

**DOES CORRUPTION HURT ECONOMIC DEVELOPMENT?:
EVIDENCE FROM MIDDLE EASTERN, NORTH AFRICAN
AND LATIN AMERICAN COUNTRIES**

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ABSTRACT

The theoretical and empirical debate on the effects of corruption on economic development is unclear. Available cross-country evidence suggests that the impact of corruption on economic development may be either positive or negative. However, previous empirical literature has begun to explore the corruption-development relationship at a regional level and the results are promising. This recent interest is surprising, because the international business community may be more interested in regional patterns regarding the impact of corruption on economic development, than at the national level. Developing economies have different cultural and economic characteristics, but they are often plagued by roughly similar levels of corruption. The key question is whether corruption affects economic development differently in developing countries located in different parts of the world. This volume addresses this void in the literature by providing empirical evidence on the impact of corruption on economic development in Middle Eastern & North African and Latin American countries.

I. INTRODUCTION

The debate on the effects of corruption on economic activity is unsettled. Some have argued that corruption hurts economic development because it redirects resources in unproductive direction and instills distortions in the economy (Scheifer and Vishny, 1993). For example, Tanzi and Davoodi (1997) identify four channels through which corruption may have an adverse effect on economic growth: higher public investment, lower government revenues, lower expenditures on business operations and maintenance, and lower quality of public infrastructure.

On the other hand, some researchers have argued that corruption may be economically desirable in certain circumstances in that it provides a more efficient provision of government services by bypassing inefficient regulations and red tape (i.e., Acemoglu and Verdier, 1998). Recognizing this equivocality, a number of survey articles provide further arguments for the theoretical validity of either view and review related issues regarding the impact of corruption on economic development (Bardhan, 1997; Wei, 1998; Aidt, 2003; Drexler and Herzfeld, 2005).

An important characteristic of the empirical studies on the corruption-development relationship is that the evidence comes from mainly cross-country studies. Surprisingly, there is scant literature at the regional level. International business managers and/or policy makers working at regional levels may be more interested regional, rather than cross-country, evidence. Furthermore, international business scholars are starting to discover important relationships at the regional level of analysis (e.g., Guetet, 2006; Gyimah-Brempong & de Camacho, 2006). Consequently, we try to build momentum for this regional level of analysis for this study.

Developing economies have different cultural and economic characteristics, but they are often plagued by roughly similar levels of corruption. The key question we address here is

whether corruption affects economic development differently in developing countries located in different parts of the world. If evidence indicates that the corruption-economic development link is sensitive to regional data employed, then further research needs to focus more on region-specific studies.

In this volume, we provide empirical evidence on the impact of corruption on economic development in the Middle Eastern-North America (MENA) and Latin American countries. Studying these two sets of countries is important and interesting for several reasons. First, their population represents cultures that are quite different from each other. For example, MENA countries (save Israel) are predominantly Muslim while most Latin American countries are Roman Catholic. Second, the majority of MENA countries are resource-rich in that they rely heavily on oil revenues to make a living, whereas Latin American economies are more diversified in terms of their economic activity. In resource-rich countries, corruption may be at a bigger scale and hence more important in economic transactions¹ Third, these two sets of countries share different levels of financial development. Latin American countries, for example, may have relatively more efficient financial markets, including stock and banking markets, than MENA countries. Finally, both of these regions contain developing economies with roughly equivalent levels of corruption so exploration of the relationship between corruption and economic development at the regional level may yield important new insights. In sum, examining the effects of corruption on economic development in these two unique set of countries that are culturally, economically and geographically different may shed further lights on the economic significance of corruption in different regional economic groups.

¹ For oil curse and related issues, see Kutun and Wyzan (2005) and references cited therein.

II. LITERATURE REVIEW ON THE CORRUPTION-GROWTH RELATIONSHIP

The impact of corruption on economic activity is studied from many different perspectives. Some scholars investigate the impact of corruption on economic growth, while others study its impact on domestic and/or foreign direct investment. For example, Mauro (1995) identified the impact of corruption and other institutional factors, including the amount of red tape, the efficiency of the judicial system, and variables of political stability, on economic growth using a data set consisting of 67 countries for the period 1980-1983. Running cross-country regressions, Mauro finds corruption reduces economic growth through lowering private investment and the relationship is robust to controlling for determinants of investment and growth.

In a follow up study, Mauro (1996) studied the influence of corruption on investment, economic growth, and government expenditure using cross-country data for 101 countries and regressions for various time periods. Similar to his earlier work, he found corruption to adversely affect economic growth largely by reducing private investment and possibly by altering the composition of government expenditure, specifically by lowering the share of spending on education.

Tanzi and Davoodi (1997) investigated the channels through which corruption affected economic growth using cross-country data and regressions during the period of 1980-1995. They found higher corruption causes higher public investment, lower government revenues, lower expenditures on operations and maintenance, and lower quality of public infrastructure. Their evidence also revealed that corruption increases public investment but reduces its productivity.

Ehrlich and Lui (1999) investigated the relationship between corruption, government, and economic growth using a panel data which includes 68 countries over the period 1981-1992.

They find that changes in both government size and corruption adversely affect the level of per capita income, but not necessarily its long-run growth rate in the more developed countries.

Mo (2000) investigated the impact of corruption on economic growth and the channels through which it affects growth using data similar to Mauro(1995). He found that a 1% increase in the corruption level reduces the growth rate by about 0.72% and the most important channel is political instability, accounting for about 53% of the total effect. He also found that corruption lowers the level of human capital and the share of private investment.

Blackburn, Bose, and Haque (2005) derive a theoretical relationship between corruption, economic development, and a number of other variables, using a dynamic general equilibrium model of economic growth. Their model indicated that the relationship between corruption and economic development is both negative and two-way causal.

Mendez and Sepulveda (2005) incorporated measures of political freedom as a key determinant of the relationship between corruption and long-run economic growth. Using cross-country data and regressions during the period 1960-2000, they found that the type of political regime is an important determinant of the relationship between corruption and economic growth. By restricting the sample to the countries considered to be free and controlling for a number of economic variables, they found a non-linear relationship between corruption and economic growth.

Buse and Hefeker (2006) investigated the links among institutions, political risk, and foreign direct investment inflows using both cross-sectional and cross-sectional time-series analysis. The sample size covers 83 developing countries during the period 1984-2003. Their findings showed that government stability, internal and external conflict, corruption and ethnic

tensions, law and order, democratic accountability of government, and quality of bureaucracy are highly significant determinants of foreign investment inflows.

Larsson (2006) discussed why corruption in Russia is more damaging to economic growth than corruption in China is. He argued that three factors, comparative advantage, the organization of corruption, and the nature of rents, determine the impact of corruption on economic growth and can explain why corruption is more devastating in Russia than in China.

Most recently, the corruption-growth literature has started to focus on regional levels of analysis. Two papers that are most related to ours are Guetat (2006) and Gyimah-Brempong and Camacho (2006). These studies include region-specific institutional variables, such as bureaucratic quality and corruption, into cross-country regressions to distinguish the impact of these variables on economic growth at regional levels. More specifically, Guetat (2006) attempted to separate the impact of corruption in MENA countries on growth from other countries including Latin American, Asian and Sub-Saharan Africa by estimating an economic growth model for a sample of 90 countries for the period 1960-2000. He introduced regional dummy variables and used interaction terms between the variables in regressions and the regional dummies to distinguish among the regional-specific effects. The results indicated that corruption deters growth more significantly in MENA countries than Latin American and other countries.

Gyimah-Brempong and Camacho (2006) employed panel data from 61 countries for the period 1980-1998 to examine regional differences in the impact of corruption on economic growth and income inequality in Africa, Asia and Latin America. This was accomplished by introducing regional dummy variables and using interaction terms between the variables in regressions and the regional dummies. Overall, they found a negative impact of corruption on

the growth of income per capita and the distribution of income. The largest negative impact of the former was in Africa, while the largest negative effect of the latter was found in Latin America. These two recent studies offer promising new insights and need further refinement and extension.

III. METHODOLOGICAL ISSUES

Research Design

We gathered the data for two distinct regions. Specifically, sixteen Middle Eastern and North African (MENA) countries were analyzed and the results were compared to eighteen Latin American (LA) countries. Data for this study were obtained from the PRS Group and the World Development Indicators, 2005 CD ROM. Our sample period is from 1993 until 2003. The selection of the sample period is dictated by data availability, but a wide variety of economic conditions are captured during this timeframe.

Variables and Measures

Dependent Variable. In this study, our dependent variable was real *GDP per capita* (in 2000 dollars). This variable was obtained from the World Development Indicators. We transformed these data using natural logarithms to ensure that the assumption of normality was not violated.

Independent Variables. *Gross capital formation* was obtained from the World Development Indicators. According to the definition from the World Development Indicators, this variable 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." We transformed these data using natural logarithms to ensure that the assumption of normality was not violated.

The *Labor Force* variable was also obtained from the World Development Indicators. This measure comprises the number of people who meet the International Labor Organization definition of the economically active population: all people who supply labor for the production of goods and services during a specified period. It includes both the employed and the unemployed. While national practices vary in the treatment of such groups as the armed forces and seasonal or part-time workers, in general the labor force includes the armed forces, the unemployed, and first-time job-seekers, but excludes homemakers and other unpaid caregivers and workers in the informal sector. We transformed these data using natural logarithms to ensure that the assumption of normality was not violated.

Our key independent variable, *Corruption*, was obtained from the PRS Group. The value of this variable ranged from 0 to 6, with 0 indicating a high level of corruption and 6 representing a low level. According to the PRS Group, this variable is a measure of corruption within the political system that is a threat to foreign investment by distorting the economic and financial environment, reducing the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability, and introducing inherent instability into the political process. In estimations, we reversed the scale associated with this variable to make its interpretation more intuitive so that high levels of the index would indicate high corruption.

Political Risk was also obtained from the PRS Group data base. They describe this measure as a means of assessing the political stability of a country on a comparable basis with other countries by assessing risk points for each of the several component factors. Risk ratings range from a high of 100 (least risk) to a low of 0 (highest risk). In estimations, we reversed the scale associated with this variable to make its interpretation more intuitive so that high levels of the index would indicate high level of political risk.

Since our study contains observations on each country across multiple years, we must address potential problems, especially heteroscedasticity, in using regression analysis as discussed by Kraatz and Zajac (2001). Two methods of estimating are outlined by Wooldridge (2002). In using the generalized least squares approach, we chose to utilize both methods, random and fixed effect models, to test our hypotheses. We lagged all independent variables one year prior to the dependent variable for each unit of analysis in order to account for potential endogeneity.

IV. EMPIRICAL RESULTS

Our main hypothesis in this volume is that corruption affects economic growth but it may hurt or improve economic development. If it causes inefficient allocation of resources and distortions in the economy, we expect a negative sign. On the other hand, if corruption is a vehicle to remove the negative effect of red tape and regulations on conducting business, then the expected sign between corruption and economic development is positive.

In terms of the expected sign for the other independent variables, theory

suggests that an increase in the gross capital formation should improve economic development, so we expect a positive relationship between GDP per capita and gross capital formation. An improvement in the labor force should increase economic development. Hence, there will be a positive link between GDP per capita and labor force. The expected sign for the labor force variable is therefore positive. Finally, a higher level of political risk may hurt economic development. Therefore, we expect a negative relationship between GDP per capita and political risk.

Descriptive Statistics and Results: MENA Countries

We begin our analysis of just the MENA region. The means, standard deviations, and correlations for this region are displayed in Table 1. A notable finding is the relatively large standard deviation associated with the political risk variable, suggesting that political risk in MENA countries show significant changes. In terms of bi-variate correlations, the dependent variable is highly correlated with both labor force and political risk variables. Another interesting observation is that, among explanatory variables, political risk is the most correlated variable with others (labor force and corruption).

The results of the pooled, cross-section, time series model are displayed in Table 2. We find that Gross Capital Formation is positively related to GDP per Capita in both the random and fixed effects models ($\beta = .06, p < .05$ and $\beta = .06, p < .01$ respectively). These results support the notion that ongoing investments in fixed assets are positively related to growth in GDP per capita in developing countries such as those located in MENA and LA regions.

Regarding the results with respect to the labor force variable, we found a significant positive relationship between Labor Force and GDP per Capita in both the random and fixed effects models ($\beta = .23, p < .001$ and $\beta = .29, p < .001$ respectively). Thus, countries that can

increase their economically-active labor population can enhance their GDP per Capita for the countries in developing countries, such as those located in the MENA and LA regions.

With respect to our key hypothesis that corruption affects economic development, the literature contains conflicting arguments and evidence. Therefore, we expected a significant relationship between the level of Corruption in a country and the level of GDP per Capita, but couldn't hypothesize the direction of the relationship. Our results indicate a positive relationship between our measure of corruption and GDP per Capita in both the random and fixed effects models ($\beta = .03, p < .001$ and $\beta = .03, p < .001$ respectively). The interpretation of these results is that higher levels of Corruption are related to higher levels of GDP per Capita in a developing country.

The results associated with the political risk data show that a higher level of political risk in a country is negatively related to GDP per Capita was supported by the data for the MENA countries. As expected, we found a negative and significant relationship between Political Risk and GDP per Capita ($\beta = -.01, p < .01$ and $\beta = -.01, p < .001$ respectively). These results indicate that countries with lower political risk tend to have a higher GDP per Capita.

Place Tables 1 and 2 about here

In addition, two post- hoc analyses were conducted using the data associated with the MENA countries. First, scholars have suggested that corruption may have a non-linear relationship with GDP per Capita (see Mo, 2001 and references cited therein). In order to assess this we squared the corruption measure and added this new measure to our models. As displayed in Table 3, the corruption² variable was not significantly related to GDP per Capita in either the

random or fixed effects models. It may also be argued that the country of Israel may not exhibit the same relationships as the other MENA countries due to different religion background. To test for this possibility, we removed Israel from the analysis. These results are displayed in Table 4 and indicate that the removal of Israel from the panel of MENA countries does not change the results or their interpretation in a meaningful way. The same significance and signs are displayed in Table 4.

Place Tables 3 and 4 about here

Descriptive Statistics and Results: Latin America

We now turn our attention to relationships within just the Latin American region. The means, standard deviations, and correlations for the Latin American countries are displayed in Table 5. The mean corruption index and its standard deviation are very similar in value to that of MENA countries, indicating similar level of corruption behavior in both regions. Similar to MENA countries, these countries also show high variation in terms of political risk; however, the mean political risk level is higher for Latin American countries than those of MENA. The dependent variable is highly correlated with all the explanatory variables, except that of gross capital formation. Again, political risk is the most correlated with other independent variables.

The results of the pooled, cross-section, time series model are displayed in Table 6. Gross Capital Formation variable, unlike the results from the MENA country data, does not appear to have a significant relationship with and GDP per Capita.

The results associated with labor force variable show a significant positive relationship between Labor Force and GDP per Capita in both the random and fixed effects models ($\beta = .17$,

$p < .001$ and $\beta = .18$, $p < .01$ respectively). Thus, the Latin American countries that can increase their economically active labor population can enhance their GDP per Capita.

With respect to our main hypothesis, the literature contains conflicting results. Therefore, we expected a significant relationship between the level of Corruption in a country and the level of GDP per Capita, but couldn't hypothesize the direction of the relationship. Our results for the Latin American countries did not find a significant relationship between our measure of corruption and GDP per Capita in either the random effects or the fixed effects model. Thus, our hypothesis is not supported using the Latin American country data.

With respect to the political risk data, we found a negative and significant relationship between Political Risk and GDP per Capita ($\beta = -.01$, $p < .001$ and $\beta = -.01$, $p < .001$ respectively). These results are similar to our findings for the MENA countries and indicate that countries with lower political risk tend to have a higher GDP per Capita.

Place Tables 5 and 6 about here

Similar to the post hoc test conducted for the MENA country data, we added a Corruption² variable to our models of the Latin American countries and found similar results, which are displayed in Table 7. In both the random and fixed effects models the relationship between Corruption² and GDP per Capita is insignificant. Overall, the differences noted in the results across the two regional groups are interesting. These results will be evaluated and discussed below in the concluding section.

Place Table 7 about here

V. DISCUSSION AND CONCLUSIONS

We estimated the impact of corruption on economic development, measured by per capita GDP, for MENA and Latin American countries for the period from 1993 through 2003. The motivation of the study was the lack of evidence on this issue at the regional level. To shed some light on this issue, we chose two regions whose nations have different cultural and economic characteristics, but are both widely regarded as developing economies plagued by roughly similar levels of corruption (Table 1 and 5). We used a commonly employed model that controls for the key determinants of economic development, and we included our key variable, corruption, into the model to test whether corruption affects level of economic development beyond those of its typical determinants. To deal with the endogeneity issues, we lagged each of the independent variables. We also employed both fixed and random effects models.

We found interesting and significant differences in terms of the impact of corruption on economic development in both regions. While corruption was associated with improved economic development in MENA countries, it had no significant relationship with economic growth in Latin American countries during our sample period. Our results are different from Guetat (2006) and Gyimah-Brempong and Camacho (2006) who found that corruption deters economic growth in both MENA and Latin American countries. The difference in results may be due to different sample periods studied. In addition, their focus was on *growth* of income per capita, while we investigate the impact of corruption on the *level* of income per capita. Our study, based on wealth levels of economic development, may better capture the long-run impact of corruption on overall economic development. Clearly, both aspects of economic development, growth and overall level, are important and need further study.

The sheer size of the oil sector in MENA countries may explain the significant impact of corruption on economic development. It seems that corruption in MENA countries helps deal with red tape and other bureaucratic barriers in MENA countries and creates an environment in which business can be run more effectively. Other determinants of economic development were generally found to be significant and consistent with theory. Our results are robust to using both fixed and random variables models.

The findings suggest corruption may be beneficial in economies with significant natural resources, or the “oil curse” (Looney, 2006). An interesting extension of this study would be to examine how corruption may affect different sectors of the economy in these regions. One could investigate whether corruption activities improve growth particularly in oil-related sectors and hence in internationally tradable-goods, relative to those non-tradable sectors. Our findings support the previous findings and theoretical arguments that suggest that corruption improves economic development in certain circumstances. This is consistent with our evidence for MENA countries. An alternate argument is that corruption may be neutral: it does not hurt, nor does it help economic development. This is consistent with our evidence for Latin American countries.

Despite these interesting findings, our study has limitations which should be noted. One of the limitations is that we studied only two developing regions. Before we can generalize our results, more evidence has to come forward from other regions. For example, one extension of the research would be to study Central Asian economies where there are abundant oil and gas reserves. Another limitation is that we use data for the post-1990 period. Using a longer sample period may further enrich the results. For example, the price of oil has risen considerably since the end of our study period and this may exacerbate these relationships. Finally, some studies employ data averaged over 3-4 years to deal with endogeneity issues. In this study, we followed

the practice of using pre-determined endogenous variables. Consequently, our results may be sensitive to using different methods.

Despite these caveats, this research offers important and interesting new insights into the corruption-development relationship by examining countries within two distinct developing regions. An important finding here is that the impact of corruption on economic development may vary across regions. This has important implications for managers and businesses operating in a specific geographical region. Our findings suggest that international business managers may face a different corruption-development link in different regions, and this finding deserves further study.

Regarding policymakers, the evidence suggests that they need to be cautious about the potential impact of corruption on socio-political instability and foreign aid. If corruption improves economic development but results in a higher level of income inequality, then they have to design fiscal and other potential policy tools to be able to distribute income from rich to poor to maintain politician instability. Hence, investigating the impact of corruption on income inequality at a regional setting may be an important research agenda for policy-makers as well. Initial work on this issue is presented in Guetet (2006) and Gyimah-Brempong and Camacho (2006), but this study has refined and extended this important line of research.

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TABLE 1**DESCRIPTIVE STATISTICS FOR POOLED DATA IN MENA COUNTRIES****(N = 16 countries, 151 observations)**

Variable	Mean	S.D.	1	2	3	4
1. GDP per Capita ¹	8.71	0.88				
2. Gross Capital Formation ¹	3.02	0.41	-.05			
3. Labor Force ¹	14.63	1.41	-.54**	.14		
4. Corruption	3.32	0.96	-.08	-.06	.16*	
5. Political Risk	34.65	10.99	-.33**	.06	.53**	.37**

¹ Variable has been transformed using natural logarithms

* p < .05, two-tailed test

** p < .01, two-tailed test

TABLE 2**REGRESSION ANALYSIS ON GROSS DOMESTIC PRODUCT PER CAPITA IN MENA COUNTRIES****(N = 16 countries, 151 observations)****Random Effects Model****Fixed Effects Model**

Variable²	Beta	Standard Error	Beta	Standard Error
Gross Capital Formation	0.055*	0.022	0.062**	0.022
Labor Force	0.227***	0.049	0.292***	0.052
Corruption	0.034***	0.007	0.028***	0.007
Political Risk	-0.005**	0.001	-0.005***	0.001
Constant	5.064***	0.787	3.995***	0.802
Adjusted R ²	0.44		0.99	
F-value	30.45***		3219.633***	

² The independent variables are lagged one year.

* p < .05, one-tailed test

** p < .01, one-tailed test

*** p < .001, one-tailed test

TABLE 3

REGRESSION ANALYSIS ON GROSS DOMESTIC PRODUCT PER CAPITA IN MENA COUNTRIES

(N = 16 countries, 151 observations)

Random Effects Model

Fixed Effects Model

Variable²	Beta	Standard Error	Beta	Standard Error
Gross Capital Formation	0.056*	0.022	0.062**	0.022
Labor Force	0.230**	0.049	0.293***	0.052
Corruption	0.041	0.030	0.038	0.030
Political Risk	-0.005**	0.001	-0.005***	0.001
Corruption ²	0.001	0.005	0.002	0.005
Constant	5.021***	0.795	4.01***	0.806
Adjusted R ²	0.44		0.99	
F-value	24.31***		3038.01***	

² The independent variables are lagged one year.

- * p < .05, one-tailed test
- ** p < .01, one-tailed test
- *** p < .001, one-tailed test

TABLE 4**REGRESSION ANALYSIS ON GROSS DOMESTIC PRODUCT PER CAPITA IN MENA COUNTRIES (without ISRAEL)****(N = 15 countries, 141 observations)****Random Effects Model****Fixed Effects Model**

Variable²	Beta	Standard Error	Beta	Standard Error
Gross Capital Formation	0.053*	0.022	0.060**	0.022
Labor Force	0.209*	0.050	0.287***	0.053
Corruption	0.037***	0.008	0.029***	0.008
Political Risk	-0.006***	0.001	-0.006***	0.001
Constant	5.214***	0.793	3.954***	0.821
Adjusted R ²	0.45		0.99	
F-value	29.48***		2953.05***	

² The independent variables are lagged one year.

* p < .05, one-tailed test

** p < .01, one-tailed test

*** p < .001, one-tailed test

TABLE 5**DESCRIPTIVE STATISTICS FOR POOLED DATA IN LATIN AMERICAN COUNTRIES****(N = 18 countries, 180 observations)**

Variable	Mean	S.D.	1	2	3	4
1. GDP per Capita ¹	8.48	0.46				
2. Gross Capital Formation ¹	2.95	0.31	.02			
3. Labor Force ¹	15.28	1.11	.41**	.03		
4. Corruption	3.19	1.03	-.37**	-.13*	-.11*	
5. Political Risk	41.40	12.13	-.59**	-.25**	-.23**	.41**

¹ Variable has been transformed using natural logarithms

* p < .05, two-tailed test

** p < .01, two-tailed test

TABLE 6**REGRESSION ANALYSIS ON GROSS DOMESTIC PRODUCT PER CAPITA IN LATIN AMERICAN COUNTRIES****(N = 18 countries, 180 observations)****Random Effects Model****Fixed Effects Model**

Variable²	Beta	Standard Error	Beta	Standard Error
Gross Capital Formation	-0.023	0.022	-0.020	0.022
Labor Force	0.174***	0.043	0.184**	0.057
Corruption	0.001	0.007	0.001	0.007
Political Risk	-0.006***	0.001	-0.005***	0.001
Constant	5.549***	0.669	5.412***	0.873
Adjusted R ²	0.25		0.99	
F-value	15.56***		774.75***	

² The independent variables are lagged one year.

* p < .05, one-tailed test

** p < .01, one-tailed test

*** p < .001, one-tailed test

TABLE 7

REGRESSION ANALYSIS ON GROSS DOMESTIC PRODUCT PER CAPITA IN LATIN AMERICAN COUNTRIES

(N = 18 countries, 180 observations)

Random Effects Model

Fixed Effects Model

Variable²	Beta	Standard Error	Beta	Standard Error
Gross Capital Formation	-0.022	0.023	-0.020	0.024
Labor Force	0.174 ^{***}	0.044	0.184 ^{**}	0.058
Corruption	-0.002	0.032	-0.001	0.032
Political Risk	-0.006 ^{***}	0.001	-0.005 ^{***}	0.001
Corruption ²	0.001	0.005	-0.002	0.005
Constant	5.547 ^{***}	0.682	5.409 ^{***}	0.884
Adjusted R ²	0.24		0.99	
F-value	12.38 ^{***}		734.85 ^{***}	

² The independent variables are lagged one year.

- * p < .05, one-tailed test
- ** p < .01, one-tailed test
- *** p < .001, one-tailed test

