, in addition to its impact on the formation of human capital, inequality of education incertitude in the accumulation of production factors.

Moreover, the results of this regression show that the impact of corruption on poverty is high, A one point increase in the standard deviation of the corruption index reduces the growth of the revenue of 20% of the poorest population with 7.8 % per year.

KEEFER and KNACK (1995) have also shown that political instability has negative effects on investment and growth, and that the subjective indexes of corruption and of the quality of administration are negatively associated to economic growth.

2. Choice of Variables and Estimation Methodology

2.1 Choice of Variables

The theoretical works which have attempted to examine the relationship between institutional factors and economic growth highlight the existence of a strong link, whether direct or indirect, between corruption and economic growth.

In fact, corruption reduces local and foreign investments, increases poverty level, may affects the inequality of revenues and poverty through its effect on growth, on fiscality and the targeting of social programs, in addition to its impact on the formation of human capital, inequality of education incertitude in the accumulation of production factors.

Also, corruption modifies the makeup of political expenditures and, in particular, corrupt public regimes devote less expenditure to education, hence on health, and probably more on public investment to the fact that corruption affects the structure of these expenditures in favor of programs that facilitate the levying of bribery (for example, in the big international transactions the purchase of High tech material « custom » is privileged because the absence of marker prices restricts comparative checking).

Nevertheless, it is difficult to demonstrate in a convincing way that corruption is the unique cause of the entire economic problems.

In fact, there are other institutional problems which are closely linked to corruption and which cause low growth rates.

Our model involves several measures serving as control variables. Previous studies showed that they take account in large part for national differences in growth rates observed since decades ago.

Thus, the variables employed in this study are the following:

-Y: The growth rate of real GDP per capita.

-IY: Statement of the raw formation of capital by the GDP

-OPEN: Statement of the volume of commerce by the GDP: (X/M)

-GY: the public expenditures, approximated by the portion of governmental consumption in the GDP.

- Financial development: measured by money and quasi money as portion of GDP (M2/GDP).

-Political rights (PR): defined by the degree to which government is controlled by individuals.

-Civil liberties (CL): consist in the freedom of press, the right of assembly, free political organizations, free commercial unions, free religious institutions, and the independence of justice.

These two indicators are evaluated on a scale from (1) to 7 with 1 being the highest degree of liberty and 7 being the lowest degree.

-Corruption (COR): it includes the following elements: frequency of irregular payment for employees and the judiciary, improper practices in the public sphere, corruption the political system as a threat to foreign investment, frequency of corruption cases in public administrations.

This indicator is evaluated on a scale of -2.5 to 2.5. (2.5) being the highest degree of fight against corruption.

All the variables are relative to the period 2000-2009 on account of the availability of data for all the countries on the scale and in particular for Tunisia.

All the economic variables are drawn from the report about development in the world [2010], the variables relative to political rights and to civil rights are taken from the annual report of *Freedom House* about liberty in the world whereas the “political instability” and the “corruption” variables are taken from the KAUFMANN (2009) database of governance indicators.

2.2 Estimation Methodology

In what follows, I suggest a dynamic study of corruption- economic growth relationship.

Before moving to the estimation of this model and to the interpretation of results, it is proper to define dynamic models and to present the models to be estimated.

2.2.1 Definition of Dynamic Models

Dynamic models are characterized by the presence of one or many dummy endogenous variables among the explicatory variables.

Within the framework of our model, the introduction of the past growth rates among the explicatory variables allows us to test the persistence of economic growth rates in the countries on the scale under study, knowing that past economic growth can affect present economic growth.

Let's consider for instance the case where there is a single dummy endogenous variable:

$$y_{it} = \alpha y_{it-1} + \beta X_{it} + \varepsilon_{i,t} \quad (\text{With } i=1 \dots N \quad t=1 \dots T) \quad (1)$$

With y the dummy endogenous variable, X the exogenous variables, (α, β) the parameters to be estimated, $\varepsilon_{i,t}$ the error term.

2.2.2 Presentation of the Model to Estimate and Interpretation of Results

2.2.2.1 Presentation of the Model to Estimate

According to the above analysis, institutions can influence economic growth by the means of productivity or by the accumulation of capital.

So, this study uses the following two equations to examine the importance of institutions:

$$y_{i,t} = \alpha_1 y_{i,t-1} + \beta_i X_{i,t} + \mu_i COR_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$INV_{i,t} = \alpha_1 INV_{i,t-1} + \beta_i X_{i,t} + \mu_i COR_{i,t} + \varepsilon_{i,t} \quad (3)$$

With y_{it} : growth rate of real GDP per capita of the country i for the year t .

$Y_{i,t-1}$: growth rate of GDP per capita for the previous year ($t-1$).

$INV_{i,t}$: the investment rate of the country (i) in the year (t)

COR : corruption index and X : a number of control variables, these two types of variable have already been defined above; $\varepsilon_{i,t}$ the error term.

2.2.2.2 The Interpretation of Results

The estimation presented here corresponds to the GMM estimation of ARELLANO and BOND's (1998)

I choose to refer to the results of this estimation because it offers a better efficiency for the results of the estimation.

The estimation results of our model are satisfactory at the economic level than at the level of economic interpretation.

It is to be noted that the coefficients are elasticities which are interpreted as relative variations which tell about the variation of the (real) GDP per capita growth rate following a unitary variation of the variable in question.

The estimation results³ of the different equations are expected taking into account theoretical and empirical considerations already mentioned.

-The past economic growth doesn't seem to affect future economic growth.

-The investment influences these countries' economic growth positively, as its coefficient is usually positive and statistically significant signaling an important effect on economic growth.

-The coefficient of the "commercial opening" variable is sometimes positive, sometimes negative but usually statistically insignificant and signaling an absence of a link between this variable and these countries' economic growth.

-The public expenditures produce no effect on the economic growth of the countries considered, as the coefficients of this variable are not statistically significant.

-the coefficients associated with the "financial development" variable are negative and statistically significant in most cases, signaling a negative effect of this variable on economic growth.

In practice, the effects of financial development on growth are far from being evident and can even sometimes prove to be negative, especially for the developing countries. Thus, BHATIA and KHATKHATE (1975), using a sample of 11 African countries over the period 1960-1970, have found a positive correlation for certain countries and a negative one (or no correlation) for others.

The measuring errors, the weakness of the sample and the potential endogeneity of financial development might have been-in theory- the cause of this result.

-« the civil liberties » produce a main effect on economic growth. Indeed, the coefficient of this variable is usually positive and statistically significant.

This result is similar to many others in the empirical literature. Indeed, among the first researchers who were interested in the study of the impact of institutions on the economic performances of nations, KORMENDI et MEGUIRE (1985) have examined the effect of civil and political liberties-among others- on economic growth and investment for 47 countries over a period from 1950 to 1977.

The result which they got is that the countries which have a high level of civil liberties perform the most.

³ see appendices for the tables featuring the estimation results of the different equations

Ensuing studies done by SCULLY (1989) and TULLOCK (1987) find a positive association between civil liberties and economic growth for a high number of countries.

The studies carried out in the 90s to examine the relationship between type of regime and economic growth have interpreted the index of civil and political liberties published by « *freedom house* » as being a measure of democracy.

BARRO (1996) et HELLIWELL (1994) have found that these indexes are positively linked to economic growth only when explicatory variables are omitted from the relationship such as: the level of instruction and the investment rate.

In general, the relationship between the measures of democracy and economic performances is far from being clear (BARRO, 1996, 1997; DURHAM, 1999) because, on the one hand, the long-run economic growth requires a state of rights and the protection of civil and political liberties, as affirmed by NORTH (1995) and that on the other hand, as OLSON (1982) put it, political liberty is in favor the exigencies of particular groupes for distributive polices.

The efforts of these pressure groups can produce a legislative obstruction and under optimum policies, and thus damage growth.

In a review of the literature, BRUNETTI (1997) compares 17 studies leading to a positive, a negative or an insignificant correlation between growth and democracy.

-« corruption » produces a negative effect on the economic growth of the sample countries subject of this study.

This result consolidates the idea that corruption is a pandemic that causes huge damage to economic activity and that governors, decision-makers, public opinion, civilian society and the private sector must apply drastic measures to fight this evil.

The equation (3) checks whether the corruption also have an indirect influence on economic growth through the accumulation of capital.

-commercial opening produces an important effect on these countries” investment as the coefficient of this variable is usually positive and statistically significant.

This result may be justified by the fact that the opening up for exchange prompts the investors to invest more through the offering of new sales opportunities on bigger markets.

- « the public expenditures » have a positive and not robust effect on investment. This can be explained by the fact that the public administrations can prompt private investments by providing an adequate infrastructure, a healthy institutional environment, and a qualified human capital.

- The same finding remains valid for « financial development », which is expected since the availability and the diversity of financing tools are capable of prompting the economic agents to invest more, hence the positive effect of financial development on investment.

This result is similar to that found by KING who LEVINE (1993) who have studied the impact of financial development on the economic growth, the accumulation of capital and the global productivity of factors for a sample of 80 countries during the period 1960-1989.

The main result which these authors have achieved is that financial development leads to produces a positive effect on the economic growth, the accumulation of capital the global productivity of factors.

-The « civil liberties » and the « political rights » influence investment in a positive way.

This result is similar to the finding provided by ISHAM, KAUFMAN and PRITCHETT (1997) who have analyzed the impact of the quality of governance on the performance of one hundred projects financed by the world bank in some developing countries over the period of 1974-1993.

They have found good performances in the nations with a high level of civil liberties, measured by the index of « *freedom house* », so that an improvement by one point in this index is associated with an improvement by more than one point in the output rate of the project.

- « corruption » has a negative impact on the investment of these countries. This is an expected result since the negative effect of corruption on growth operates essentially through its effect on investment.

MAURO (1995) has proven that there is a negative correlation between corruption and the investment rate and between corruption and the growth rate for 67 countries during the period of 1960-1985. The study shows if a country like Egypt improved its administrative efficiency and reduced its corruption down to the level of that of Argentina (which corresponds to a 6/10 mark instead of 4/10), its investment rate would grow by 3 % and its growth rate by 0.5%.

MAURO's analysis has shown, however, that it's especially by the intermediary of private investment that corruption reduces growth; that is, the biggest part of the effects of corruption on growth are transmitted through its effects on the general sum of investment.

This impact represents at least one third of its global negative effect, while the rest operate necessarily via other channels and forms of institutional inefficiency such as political instability, administrative obstacles, or weak legislative and judicial systems.

Conclusion

In this research project, I have tried to make a contribution to solve the fundamental question: Is there any link between a country's corruption, investment, and the economic performances that it achieves?

To this end, I have employed a dynamic panel data model covering a sample of 11 countries from the MENA region during the period 2000-2009.

The main findings derived from this empirical analysis reveal the following:

- A positive impact of political institutions (political rights and civil liberties) on economic growth and investment.

- A negative effect exerted by corruption on economic growth.

- A negative effect exerted by corruption on investment.

Generally speaking, the results which have been reached by the empirical tests carried out within the framework of this research reinforce the conclusion achieved by the empirical literature of the subject; that it's especially via private investment that corruption reduces growth; that is, the bulk of the corruption effects on growth is transmitted through its effects on the sum total of investment, the rest operating necessarily through other channels and forms of institutional inefficiency such as political instability, administrative obstacles, or weak legislative and judicial systems.

To conclude, these analyses have permitted, though in part, to show that there exists a relationship between the corruption and the economic performances and to detect certain essential channels through which may transit the effects of the corruption on the economic performances of the developed and the developing countries as regards economic growth.

However, it is important to note that, despite the importance of the empirical results which this work has led to, some insufficiencies may be raised:

- Other possible mechanisms of the studied relationship haven't been included.
- The issue of causality hasn't been treated.
- The influence of the threshold level of economic and institutional development hasn't been tested.

The relationship between the institutional factors and the economic growth may be better grasped once its underlying mechanisms continue to be analyzed and the techniques used to quantify them are improved.

In the light of the present debate generally concerning good governance, these fields of investigation can be the subject study of several future works.

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Appendices

Appendix 1:

List of Countries

1	Algeria
2	Bahrain
3	Egypt
4	Iran
5	Jordan
6	Kuwait
7	Lebanon
8	Morocco
9	Oman
10	Saudi Arabia
11	Tunisia

Appendix 2:

Table1: Estimation results of corruption and growth: dependent variable real per capita GDP growth (Arellano-Bond dynamic panel data estimator)

Variables	(1)	(2)	(3)
L GDP	0.28 (0.67)	0.2 (0.49)	0.26 (0.64)
INV	0.10** (1.66)	0.22** (2.17)	0.15 (1.38)
OPEN	0.02 (1.01)	-0.009 (-0.24)	0.019 (0.42)
G	-0.008 (-0.04)	-0.06 (-0.28)	-0.04 (-0.2)
M2/PIB	-0.023 (-1.01)	-0.15* (-2.23)	-0.15 (-2.23)
CL	-	4.44* (2.49)	6.29* (2.86)
PR	-	-	-2.43 (-1.38)
COR	-	-12.6** (-1.66)	-14.41** (-1.86)
T- Sargan	9.03 (43)	2.43 (43)	0.48 (43)
AR(2)	0.91	0.45	0.72

** : Significant at 10%. * : Significant at 5%. t-student in parentheses. LGDP: real GDP per capita growth on t-1.

Table2: Estimation results of corruption and investment: dependent variable investment

(Arellano-Bond dynamic panel data estimator)

Variables	(1)	(2)	(3)
INV₋₁	-0.29* (-2.39)	-0.17 (-1.4)	-0.49 (-1.56)
OPEN	0.25 (7.18)	0.24 (8.42)	0.24 (4.06)
G	0.006 (0.02)	0.88* (2.46)	-0.81 (-1.94)
M2/PIB	0.13** (1.86)	-0.05 (-0.7)	0.22 (2.08)
CL	-	-	-2.24 (-0.59)
PR	-	-	6.42 (1.00)
COR	-	-12.56* (-3.32)	14.32 (0.93)
T- Sargan	4.25 (43)	7.47(43)	2.22(43)
AR(2)	0.91	0.73	0.34

** : Significant at 10%. * : Significant at 5%. t-student in parentheses. LGDP: real GDP per capita growth on t-1.