Corruption and Economic Growth in Arab Countries

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Abstract

This paper studies th. relationship between the corruption and economic growth in the Arab countries during the period 2003-2009, by estimating one single equation model. This estimation depends on a panel data analysis for 16 countries for the period 2003-2009. The analysis uses fixed effect and random effect models. The analysis depends on annual data from the International Financial Statistics (IFS) published by the IMF for the period 2003-2009 and some indicators from the World Bank .This paper found that most of the Arab countries had negative average growth rates of the Corruption Perception Index (CPI). This means that the corruption has increased in most of these countries. The results confirmed a negative statistically significant relationship between the corruption and the economic growth. Moreover, the evidence confirms that investment constitutes a key driver for growth.

Keywords: Corruption, Investment, Economic Growth, Arab countries
JEL Classification: O40, D73

1. Introduction

During the past decade, corruption and its impact on the economy have received a great deal of attention. The resurgence of this topic is a consequence of a couple of factors. First, there is an increase in the number of corruption indexes. Researchers can now empirically examine the effects of corruption on output and other factors. Second, and more importantly, corruption has become more prevalent in the global economy (Tanzi, 1998).
Empirical literature has approved the negative impact of corruption on economic activity, both at the macro and micro economic level. At the microeconomic level, Del Bo and Rossi (2007) argue that corruption is associated with lower efficiency in the allocation and use of production factors. At the macroeconomic level, Mauro (1995) argues the corruption has negative effects on GDP per capita and growth.
international nonprofit organization Global Integrity (2011), says anti-corruption and transparency measures in Egypt were on a steady decline since 2006, putting increased pressure on the country's already fragile government. The report says Yemen and Morocco experienced similar

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challenges - with barriers to independent media, enforcing asset disclosures for political leaders and effectively auditing government agencies and programs.

The aim of this paper is to study the relationship between the corruption and economic growth in Arab countries for the period 2003-2009. The main objective of this paper is to estimate a single equation model. I ar also particularly concerned to measure this model in a panel of 16 countries (see Table 1 for the list of these countries) by using a panel data analyis (Random and Fixed effects models). This paper depends on the data from the International Financial Statistics (IFS) published by the IMF, World Bank, and the Transparency International for the period 2003-2009.

This paper is organized as follows. In the next section I present information about the corruption and stylised facts about it in Arab countries. Section 3 discusses some of the previous studies. Section 4 provides the methodology. The fifth section describes the estimation results. Section 6 concludes.

2. Corruption in the Arab countries

In the last few years, governments in the Arab countries have fallen because of accusations of corruption, prominent politicians (including presidents and prime ministers) have lost their official positions and, in some cases like Egypt, whole political parties have been replaced.

Corruption has been defined in many different ways. Tanzi (1998) says that like an elephant, while it may difficult to describe, corruption is generally not difficult to recognize when observed.

The most popular and simplest definition of corruption is the definition of the World Bank. The World Bank defines the corruption as the abuse of public power for private benefit.

Several attempts have been done to measure the corruption such as the questionnaire-based surveys. These can be related to a specific agency or to a whole country or to an international organization. The results obtained from these surveys are now widely used by researchers and business people. The best-known of these surveys, the Transparency International (TI) index, for example, assesses the perception of corruption on a scale of 0 to 10. Ten refers to a corruption-free country; zero refers to a country where most transactions or relations are tainted by corruption.

The corruption Perception Index (CPI) is described by TI (2008) as a composite index, a poll of polls, drawing on corruption-related data from expert and business surveys carried out by a variety of independent and reputable institutions. The CPI reflects views from around the world, including those of experts who are living in the countries evaluated.

Table 1 shows the indexes for the period 2003-2009 in Arab countries. Comparing between the figures for these 16 countries indicates that Qatar has the highest score especially in the last four years, thus Sudan has the lowest score.

Table 1 Corruption Perception Index (CPI), 2003-2009

Country	2003	2004	2005	2006	2007	2008	2009
Egypt	3.3	3.2	3.4	3.3	2.9	2.8	2.8
Sudan	2.3	2.2	2.1	2.0	1.8	1.6	1.5
Algeria	2.6	2.7	2.8	3.1	3.0	3.2	2.8
Morocco	3.3	3.2	3.2	3.2	3.5	3.5	3.3
Saudi Arabia	4.5	3.4	3.4	3.3	3.4	3.5	4.3
Yemen	2.6	2.4	2.7	2.6	2.5	2.3	2.1
Syria	3.4	3.4	3.4	2.9	2.4	2.1	2.6
Tunisia	4.9	5.0	4.9	4.6	4.2	4.4	4.2
Libya	2.1	2.5	2.5	2.7	2.5	2.6	2.5
Jordan	4.6	5.3	5.7	5.3	4.7	5.1	5.0
Lebanon	3.0	2.7	3.1	3.6	3.0	3.0	2.5
United Arab Emirates	5.2	6.1	6.2	6.2	5.7	5.9	6.5
Kuwait	5.3	4.6	4.7	4.8	4.3	4.3	4.1
Oman	6.3	6.1	6.3	5.4	4.7	5.5	5.5
Qatar	5.6	5.2	5.9	6.0	6.0	6.5	7.0
Bahrain	6.1	5.8	5.8	5.7	5.0	5.4	5.1
Descriptive Statistics:							
Number of countries	16	16	16	16	16	16	16
Mean	4.0	3.9	4.0	3.9	3.6	3.7	3.7
Median	3.4	3.4	3.4	3.3	3.4	3.5	3.3
Minimum	2.1	2.1	2.1	1.9	1.5	1.3	1.5
Maximum	6.3	6.1	6.3	6.2	6.0	6.5	7.0

Source: Transparency International

Figure 1 shows the average growth rate of the CPI around the Arab countries during the period 2003-2009. It can be noticed that most of the Arab countries (10 out of 16) had negative average rates. Sudan had the lowest negative rate (-6.9%) thus Saudi Arabia had the highest negative rate (-0.8%). Moreover, Morocco had zero average growth rate. On the other hand, only five countries had positive annual growth rate. United Arab Emira'. ' and Qatar had the highest positive growth rate (3.8%)

Figure 1 :Average Annual Growth Rates of CPI in the Arab Countries, 2003-2009
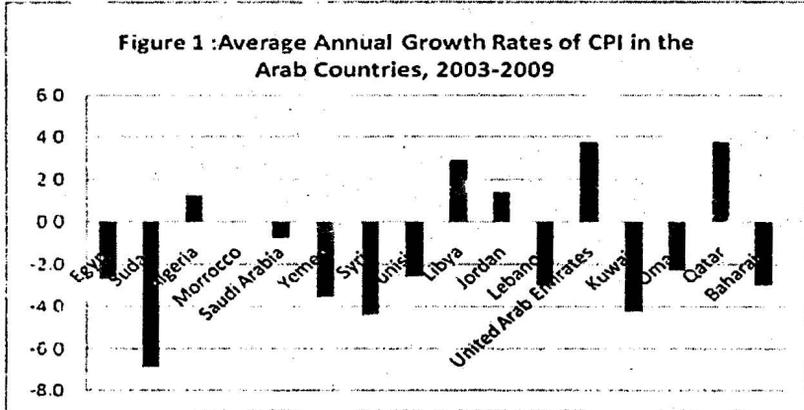
Source: Calculated by the author using Transperancy International data.

3. Previous Studies

There is an extensive literature on the economic effects of corruption. In modeling the effect of corruption on economic growth, previous studies have used a neoclassical growth specification. The rational is that physical capital, human capital, and institutional variables (of which corruption is one) contribute to the steady-state per capita income level. Given the initial per capita income, the rates of growth of these variables determine the speed at which an economy converges to its steady state, which affects the growth rate of GDP (Swaleheen and Stansel, 2007).

Mauro (1995) is the seminal empirical work on the interaction between corruption and growth. He finds that much of the effects of corruption on growth take place indirectly, through the effect on investment. He also finds that investment is controlled for; the direct effect of corruption on growth is weak.

Semenescu et al (2007) use multivariate regressions for 28 European countries using Lucas' model and they find that there is a positive relationship between the corruption, investment and economic growth in European Union. Moreover, Ballamone- Lutz and Ndikumana (2007) find the same positive relationship between the corruption and economic growth using a panel data for 33 African countries.

On the other hand, some studies such as Meon and Sekat (2005) and Houston (2007) find that in countries with poor governance, corruption helps to increase output.

4. Methodology

The aim of this paper is to estimate the relationship between the corruption and economic growth in the arab countries for the period 2003-2009. This study uses a panel data for 16 Arab countries for the period 2003-2009. The countries are selected on the basis of data availability. The list of these countries is presented in Table 2.

Table 2: List of Countries			
Egypt	Saudi Arabia	Libya	Kuwait
Sudan	Yemen	Jordan	Oman
Algeria	Syria	Lebanon	Qatar
Morocco	Tunisia	United Arab Emirates	Bahrain

The main variables included in the estimation are income per capita (in log form), total investment as a percentage of Gross Domestic Product (GDP), openness (the sum of exports and imports as a percentage of GDP, in log) and adult literacy rate (in log) as a measure of human capital. Data on these variables are from the World Bank's World Development Indicators and the International Financial Statistics (IFS) published by the IMF for the period 2003-2009. As I mentioned in section 2, I use the Corruption Preceptions Index (CPI) as a measure for the corruption and I got CPI's data from the Transprancy International .

The main objective of this paper is to empirically estimate this relationship using Ballamone-Lutz and Ndikumana (2007) model. First, I examine the direct effects of corruption on economic growth by estimating the following model:

$$Y_{it} = \alpha Y_{i,t-1} + \beta X_{it} + v_i + \varepsilon_{it} \tag{1}$$

For a country i , Y is the natural logarithm of per capita real income. X is a vector of predeterined variables such as corruption, investment, openness to trade and others. α and β are parameters to be estimated.

Second, I explore the effects of corruption on investment by estimating the following ivestment equation:

$$Inv_{it} = \sigma Inv_{i,t-1} + \omega X_{it} + v_{it} + \varepsilon_{it} \tag{2}$$

Where Inv stands for ivestment, X is a vector of predeterined variables such as corruption, income, openness to trade and others. In all the estimations, I assume that v_i and ε_{it} are independent over all time periods and for each country i . the term v_i represents country-specific effects that are assumed to be independent and identically distributed over the countries, just as ε_{it} . I estimate this model using the fixed and random effects models.

5. Results

Table 3 reports the estimation results for growth equation. All the estimations in this table have been done with Fixed Effect (FE) and Random Effect (RE) models. Column (1) shows that investment has a positive and statistically significant coefficient, and corruption has a negative and statistically significant coefficient as expected. The results indicate that openness to trade, and human capital (proxied by literacy rates) are statistically insignificant.

Table 3 Panel Data estimates of the relationship between the corruption and economic growth: Fixed effect (FE) vs. Random effect (RE) models

	(1)		(2)	
	FE	RE	FE	RE
Constant	0.762***	0.798***	0.785***	0.794***
Income (lagged)	0.8502***	0.8491***	0.8502***	0.7093***
Investment	0.8170**	0.7125**	0.8170**	0.4821*
Openness	0.0428	0.0114	0.0428	0.0112
Corruption	-0.651***	-0.623***	-0.642***	-0.553***
Corruption * Openness			0.8923***	0.8303***
Corruption * Openness square			-0.897***	-0.797***
Literacy	0.4286	0.4548		
Number of obs.	111	111	111	111
Hausman Test X2		9.02		8.89
Prob(>0)		0.06		0.11

Notes: The dependent variable is the log of per-capita income
*Significant at 10%   **Significant at 5%   ***Significant at 1%

In column (2) of table 3 , I explore the joint effect of corruption and openness by including the interaction between corruption and openness, and between corruption and square of openness. The results indicate that there is an inverted U shape effect, implying that corruption is more harmful to growth at high levels of openness to trade. This suggests that high trade Arab countries, consisting mostly of resource rich country, may be more prone to corruption.

To shed light on the appropriateness of the fixed effect estimations versus the random effect estimations, I also concluded the Hausman tests with the corresponding (X^2) and p values as listed. The corresponding p values under Hausman test (0.06 and 0.11, respectively) suggest that the null

hypothesis that the random effect model is the correct specification cannot be rejected at 5% level.

Table 4 Panel Data estimates of the relationship between the corruption and investment: Fixed effect (FE) vs. Random effect (RE) models

	(1)		(2)	
	FE	RE	FE	RE
Constant	0.352***	0.346***	0.354***	0.344***
Income	0.2324***	0.2215***	0.2315***	0.2212***
Investment (lagged)	0.8170***	0.7125***	0.8170***	0.4821***
Openness	0.0218	0.0204	0.0321*	0.0298*
Corruption	-0.071***	-0.072***	-0.071***	-0.070***
Corruption * Openness			0.0723***	0.0603***
Corruption * Openness square			-0.069***	-0.061***
Number of obs.	111	111	111	111
Hausman Test X2		17.23		27.62
Prob(>0)		0.00		0.00

Notes: The dependent variable is the ratio of investment in GDP, in log
*Significant at 10%   **Significant at 5%   ***Significant at 1%

In table 4 , I report estimation results for total investment. Income has a robust positive effect, implying that richer countries have higher investment ratios. Openess to international trade has a positive effect on investment. Corruption is shown to have negative effects on investment, but only once I control for the joint effect of openness to trade and corruption. the Hausman test (High X^2 values) indicates that the fixed effect model is more appropriate.

6. Conclusions

This paper empirically analyzes the relationship between the corruption and the economic growth by applying a panel data analysis for 16 Arab countries. The analysis uses annual data from 2003 to 2009.

Most of the Arab countries had negative average growth rates of the Corruption Perception Index (CPI). This means that the corruption has increased in most of these countries. Qatar had the highest CPI and Sudan had the lowest one.

Consistent with the evidence in the empirical literature, the analysis in this paper has established a statistically significant effect of investment on growth. On the other hand, the results confirmed a negative statistically significant relationship between the corruption and the economic growth.
The evidence confirms that investment constitutes a key driver for growth. Moreover, the analysis provides evidence of a negative effect of corruption on investment, suggesting that one of the channels through which corruption affects growth is through investment.

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الفساد و النمو الاقتصادى فى الدول العربية

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الملخص

يدرس هذا البحث العلاقة بين الفساد و النمو الاقتصادى فى الدول العربية خلال الفترة ٢٠٠٣ – ٢٠٠٩ عن طريق تقدير نموذج قياسى ذو معادلة واحدة. التقدير القياسى يعتمد على تحليل بيانات مقطع عرضى لعدد ١٦ دولة عربية خلال الفترة ٢٠٠٣-٢٠٠٩. التحليل القياسى يعتمد على استخدام كل من نموذج الأثر الثابت و العشوائى. البيانات المالية المستخدمة فى القياس و التحليل تم تجميعها من الاحصاءات المالية الدولية التى يصدرها صندوق النقد الدولى و بعض المتغيرات الأخرى تم تجميعها من نشرات البنك الدولى، كما تم تجميع بيانات مؤشر الفساد من منظمة الشفافية الدولية. لقد توصل البحث الى أن غالبية الدول العربية ينمو فيه الفساد بمعدلات نمو سالبة ، مما يؤكد على تزايد معدلات الفساد فى تلك الدول. كما أن النتائج تؤكد وجود علاقة احصائية معنوية سالبة بين الفساد و النمو الاقتصادى. كما أن البحث يؤكد على أهمية الاستثمار كمحرك أساسى للنمو الاقتصادى.

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