IS CORRUPTION SAND OR GREASE IN THE WHEELS OF INVESTMENT?

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ABSTRACT: *This study is an attempt to explore the direct and indirect impact of corruption on private investment. For indirect impact, governance quality has been used as a transmission channel for the sample of six Asian (developing) countries namely Bangladesh, India, Maldives, Nepal, Pakistan, and Sri-Lanka, covering the period 1996-2017. This study has used cross-section and panel data estimation (Fixed Effects). The results confirmed that corruption hurts private investment directly as well as indirectly. While combating corruption is a long-term challenge and a transmission channel through which corruption affects private investment is another way to restrict the adverse impact of corruption. Based on estimation results, this study provides a policy suggestion to these six Asia countries, that improves the quality of governance which will limit the adverse impact of corruption and will encourage private investment.*

Key Words: Corruption, governance quality, direct and indirect effect, transmission channel.

1. INTRODUCTION

It is a common consensus among economists that long-run growth a result of capital accumulation. However, there is still a gap in the knowledge to explore the factors which in turn determine the rate of physical capital. Secondly, growth economists are not on the same page to understand the relationship between the quality of institutions and physical capital [1]. This study is an attempt to explore that are weak government institutions are the product of corruption and secondly what is the impact of those government institutions on physical capital?

Before going into deep analysis, it is necessary to know what corruption is? But defining corruption is no an easy task because it ranges from broad terms of "misuse of power" to the strict most common definition as an act of bribery having the involvement of public officer [2]. It is an illegal and immoral action which normally practiced secretly [3]. In the past corruption has been studied as a problem of cultural and moral underdevelopment. But it has received special attention when International Transparency defines corruption as "misuse of public offices for private benefits".

Nowadays, economists, historians, and political scientists are actively engaged in exploring more about corruption, and its impact on different economic indicators. Theoretically as well as empirically scholars are not on the same page because some scholars are in favor of corruption [4, 5, 6] and some are against it [1, 3, 7, 8]. Such as, Corruption discourages private investment by raising hidden costs of production and by raising uncertainty over future returns from a current investment [9]. Similarly, it hurts good governance [10]. Because those countries which are experiencing bad governance, are facing a high level of corruption [11].

Hence, the main objective of this research is to find the impact of corruption on private investment through government intervention as a transmission channel in six Asian economies (SAARC countries) namely Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka.

2. LITERATURE REVIEW

When there is a theoretical concern, Domar [12] and Harrod [13] are among the pioneer contributors who stressed the importance of physical capital for the overall welfare of the economy. They independently constructed a model (Harrod-Domar Model) in which they stressed saving and investment, which ultimately leads to a higher growth rate. Solow-Swan Growth model [14,15] also an emphasis on capital accumulation including population growth. Therefore, this study is an attempt to explore whether corruption is a curse for investment or it is a blessing.

Nowadays, it is confessed by most empirical studies that corruption hurts private investment. But some researchers [4, 5, 6] have addressed that corruption may encourage private investment. Because bribes can help in avoiding bureaucratic regulations and it serves as an incentive for government officials to accelerate their duties.

On the other hand, Mauro tried to explore the relationship between corruption and private investment for 58 countries, having data from 1970 to 1985. He confirmed that corruption has a statistically significant adverse impact on private investment which in turn affect negatively on the overall economy [1].

Corruption hurts capital accumulation and innovation because innovators somehow need government support, for instance, infrastructure, permits, and import quotas. On the other hand, the demand for those goods is high and inelastic, which becomes a primary cause of corruption. Secondly, producers (innovators) have credit-constrained to pay bribes, which ultimately reduce private investment [3]. Later on, various studies have recheck these results and they confirmed that as the level of corruption is increasing private investment is significantly decreasing [8, 16, 17].

Similarly, many studies have confirmed that corrupt government institutions cause a severe obstacle for investment and innovation. Such as violation of property rights over physical capital may cut incentives and opportunities to invest in physical capital. Government officials may create hurdles in providing licenses and permits, which ultimately slows down the process of innovation and new processes of production [18, 19]. Furthermore, it also been found by using panel data of 46 developing countries, with the period of 1996-2009. They tried to investigate the impact of good governance on private investment. Outcomes identified that a high level of corruption and political instability are indicators of bad governance. Furthermore, estimated concluded that bad governance has a statistically significant adverse impact on overall private investment and vice versa [20]. Similarly, these also have been confirmed these results by using the data of North Africa and the Middle East region to address the problems of private investment is confirmed and it has been confirmed that higher private investment is a byproduct of good governance [21].

Moreover, Emery took African countries and did cross-country analysis, in which he found that quality of governance has a strong influence on the level and nature of private investment. Even though private investment is a major determinant of economic growth which in turn helps alleviate poverty and improve the living standard of citizens. But unfortunately, most of the countries in Africa are unable to create an investment-friendly atmosphere because of their low quality of governance [22].

3. DATA AND METHODOLOGY

3.1 Data and sources

Nowadays, it has been admitted in the empirical studies to include institutions as an ordinary explanatory variable in the regressions related to growth. This study is following the World Governance Index to measure the level of corruption and quality of governance. Furthermore, controlling variables of corruption are followed by growth literature [7, 17, 23] which are possibly linked with corruption namely foreign direct investment, population, political stability. Table .1 shows a list of all variables and their sources.

Table .1: Variables their definition and source

Variables	Definitions	Sources
Private Investment	Capital stock in trillions (USD)	Penn World Table 9.1
Corruption Index	Perception of public power used in private gain (petty as well as grand forms)	World Governance Index
Governance quality	Perception of quality of public, civil service and its independence from political pressures	World Governance Index
Foreign investment	It's a net inflow of investment from other countries (in USD)	World Bank Dataset
Population	Population (in millions)	Penn World Table 9.1
Political Stability	Perception of the possibility that the government will be destabilized/overthrown.	The Global Economy

Source: Constructed by authors.

3.2 Methodology

The main objective of this study is to find the direct, indirect, and total impact of corruption on private investment for a sample of 6 Asian (developing) countries for 1996-2017. This study is using methodology to find the indirect impact of corruption on economic growth through various transmission channels which is commonly used in the literature [3, 7, 17]. However, this study is using governance quality as a transmission channel and its impact on private investment. This study will apply the ordinary least squares (OLS) method on the following equations and panel data estimation (fixed effect) techniques.

$$INV_{it} = \alpha_0 + \beta_1 COR_{it} + \beta_2 GQ_{it} + \beta_3 PS_{it} + \beta_4 POP_{it} + \beta_5 FDI_{it} + \varepsilon_{it} \quad (1)$$

$$GQ_{it} = \lambda_0 + \gamma_1 COR_{it} + \gamma_2 POP_{it} + \mu_{it} \quad (2)$$

By substituting equations (2) in (1) and we will get equation (3)

$$INV_{it} = (\alpha_0 + \lambda_0) + (\beta_1 + \beta_2\gamma_1) COR_{it} + \beta_3 PS_{it} + (\beta_4 + \gamma_2) POP_{it} + \beta_5 FDI_{it} + \varepsilon_{it} + \mu_{it} \quad (3)$$

Now by taking the partial derivative of INV_{it} concerning INV_{it} we will get equation (4)

$$\partial INVit \partial CORit = \beta 1 + \beta 2\gamma 1 \quad (4)$$

$\beta 1$ is the direct effect of corruption and $\beta 2\gamma 1$ is the indirect effect of corruption on private investment through $\beta 1 + \beta 2\gamma 1$ is the total impact of corruption on private investment.

4. ESTIMATED RESULTS

Table.2 is the estimation result of equations(1) and (2). Regression (1) presents the impact of corruption on private investment including, governance quality, controlling variables namely foreign direct investment, total population, and political stability. All the coefficients of explanatory variables have predicted sign statistically significant results. The R^2 is 0.92, meaning that 9percentnt variation in private investment can be caused by all independent variables. The coefficient of corruption shows a positive sign but it reflects the negative influence on private investment with statistically significant at 10 percent (P-value). Corruption

Table.2: Ordinary Least Squared (OLS) results of equation (1) and (2)

VARIABLES	Private Investment	Governance Quality
Corruption	0.446*	0.758***
	(0.334)	(0.239)	(0.0781)
Foreign Investment	0.511***	
	(9.823)	(0.0742)
Governance Quality	-0.755**	
	(0.394)	(0.329)
Total Population	0.00369***	0.000119*
	(417.31)	(0.000825)	(6.24e-05)
Political Stability	0.276**	
	(0.922)	(0.114)
Constant	0.105	0.0858
	(0.126)	(0.0610)
Observations	132	132
R-squared	0.923	0.465

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

the index varies from -2.5 to 2.5, and a higher value reflects low corruption and vice versa. Hence corruption has a significant impact on private investment, a decline in corruption of one standard deviation increases privative investment by 148.9 billion USD. Similarly, an increase in the foreign direct investment of one standard deviation increases private investment by 5 trillion USD. In this model, a decrease in the governance quality of one standard deviation leads tan o increase in private investment by 297 billion USD. On the other hand and, an increase in the total population of one standard an leads in to increase private investment by 1.53 trillion USD. Similarly, an increase in the political stability of the one standard deviation increases private investment by 254 billion US Dollars.

The second column shows regression (2), which is the result of equation (2) where governance quality is the dependent variable and corruption and population are the independent variables. Both coefficients of explanatory variables have predicted sign significant results. The R^2 is 0.46, meaning that 46.5 percent variation in governance quality can be caused by corruption and population. The coefficient of corruption

shows a positive sign but it reflects the negative influence on private investment with statistically significant at 1 percent (P-value). Hence corruption has a significant impact on private investment, a decline in corruption of one standard deviation increases privative investment by 253 billion USD. Similarly, an increase in the total population of one standard leads to an increase in private investment by 49.6 billion USD.

Table.3 shows the estimated value of equation (4), which depicts the direct, indirect, and total effect of corruption on private investment. β_1 is the coefficient of corruption (as in equation (1)) which shows the direct adverse impact of corruption on private investment. But its sign is positive, which is because the World Governance index of corruption higher the value low the corruption. So, a one-unit decrease in corruption will increase private investment by 44 percent. The second column presents the indirect impact of corruption on investment through governance quality transmission channels. It shows a negative impact, and the column is the overall impact of corruption on private investment which is the sum of direct and indirect impact.

Table.3: Direct, indirect, and total effect of corruption on Private Investment (OLS results)

Direct Effect	Indirect Effect	Total Effect
β_1	$\beta_2\gamma_1$	$\beta_1 + \beta_2\,\gamma_1$
0.44	-0.74*0.75= -0.56	0.44 + 0.56 = -1.0

Source: Constructed by authors.

Table .4: Tests of endogeneity

Ho:	variables are exogenous
Equation (1)	
Durbin (score) chi2(1)	= .303331 (p = 0.5818)
Wu-Hausman F(1,125)	= .287907 (p = 0.5925)
Equation (2)	
Durbin (score) chi2(1)	= 1.09961 (p = 0.2944)
Wu-Hausman F(1,128)	= 1.07525 (p = 0.3017)

Source: Output of Stata software.

For handling the problem of endogeneity, two variables have been used in the literature, as an instrumental variable of corruption namely ethnolinguistic fractionalization [1] and legal origins [8, 17]. This study has used legal origins as an instrument for corruption and has applied two endogeneity tests (Wu-Hausman and Durbin), and the null hypothesis of both tests has been accepted in both regression equations, meaning that variables are exogenous as stated in table.4.This study is using panel data for six Asian countries, for 1996-2017, to see whether there is the existence of heterogeneity among these four countries. Hence F-test and Breusch Pagan Lagrange Multiplier test has been used to select an appropriate model both tests confirmed that the Fixed Effects (FE) model (by F-Test) and Random Effects (RE) model (by Breusch Pagan Lagrange Multiplier) are appropriate. To select one between them Hauman test has been used which suggested that the Fixed Effects model, which is displayed in table.5.

Table.5: Direct, indirect, and total effect of corruption on Private Investment (FE results)

VARIABLES	Private Investment	Government Quality
Corruption	0.144*	0.524***
	(0.705)	(0.117)
Foreign Investment	0.111***	
	(0.0342)	
Government Quality	-0.228	
	(0.567)	
Total Population	0.0698***	0.000110
	(0.00487)	(0.000399)
Political Stability	0.693***	
	(0.222)	
Constant	-14.79***	-0.0612
	(1.170)	(0.126)
Observations	132	132
R-squared	0.921	0.141
Number of countries	6	6

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table.6: Direct, indirect, and total effect of corruption on Private Investment (FE results).

Direct Effect	Indirect Effect	Total Effect
β_1	$\beta_2\gamma_1$	$\beta_1 + \beta_2\gamma_1$
0.14	0.52*0.23 = 0.12	0.14 + 0.12 = 0.26

Source: Constructed by authors

5. CONCLUSIONS

In recent empirical literature has explored the impact of corruption on economic growth through various transmission channels [3, 7, 16, 17] This study has used the same method to find the direct and indirect impact of corruption on private investment, for indirect impact governance quality has been used as a transmission channel. Corruption is a broader concept, and it has an existence in every sector of the economy. Secondly controlling overall corruption is not an easy task because of its nature [17]. The reason behind finding the indirect effect of corruption on private investment through governance quality was to find an alternative way to stop the adverse impact of corruption on private investment.

The results of this study have confirmed a negative impact of corruption on private investment which is accepted by most of the empirical literature. Secondly, this study also concludes that as corruption is increasing in six Asian countries, the quality of governance is decreasing. And that low governance quality ultimately hurts private investment. Based on the outcomes of this study FDI has a positive influence on private investment, meaning that FDI is creating a spillover effect. Furthermore, political stability and population growth are also encouraging private investment.

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