GREASING OR SANDING? GMM ESTIMATION OF THE CORRUPTION-INVESTMENT RELATIONSHIP

Anupam Das[1]
Department of Policy Studies Mount Royal University, 4825 Mount Royal Gate SW, Calgary, Alberta, T3E6K6, Canada
Tel: +1-403-440-6535, *Email: adas@mtroyal.ca*
Meaghan Marie Beatty Parry
Economics, Business and Mathematics, King's University College at the University of Western Ontario, 266 Epworth Avenue, London, Ontario, N6A2M3, Canada
Tel: +1-519-719-9785, *Email: mparry4@uwo.ca*

ABSTRACT
This paper employs the generalized method of moments (GMM) technique to a large sample of 74 developing countries over the period 2000 to 2008 to investigate the effect of corruption on the rate of investment. Overall results (all countries together) indicate that the control of corruption has a positive impact on the investment rate. Regional detailed investigations suggest that the effect of corruption control on the investment rate is positive in Sub-Saharan Africa, and Latin America and the Caribbean. No significant effect is found in Asia. In general, the sanding hypothesis is found to be dominant in our investigation.
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1. INTRODUCTION

Corruption is a concept with roots in the ancient world, and although its form may have shifted through the centuries, it is still alive and well in the modern age, especially in the developing world. It has been theorized that corruption can lead to the destruction of democracy, the violation of human rights, the collapse of markets, lower quality of life, and increased threats to social welfare (United Nations, 2004; World Bank, 2001). The impact of corruption in the developing world is thought to be particularly damaging, as it is believed to hurt the poor disproportionately. Development initiatives and funds can be siphoned away from the people and used to feed inequality and injustice, which can result in an abundance of social problems. Although corruption is understood to be a key component of economic underdevelopment, (United Nations, 2004) and many international organizations have long advocated for the implementation of a wide range of anti-corruption measures in developing nations, (OECD, 2009; United Nations, 2004; World Bank, 1997) the relationship between corruption and economic performance in the academic literature is still inconclusive.

The debate which is waged among academicians focuses on whether corruption greases or sands the wheels of growth. (Meon and Sekkat, 2005). Corruption as a greasing agent is favored by economists who argue that corruption acts as a facilitator to trade and investment, promoting allocative efficiency and fostering business developments (Meon and Sekkat, 2005; Aidt, 2003 Bardhan, 1997; Leff, 1964; Huntington, 1968; Leys, 1965). Contrary to this argument is the position that corruption fuels the growth of poor governance and further corruption (Meon and Sekkat, 2005).

While the growth effect of corruption could be negative or positive, one important issue that is still unsettled in the literature is through what means corruption influences growth. (Baliamoune-Lutz and Ndikumana, 2008). Ndikumana (2006) reviewed and discussed the sources through which corruption affects growth and found that the nexus between corruption and economic activities can be explained through different channels, such as changes in tax revenue, productivity of labor, and human capital accumulation. The most primary, but important, linkage however, is the accumulation of physical capital (Baliamoune-Lutz and Ndikumana, 2008). Typically, investment rates in developing countries are lower than their developed counterparts. One possible explanation is that corruption has a dampening effect on the rate of investment by creating an inhospitable investment environment and lowering the incentive to invest. (Meon and Sekkat, 2005; Gyimah-Brempong, 2002; Bardhan, 1997; Tanzi and Davoodi, 1997; Mauro, 1995).

This paper seeks to further understand how corruption impacts the rate of investment in different developing regions in the world. It is unique in its approach as it provides a global outlook by estimating investment equations for a large sample of 74 developing nations, and it provides a regional specific examination of the differing impacts of corruption. This discussion furthers scholarly literature as it approaches the issue of corruption's impact on growth through the most primary channel, investment. This channel is chosen because the traditional debate regarding corruption's impact on growth is made problematic by the notion that growth is driven by multiple factors, many of which can be influenced by corruption. Through

separating investment from the determinants of growth, the impact of corruption can be clarified. Moreover, this research uses the generalized method of moments (GMM) technique to explain the relationship between corruption and the investment rate while controlling for the potential bias that may come from endogeneity of some regressors, including the lagged dependent variable.

Overall results from a panel of 74 countries indicate that the control of corruption has a positive effect on the investment rate. Thus, the sanding hypothesis of corruption is dominant in our investigation. Furthermore, this research also attempts to capture the regional effect of corruption. Results suggest that control of corruption is positively related to the investment rates in Sub-Saharan Africa, and Latin America and the Caribbean. Corruption has no impact on the investment rate in Asia.

In this regard, the motivation, context and results of this research are presented as follows. Section 2 presents the theoretical and empirical background of the research. Section 3 outlines the methodology to be used to derive results. Section 4 presents those results and finally, Section 5 concludes the paper.

2. LITERATURE REVIEW

The existing literature is dominated by discussion regarding the question of whether corruption greases or sands the wheels of growth. The majority of theoretical and empirical literature presents evidence of a negative and statistically significant relationship between corruption and investment. Corruption has been found to reduce investment by creating an inhospitable investment environment and by lowering the incentive to invest (Meon and Sekkat, 2005; Gyimah-Brempong, 2002; Bardhan, 1997; Tanzi and Davoodi, 1997; Mauro, 1995). The necessity of bribe paying implies taxation on investment income, and, "declining profitability on productive investments relative to rent seeking investments, thus tending to crowd out the former" (Bardhan, 1997, p.1328). Furthermore, corruption harms growth by reducing the quality of investment, as resources may be diverted from investment in infrastructure or human capital accumulation toward private consumption, particularly by government officials (Tanzi and Davoodi, 1997). In this light, corruption presents a negative effect on investment and may considerably hinder or sand the economic growth and development of a nation.

Although corruption may seem inherently destructive, its negative impact can be mitigated in such cases where corruption benefits investment. In many developing countries, firms pay bribes to win contracts, to have access to subsidized prices, to obtain credit, and to avoid taxation. In this manner, corruption may benefit firms (Rose-Ackerman, 1996) who may expand their investments in the corrupt nation (Hellman, *et al*, 2002). Furthermore, developing countries are thought to be a second best world where pre-existing distortions exist due to malfunctioning institutions and poor governance. Thus, corruption, as a form of bargaining, is efficiency improving (Aidt, 2003; Bardhan, 1997), and, "if the government has erred in its decision, the course made possible by corruption may well be the better one." (Leff, 1964, p.11). Corruption may also function as 'speed money', which can reduce the administrative and legislative barriers to investment and can lessen the time spent in queues (Lui, 1985). The evidence that corruption may not be inherently negative supports the

understanding of corruption greasing the wheels of growth and benefiting gross domestic investment.

Existing empirical literature tends to focus specifically on corruption's effect on growth rather than investment. Of this literature, much weight is given to the hypothesis that corruption has a negative and statistically significant impact on economic growth (Meon and Sekkat, 2005; Gyimah-Brempong, 2002; Jain, 2001; Wei, 2000; Gupta, *et al,* 1998; Kaufmann, 1997; Porta and Vannucci, 1997; Tanzi and Davoodi, 1997; Mauro, 1995). Meon and Sekkat (2005) use the Generalized Least Squares (GLS) method to estimate the impact corruption has on both growth and investment. Their results suggest that corruption has a significant, negative impact on growth and that corruption has a significant, negative impact on investment. These findings support the sanding the wheels hypothesis. Mauro (1997, 1995) employs both Ordinary Least Squares (OLS) and Instrumental Variables (IV) estimating techniques. He finds that the most important channel through which corruption reduces growth is by lowering private investment. This accounts for approximately one third of the negative impact of corruption. This notion is further discussed by Pelligrini and Gerlagh (2004) who find that a one standard deviation decrease in the corruption index can raise private investment by as much as 2.5 percent, which results in GDP growth of approximately 0.34 percent. This effect of the investment channel substantially exceeds the direct corruption effect which was calculated to be 0.20 percent growth per year. These findings offer further credibility to the notion of corruption sanding the wheels of growth, particularly through the investment channel.

The debate, however, of whether corruption negatively, positively, or ambiguously impacts gross domestic investment and growth still remains unresolved on a global scale. The multiple factors which impact each individual nation's investment level ensure that no globally definitive answer or solution has been achieved. When examined at a regional specific level, however, the answer seems more attainable. Much literature indicates an "East Asian Paradox," the achievement of very high investment and growth rates in the face of high levels of corruption (Rock and Bonnett, 2004; Wedeman, 2002). In a large proportion of the developing world, corruption reduces investment; however, studies indicate that countries characterized by stable governments with strong ties to business, such as in Asia, demonstrate no investment-corruption relationship (Rock and Bonnett, 2004). Paul (2010) also argues in the same manner that corruption has an indirect positive effect on growth in Bangladesh. However, an associated issue, noted by Paul (2010) is that "… Bangladesh has the potentials to make growth performance even brighter if corruption can be further reduced through comprehensive liberalization and bureaucratic reform." In other words, it can be said that while *corruption* greases the wheels in a regulation-heavy system; *control of corruption* may grease the wheels further. Furthermore, in countries such as Indonesia, it has been argued that institutionalizing corruption benefits investment, since the investment process is simplified as investors know where to go and how much to pay for specific services (Tanzi, 1998). This paradox, however, does not seem to exist in Latin American or African countries (Loayza, 1997; Gyimah-Brempong, 2002). Loayza (1997) argues that an increasing number of firms in the Latin American

informal sector use government facilities without paying the cost of public services. This is an implicit culture of corruption, which increases the total cost of services. The overall effect is lowering investment and thus, economic growth (Johnson, *et al*, 1999). Gyimah-Brempong (2002) specifically investigates the African experience. Using the Arellano-Bond dynamic panel General Method of Moments (GMM) estimator, the results suggest that a one unit increase in corruption decreases the growth rate of GDP by between 0.75 and 0.9 percent, and of per capita income by between 0.39 and 0.41 percent. Furthermore, it is found that corruption is positively and significantly different from zero at $\alpha = 0.05$, indicating that, when all else equal, increased corruption decreases the investment rate in African countries. The regional specific analyses seem to provide a stronger answer to the question of whether corruption greases or sands the wheels of growth and investment. In this light, the determination of corruption's impact on growth, particularly through the investment channel, requires a regional specific focus which will be integrated into the empirical findings of this research.

3. METHODOLOGY

3.1 The Investment Equation

Our specification relates (log of) the rate of investment to a set of conventional determinants as suggested by the flexible accelerator model of investment. Additionally, this specification is modified by adding the corruption variable to examine the impact of corruption on the rate of investment. Because we use yearly time series data, inertia is likely to be present and thus, needs to be taken into consideration (Servén, 1998). The general model to be estimated is of the following form:

$$\frac{I}{Y} = \alpha + \beta_1\left(\frac{I}{Y}\right)_{-1} + \beta_2(PCY) + \beta_3(PCY)_{-1} + \beta_3(INTR) + \beta_4(INFL) + \beta_5(COR) + \varepsilon$$

$\frac{I}{Y}$ is the log of the investment rate. As discussed above, the specification also includes lagged investment rate $\left(\frac{I}{Y}\right)_{-1}$ as a regressor which suggests that investment is strongly persistent. The current and lagged levels of (the log of) per capita income variables are included to capture the conventional accelerator effect. The current level of per capita income is expected to be positively related to the investment rate. The log of rate of inflation $(INFL)$ (measured as the growth of GDP deflator) and the log of nominal interest rate $(INTR)$ measure the user cost of capital. Both these regressors are expected to have a negative influence on the rate of investment. Finally, we add the measure of control of corruption (COR) to capture the relationship between corruption and the investment rate.

3.2 Data and Estimation Issues

For this research, different versions of investment equations are estimated for 74 developing countries over the period 2000-2008 (See Table 1 for the list of countries). Control of corruption data is collected from the World Governance Indicators (WGI). The data on investment and income are collected from UNDATA of the United Nations Statistical Office. The data on other aggregates are obtained, variously, from the World Bank Open Data and the International Financial Statistics, published respectively by the World Bank and the International Monetary Fund.

The World Bank's World Governance Indicators (WGI) are selected as the tool through which to measure corruption,

particularly the index, "Control of Corruption." This index is an aggregation of various indicators measuring the perception of corruption in a nation. It is designed to capture, "perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interests" (Kaufmann *et al*, 2007, p.6). The index values range between -2.5 and +2.5, with -2.5 indicating very poor performance and rampant corruption, and +2.5, indicating excellent performance and absence of corruption.

To capture the memory effect of the investment rate, we include lagged investment rate in the investment equation. Including this variable as a dependent regressor makes the specification dynamic. Therefore, estimation using least squares procedures will provide inconsistent estimates of the relevant coefficients (Greene, 2007). An instrumental variable approach is thus called for and, in that regard, the generalized method of moments (GMM) approach proposed by Blundell and Bond (1998) is an information-efficient means of obtaining consistent coefficient estimates. The advantage of this (system GMM) approach, over other GMM (or instrumental variable) approaches, is that it utilizes both lagged and differenced versions of the regressors as instruments in obtaining coefficient estimates.

Since this panel dataset is categorized as having a T of 9 years (from 2000 to 2008) and large N (74 countries), non-stationarity of some variables, particularly the dependent variable, may become an issue. If the dependent variable was shown to be non-stationary for all, or a large majority of panels, then the strict GMM approach of the type described above would not be the most appropriate approach. A panel cointegration procedure would be more appropriate. To test the level of integration, the Fisher test for non-stationarity of all panels (unit root) is applied to all variables.

Table 1: List of Developing Countries in the Sample

Algeria	Dominican Republic	Malawi	Senegal
Argentina	Ecuador	Malaysia	Sierra Leone
Bangladesh	Egypt, Arab Rep.	Mali	Sri Lanka
Belize	El Salvador	Mauritania	Suriname
Benin	Fiji	Mauritius	Swaziland
Bolivia	Gabon	Mexico	Syrian, Arab Rep.
Botswana	Gambia, The	Morocco	Tanzania
Brazil	Ghana	Mozambique	Thailand
Burkina Faso	Guatemala	Nepal	Togo
Burundi	Guyana	Nicaragua	Tunisia
Cameroon	Haiti	Niger	Turkey

Table 1 (cont.): List of Developing Countries in the Sample			
Central African Rep.	Honduras	Nigeria	Uganda
Chad	India	Pakistan	Uruguay
Chile	Indonesia	Panama	Venezuela
Colombia	Jamaica	Papua New Guinea	Vietnam
Comoros	Jordan	Paraguay	Zambia
Congo, Republic	Kenya	Peru	Zimbabwe
Costa Rica	Lesotho	Philippines	
Cote d'Ivoire	Madagascar	Rwanda	

Table 2: Stationarity Tests for Relevant Variables

Variable	Fisher-type Test Statistics, χ^2 (Null of full panel non-stationarity)	Determination
Ln Investment/ GDP	199.42***	Stationary
Ln Per Capita Income	1031.84***	Stationary
Ln Rate of Interest	326.86***	Stationary
Ln Rate of Inflation	543.76***	Stationary
Control of Corruption	304.48***	Stationary

Notes: 1) *** indicates significance at the 1% level. 2) Ln x implies $\log_e(1+x)$ when x is a proportion and $\log_e(x)$ when x is an index or absolute value

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The null hypothesis of unit root for all panels is very strongly rejected (at better than the 1% level) for the dependent variable- rate of investment. The test statistic is 199.42 with a *p* value of 0.000. Applying the same test to other independent variables also leads to the rejection of the null of unit root. We can therefore conclude that these variables are mostly integrated of order zero [I(0)] – meaning that the specific GMM approach would be an appropriate approach. GMM technique is also applied to estimate investment equations for three different regions, Sub-Saharan Africa, Latin America and the Caribbean, and Asia. Countries are divided into regions to capture the differing impact of corruption on the investment rate in different regions of the developing world.

4. RESULTS AND ANALYSIS

The results from estimating the general investment equation (for the world) specified above, as well as several regional equations on this specification are reported in following tables. All estimated versions of this investment equation meet the Arrellano-Bond criteria for valid specifications – though there is evidence of AR(1), which is acceptable, there is no

evidence of AR(2), which is not, and tests of over identifying restrictions and exogeneity of instruments do not reject the hypotheses that the (GMM) instruments are valid and exogenous.

Table 3 presents the results from estimating the investment equation for the world. As expected, the coefficient for lagged investment ratio is very significant (better than the 1% level) with a coefficient of 0.9 that proves extremely robust to changes in the specification. This strongly supports the persistence model of investment. The positive and significant (at the 1% level) coefficient for (log of) per capita income captures the conventional accelerator effect. Lagged (log of) per capita income is found to be negative and significant. Among other standard investment determinants (i.e. rate of interest and inflation), only the log of inflation carries a significant (negative) coefficient.

In the general investment equation, the coefficient for control of corruption is positive and significant, though only at the 10% level, with a magnitude of 0.034. This coefficient, however, does not represent the long run coefficient as our equation contains an autoregressive term.

Table 3: GMM Estimates of the Investment Equation: All Developing Countries

Dependent Variable: Ln Investment/GDP

	Investment Equation
Constant	-0.014 (0.840)
Ln Investment/GDP Lagged	0.920*** (0.000)
Ln Per Capita Income	0.258*** (0.009)
Ln Per Capita Income (Lagged)	-0.271*** (0.005)
Ln Interest Rate	0.272 (0.138)
Ln Inflation	-0.510* (0.084)
Control of Corruption	0.034* (0.055)
Arellano-Bond Test for AR(1)	-3.46*** (0.001)
Arellano-Bond Test for AR(2)	-0.82 (0.412)
Hansen test of overriding restrictions ($\chi 2$)	66.29 (0.976)
Number of Observations	582

Notes: 1) Instrumental Variables: Ln Per Capita Income (Second Lagged), Ln Investment/GDP (Second Lagged), Control of Corruption (Lagged), Ln Interest Rate (Lagged), Ln Inflation (Lagged), Money Supply Growth. 2) P-values are in the parenthesis. 3) Ln x implies $\log_e(1+x)$ when x is a proportion and $\log_e(x)$ when x is an index or absolute value. 4) *** Indicates significance at the 1% level; * Indicates significance at the 10% level.

Table 4: GMM Estimates of the Regional Investment Equation: Sub-Saharan Africa	
Dependent Variable: Ln Investment/GDP	
	Investment Equation
Constant	-0.097 (0.578)
Ln Investment/GDP Lagged	0.814*** (0.000)
Ln Per Capita Income	0.356 (0.156)
Ln Per Capita Income (Lagged)	-0.381 (0.116)
Ln Interest Rate	0.373 (0.333)
Ln Inflation	-0.582 (0.257)
Control of Corruption	0.104* (0.063)
Arellano-Bond Test for AR(1)	-2.59*** (0.010)
Arellano-Bond Test for AR(2)	-0.89 (0.373)
Hansen test of overriding restrictions ($\chi 2$)	27.85 (0.833)
Number of Observations	246

Notes: 1) Instrumental Variables: Ln Per Capita Income (Second Lagged), Ln Investment/GDP (Second Lagged), Control of Corruption (Lagged), Ln Interest Rate (Lagged), Ln Inflation (Lagged), Money Supply Growth. 2) P-values are in the parenthesis. 3) Ln x implies $\log_e(1+x)$ when x is a proportion and $\log_e(x)$ when x is an index or absolute value. 4) *** Indicates significance at the 1% level; * Indicates significance at the 10% level.

When the coefficient for autoregressive term is taken into account, the implied long run coefficient is 0.43 points.[2] This means that any 1 point improvement of control of corruption leads to an increase in the investment rate by 0.43 points. These results support the sanding hypothesis of corruption. In other words, on average, an improvement of governance and institutions tends to increase the rate of domestic investment in developing countries.

[22] The formula for translating a coefficient from an ADL model to its long-run equivalent is $\beta/(1-\alpha)$ where β is the coefficient for the variable of interest and α is the coefficient for the lag dependent variable. Therefore, in this case the implied long run coefficient is $\frac{0.034}{(1-0.92)} = 0.43$

Tables 4 to 6 present the investment effect of control of corruption in different regions of the developing world. Different coefficients for lagged investment ratio are found to be positive and very strongly significant in all versions. This tends to suggest that the persistence model of investment is valid in all regions. Moreover, the conventional accelerator effect of investment is found to be present in all regions but one, i.e. the coefficient for (log of) per capita income is significant (and positive) in Asia, and Latin America and the Caribbean but insignificant in Sub-Saharan Africa.

Our main variable of interest, control of corruption, is found to be positive and significant at the 10% level in Sub-Saharan

Africa (Table 4). The magnitude of this coefficient is 0.104, suggesting an implied long run coefficient of 0.56. In effect, over the long run, a 1 point improvement of the control of corruption index in Sub-Saharan Africa is responsible for a 0.56 point increase in the rate of investment. This, in fact, echoes the findings of Gyimah-Brempong (2002), that a reduction in the level of corruption in Africa increases the regional growth, and that this effect is transmitted via capital accumulation. A similar result is found for Latin America and the Caribbean. The coefficient for control of corruption in this region is positive and significant (at the 5% level) with a magnitude of 0.039. The implied long run coefficient is 0.62. This result reinforces the findings of Loayza (1995). In the long run, therefore, the effect of controlling corruption seems to have a strong positive impact on the rate of investment in Sub-Saharan Africa and in Latin America and the Caribbean (See Table 5).

Table 5: GMM Estimates of the Regional Investment Equation: Latin America and the Caribbean

Dependent Variable: Ln Investment/GDP	
	Investment Equation
Constant	-0.035 (-0.729)
Ln Investment/GDP Lagged	0.937*** (0.000)
Ln Per Capita Income	0.403** (0.022)
Ln Per Capita Income (Lagged)	-0.413** (0.026)
Ln Interest Rate	0.060 (0.724)
Ln Inflation	0.099 (0.628)
Control of Corruption	0.039** (0.036)
Arellano-Bond Test for AR(1)	-2.96*** (0.003)
Arellano-Bond Test for AR(2)	-2.14 (0.032)
Hansen test of overriding restrictions ($\chi 2$)	17.94 (1.000)
Number of Observations	184

Notes: 1) Instrumental Variables: Ln Per Capita Income (Second Lagged), Ln Investment/GDP (Second Lagged), Control of Corruption (Lagged), Ln Interest Rate (Lagged), Ln Inflation (Lagged), Money Supply Growth. 2) P-values are in the parenthesis. 3) Ln x implies $\log_e(1+x)$ when x is a proportion and $\log_e(x)$ when x is an index or absolute value. 4) *** Indicates significance at the 1% level; * Indicates significance at the 10% level.

Table 6: GMM Estimates of the Regional Investment Equation: Asia	
Dependent Variable: Ln Investment/GDP	
	Investment Equation
Constant	0.126 (0.210)
Ln Investment/GDP Lagged	0.970*** (0.000)
Ln Per Capita Income	0.353** (0.020)
Ln Per Capita Income (Lagged)	-0.376** (0.017)
Ln Interest Rate	-0.021 (0.915)
Ln Inflation	-0.161 (0.481)
Control of Corruption	0.030 (0.418)
Arellano-Bond Test for AR(1)	-2.59** (0.010)
Arellano-Bond Test for AR(2)	0.90 (0.367)
Hansen test of overriding restrictions ($\chi 2$)	11.77 (1.000)
Number of Observations	152

Notes: 1) Instrumental Variables: Ln Per Capita Income (Second Lagged), Ln Investment/GDP (Second Lagged), Control of Corruption (Lagged), Ln Interest Rate (Lagged), Ln Inflation (Lagged), Money Supply Growth. 2) P-values are in the parenthesis. 3) Ln x implies $\log_e(1+x)$ when x is a proportion and $\log_e(x)$ when x is an index or absolute value. 4) *** Indicates significance at the 1% level; * Indicates significance at the 10% level.

The effect of corruption on the investment rate is found to be rather insignificant in the third group of countries from Asia (See Table 6). In fact, this coefficient is strongly robust to changes in the specifications. On average, control of corruption has no considerable effect on the investment rate in these countries. This result, however, is not surprising. Lee and Oh (2007) suggest that given the variances in corruption, particularly in Asian countries, the effect of corruption on economic activities may be different. Thus, the overall effect of corruption on the investment rate is inconclusive for this group of countries. Whether different types of corruption have different effects across countries can be determined only from more specific country analyses. Determining the actual effect of corruption at the country level is beyond the scope of this paper.

5. CONCLUSION

In this research endeavor, we attempted to discover the effect of controlling corruption on the rate of investment in developing countries. To do so, we estimated various specifications of an investment equation for 74 developing countries over the period 2000 to 2008. Overall results suggest that control of corruption has a positive effect on the investment rate in developing countries. More specifically, over the long run, for each point increase of control of corruption in developing countries, the investment rate increases by 0.43 points. Thus, the presence of corruption is not conducive to high levels of domestic investment because corruption creates distortions which effectively diminish the incentive to invest in a nation (Shleifer and Vishny, 1993). In this manner, control of corruption has been found to benefit economic growth globally, primarily through promoting higher levels of

investment in a nation. This result reinforces the sanding hypothesis of corruption.

A key objective of this investigation was to discover the regional effect of control of corruption on the investment rate. Results indicate that, indeed, regional effects are different. The sanding hypothesis was again found to be true for Sub-Saharan Africa, and Latin America and the Caribbean. In Latin America, because public officials have strong bargaining power relative to businesses, corruption is of a degenerative form which allows public officials to use their positions to collect bribes (Gyimah-Brempong and Munoz de Camacho, 2006). Gyimah-Brempong (2002) argued that corruption in Africa is decentralized and uncoordinated. This form of corruption decreases investment because bureaucrats act as independent contractors, therefore, paying bribes at any stage of the investment process does not guarantee that one will receive the services requested.

Our results also suggest that control of corruption has no discernible impact on investment rates in Asia. This result confirms the notion that, in many Asian countries, governments have strong ties to the private sector, and corruption facilitates development (Rock and Bonnett, 2004). Government officials may provide resources to a business in exchange for a share in the firm's revenue (Gyimah-Bremong and Munoz de Camacho, 2006). Profit sharing provides an incentive for the public officials to encourage economic growth. Furthermore, many Asian countries have institutionalized corruption. The simplification of the investment process stimulates growth (Tanzi, 1998). Thus, the greasing hypothesis is not reflected in our results for Asian countries.

This work raises an additional question: does corruption have different effects across countries within the same region? Detailed investigation at the country level may be used to determine the country specific results. This is an intriguing issue, and thus left for future research.

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