Corruption-Growth Nexus in the Emerging Market Economies: Empirical Evidence Using Panel Data

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ABSTRACT

Corruption is a governance dilemma in emerging market economies (EMEs) with fragile law enforcement systems. Using annual data from 1997 to 2020, this study explores corruption-growth nexus in the World's most important emerging market economies. Since it takes into account the intrinsic characteristics of each country, the panel data fixed effect estimation method appears to be the best option. The fixed effect estimation results reveal that corruption has a significantly negative impact on economic growth of the EMEs under consideration, after controlling for the government spending, investment, human capital, trade openness, and population. The random effect estimation method used as a fallback does not significantly alter the empirical findings. A noteworthy fact revealed by the pragmatic findings is that when corruption is significant, the effect of government spending on economic growth becomes negative due to embezzlement and misallocation of public coffers.

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1.   Introduction

The abuse of public office for personal gain is called corruption (Bardhan, 1997; Jain, 2001; Svensson, 2005). In general, corruption may be demarcated as the misuse of public power by a public authority or a state official for personal gain. It is also referred to private rent-seeking behavior of someone who misuses public authority for private gain. Government corruption can also be viewed as a depraved state-society relationship. The issue of corruption has received substantial attention in the developing world after the corruption and money laundering scandals of the political elite. The freedom of electronic and print media along with flourishing democracy is enhancing public awareness of corruption in recent years. An opulent literature is available on the economic aftermaths of corruption explaining that the corrupt practices lead to a widespread devastating impact on an economy in the long run.

Corruption obstructs economic growth and development by eroding the efficiency of public enterprises, glooming the investors, and reducing human development. It also leads to the misallocation of public coffers and the wastage of public resources. It jeopardizes the foreign and domestic investment climate by influencing the investor's sentiments and shaking their trust in the government. Corruption may also prompt taxpayers to avoid paying taxes as their tax money is misused by the corrupt political elite. The World Bank has avowed that corruption is a major obstacle to the way of socioeconomic development of a country.

Economies are never immune to corruption. Corruption is present everywhere but it is more prevalent in developing countries. Whether corruption greases or sands the wheels of economic growth is a topic that continues to offer a strong research enticement (Aidt, Dutta, & Sena, 2008; Bardhan, 1997). According to proponents of the greasing the wheels hypothesis corruption fosters trade that could not have occurred otherwise and boosts efficiency by enabling private sector agents to get around onerous laws.

The misuse of public authority for personal gains can erode people's confidence in the government which undermines the effectiveness of the public policy. The trust of the general public in state institutions is shaken endangering the socio-economic prospect of a country in the long run. Corruption evades the taxpayer's money from education, health, and infrastructure (Gillani, Shafiq, & Ahmad, 2019). Economists are interested in the aftermaths of corruption because it is evident that there is a nexus between corruption and economic performance. The corrupt practices and rent-seeking attitudes of public officials expose the fragility of public sector institutional structures in developing countries.

Corruption erodes the government's capacity to help the economy grow by benefiting all the citizens. The negative impacts of corruption on the economy cannot be negated. International organizations have been consistently claiming that corruption is an obstacle in the way of long-run economic growth. Despite the negative growth effects of corruption, theoretical studies explain that corrupt government practices can counteract governance failure by promoting economic growth in the short run. That's why economists are concerned about the long-run impacts of corruption on the economy.

We can summarize the long-run economic impacts of corruption in the following text. Corruption can manifest itself in many ways. The rent-seeking behavior of public officials may lead to the misallocation of resources in the economy because the utilization of funds is decided based on personal interest. Ranking of the projects based on public interest and social values may have diverged towards self-interest. So, the malpractices in private investment contracts by the corrupt decision-makers waste public money as the decisions are made based on potential corruption payments. IMF's fiscal monitor reports on corruption show that countries with low levels of corruption face less wastage in public investment projects. It is observed that less corrupt governments use public money more efficiently.

The empirical facts show that the most corrupt emerging economies waste public money twice as the least corrupt countries. It could be the taxpayer going to a tax administrator for a bribe in exchange for a discount on tax-bill or it could be a company or firm offering a bribe in exchange for getting a contract. Corruption leads to tax evasion, kickbacks, and commissions. When we compare countries at the same stage of economic development, the more corrupt countries collect 4 percentage points of GDP less in tax revenues than the less corrupt countries. It is a massive loss of resources that could have been utilized to facilitate the public by providing social safety nets, education, and healthcare.

To that end, we're curious about how corruption affects Pakistan's economy. This research has real-world implications because it employs cutting-edge empirical analysis to measure corruption's long-term impact on growth in Pakistan and other major emerging economies of the World.

2.   Literature Review

It is becoming increasingly evident in the theoretical literature that human progress, investment, and government effectiveness are all negatively impacted by corruption. Corruption in both the public and private sectors stunts economic expansion. Corruption is the biggest obstacle to economic and social development, says the World Bank. When corruption is widespread, it hurts a country's economy, wastes public money, and makes it difficult to attract investors from home and abroad. Corruption propagates social and economic inequities and fortifies political instabilities. In a nutshell, corruption harms economic growth and sustainable development.

However, the empirical literature on the relationship between corruption and economic growth has contradictory findings that fall into two categories. The first one demonstrates how corruption has a beneficial effect on economic growth. Leff (1964) demonstrates that corruption encourages economic expansion for a variety of reasons, including assisting businesspeople in avoiding bureaucratic delays through official bribery. According to Beck and Maher (1986), the allocative efficiency may still exist, even when corrupt officials award bids to the highest bidder. According to the second category, corruption hampers economic progress by raising corporate costs and creating prodigious uncertainty in the decision-making progression (Murphy, Shleifer, & Vishny, 1991; Tabash, Farooq, Safi, Shafiq, & Drachal, 2022).

Méon and Sekkat (2005) declare that there is a significantly negative effect of corruption on growth and investment. Svensson (2005) looked into eight corruption-related issues. He discovers a poor but insignificant link between corruption and development. To examine the link between corruption and development, Fisman and Svensson (2007) compiled a unique data set that included information on the expected bribe payments made by Ugandan businesses. They found that the impact of taxation from 1995-1997 was significantly greater than the short-run growth rates of Ugandan businesses. Kimuyu (2007) found the same thing to be true in the natural setting of Kenya. Institutional quality, economic development, and corruption are all interconnected. In this world, they found two distinct systems of government. It has been observed that even in regimes with strong institutions, corruption can have a significant effect.

Aidt et al. (2008) estimate the effect of corruption on growth using a threshold model. Depending on the caliber of the political institutions, we identify two governance regimes. Corruption has a significant detrimental effect on growth in a system with high-quality political institutions. Corruption does not affect growth in a system with subpar institutions. Using panel data from 69 countries, Méon and Sekkat (2005) studied the connection between aggregate Efficiency, fraud, and many facets of governance. They employed two corruption measures and two other facets of government. The authors claim that corruption harms economies through ineffective institutions. A cross-country study by Holmberg and Rothstein (2011) indicates that corruption consistently results in lower per capita GDP growth along with lower levels of human development.

Hodge, Shankar, Rao, and Duhs (2011) simulates the transmission pathways with which corruption impairs growth. The findings indicate that corruption hurts investment, human capital, and political instability. These routes lead to an adverse impact of corruption on growth in general. No single policy solution appears to be viable. d'Agostino, Dunne, and Pieroni (2016) starts with an endogenous growth model and expands it to incorporate various types of public spending and corruption. The findings support the negative correlation between corruption and military spending. Ben Ali and Saha (2016); Cieślik and Goczek (2018) and d'Agostino et al. (2016) investigate the correlation between corruption and development from a functional perspective. The authors suggest that the correlation between corruption and economic development may be moderated by other factors.

Awan, Akhtar, Rahim, Sher, and Cheema (2018) examine the association between governance, corruption, and GDP growth in the selected SAARC nations for the period 1996 - 2014. The researchers conclude that government effectiveness and political stability have a favorable impact on economic growth in SAARC countries. Nguedie (2018) investigates the connection between corruption, investment, and growth for a sample of 110 nations between 2006 and 2016. Results from the Panel Smooth Transition Regression (PSTR) indicate a non-linear relationship between GDP growth and investment that is dependent on the extent of corruption. More specifically, the findings imply that growth is more sensitive to investment in nations with low levels of corruption.

Gründler and Potrafke (2019) examine the corruption-growth nexus using panel data for 175 countries for the period 2012 to 2018. it is observed that the if corruption perception index (CPI) climbs by one standard deviation, the real per capita GDP falls by nearly 17 percent. It reflects the overall long-term effect of corruption on growth. In autocracies, the impact of corruption on economic growth is more pronounced and is transmitted to growth by reducing FDI and raising inflation. Son, Liem, and Khuong (2020) apply the three-stage least square method to investigate the incidence of corruption in the banking sector and GDP growth in a panel of 120 countries. The empirical evidence suggests that corruption contributes to a higher percentage of bad loans. It was discovered that corruption has a multiplier effect on GDP growth through the banking system.

Baklouti and Boujelbene (2020) uses fixed effects, GMM, and OLS methods to test the impact of corruption on economic growth. A dataset of 34 OECD nations is used for the period 1995 - 2014. According to the estimation results, slower economic growth is caused by higher levels of corruption and a bigger shadow economy. Results also suggest that the influence of corruption on GDP growth is amplified by the shadow economy. These findings reveal important complementarities between the shadow economy and corruption, indicating that reducing corruption will also result in a reduction in the shadow economy's size and the detrimental consequences of corruption on growth through the underground economy.

Beyaert, García-Solanes, and Lopez-Gomez (2023) find that corruption has a nonlinear effect on GDP growth in their analysis of 103 countries from 1996-2017. They suggest that the responses to the traditional growth factors vary with the prevalence of corruption. Spyromitros and Panagiotidis (2022) use autoregressive and fully modified OLS methods to analyze the effect of corruption on economic growth in 83 developing economies. It is found that corruption hinders economic growth, but its effects vary by region.

Kesar and Jena (2022) investigate the effect of corruption on economic growth in the BRICS economies between 2002 and 2018.Using the augmented Solow Model as a theoretical perspective the panel ARDL results suggest that political stability along with trade openness improve economic performance. The inverted U-shaped relationship between corruption and economic growth is supported by the fact that, over time, corruption boosts economic growth to a certain extent .

The previous studies have generally focused on the developed and developing economies while the emerging economies are generally ignored. Our study aims at exploring the impact of corruption on economic growth in the context of emerging economies in which institutions are in the transition phase.

3. Empirical Methodology and Data

Using the following framework, we examine the correlation between corruption and economic expansion.

$$GDP_{it} = \beta_0 + \beta_1 COR_{it} + \beta_2 ENR_{it} + \beta_3 INV_{it} + \beta_4 POP_{it} + \beta_5 GOV_{it} + \beta_6 OPEN_{it} + \eta_i + \mu_{it} \qquad (1)$$

Where GDP is the growth rate of real GDP per capita and COR is the incidence of corruption. The term ENR is secondary school enrolment as a proxy for human capital while INV is an investment which is gross fixed capital as a percentage of GDP. The variables POP, GOV, and OPEN are population growth, government expenditure, and trade openness (exports plus imports as a percentage of GDP) respectively. Moreover, ηi is country-fixed effects and μit is a random error term. The subscript 'i' is country and 't' is time.

GDP per capita growth is predicted to improve with higher rates of secondary school enrollment, investment, and trade openness (Barro, 1999). It's not entirely clear how this will affect the populace, but corruption is widely believed to have a negative correlation with population growth over the long term. The data on core variable corruption comes from International Country Risk Guide (ICRG). The ICRG control of corruption variable is an index constructed by Political Risk Services. This index measures the corruption within the political system distorting the financial and economic environment. Corruption reduces the efficiency of the government and reduces the efficiency of businesses and the government.

The data on real GDP per capita, gross fixed capital formation, secondary school enrollment, population growth, population growth, and trade openness are obtained from the World development indicators (WDI) database provided by the World Bank. The panel data for the period 1997-2020 is used for the estimation. The countries included in the study are 23 emerging market economies including Argentina, Bangladesh, Brazil, Chile, China, Czech Republic, Greece, Hungary, India, Indonesia, Malaysia, Mexico, Pakistan, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, Ukraine and Venezuela.

The fixed effect model's main benefit is that it enables us to control for the time-invariant country-specific characteristics. It is crucial to account for the unobserved country effects when dealing with panel data of heterogeneous countries. The emerging economies in our empirical analysis have diversified state-level characteristics, hence we deal with this issue by using a fixed effect approach of panel data estimation. We also employ a random effect estimation approach to check the robustness of our empirical results. Both approaches have their pros and considerations.

The fixed effect method considers that there is a dependence between unobserved country-specific factors and the observed independent variables. On the other hand, the random effect method considers that these effects are independent of the observed independent variables.

4. Empirical Results

Firstly, table 1 is presented below showing some important summary statistics including the number of observations, mean, and standard deviation. The extreme ranges of each series consisting of the minimum and maximum values are also presented.

Table 1
Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
GDP	552	8.632	0.968	6.130	10.311
COR	552	2.543	0.855	1.000	5.000
ENR	470	83.329	18.473	22.512	120.651
POP	552	0.892	0.897	-1.831	2.871
GOV	548	75.380	8.835	48.287	94.217
INV	552	23.113	6.187	11.074	45.690
OPEN	552	68.273	40.097	15.636	220.407

Table 2
Fixed Effect Estimates

Dependent variable: log (GDP)				
Variable	**Coefficient**	**Std. Error**	**t-value**	**P-value**
COR	-0.05424*	0.01268	-4.28	0.000
ENR	0.01279*	0.00080	16.01	0.000
POP	-0.0801*	0.02865	-2.79	0.005
GOV	-0.00499**	0.002334	-2.14	0.033
INV	0.01797*	0.00223	8.07	0.000
OPEN	0.00100***	0.000593	1.69	0.091
Constant	7.6974*	0.2392	32.18	0.000
R^2 (Overall)				0.3946
Number of Countries				23
Number of Observations				452

*Note: The asterisks *, **, and *** show the significance of a variable at 1%, 5%, and 10% levels respectively*

Table 3
Random Effect Estimates

Dependent variable: log (GDP)				
Variable	**Coefficient**	**Std. Error**	**t-value**	**P-value**
COR	-0.05005*	0.01281	-3.91	0.000
ENR	0.01307*	0.0008104	16.12	0.000
POP	-0.08368*	0.02872	-2.91	0.004
GOV	-0.0047**	0.002357	-2.00	0.045
INV	0.01749*	0.00226	7.73	0.000
OPEN	0.001086***	0.00059	1.83	0.068
Constant	7.6247*	0.2734	27.89	0.000
R^2 (Overall)				0.4064
Number of Countries				23
Number of Observations				452

Note: The asterisks *, **, and *** show the significance of a variable at 1%, 5%, and 10% levels respectively.

5. Interpretation of Results

Table 2 shows the fixed effect estimation results using panel data for the 23 emerging markets over the period 1995-2018. The empirical results show that secondary school enrollment (ENR), gross fixed capital formation or gross investment (INV), and trade openness (OPEN) is positively and significantly correlated with GDP per capita in the selected emerging economies. Economic growth is encouraged due to a rise in secondary school enrollment which is a proxy for human capital formation (Romer, 1990). A rise in educational attainment leads to a lower level of corruption due to improved social norms, less nepotism, and better workplace performance resulting in higher economic growth. A one-unit increase in secondary school enrollment results in a 0.013 percent rise in GDP per capita. Investment is an important component of national income accounting which has a positive influence on economic growth through a multiplier effect. Similarly opening the domestic boundaries for global trade encourages GDP growth through the competitive business environment and technology transfer from the advanced countries. On the other hand, the coefficients of, population (POP), corruption (COR), and government expenditure (GOV) are negative. Population pressure is an alarming issue in the emerging and developing world putting pressure on domestic resources and lowering GDP per capita. Corruption is the core variable in our study which is significant at the 1 percent level. The empirical results demonstrate that a one-unit increase in corruption leads to reduce GDP per capita by 0.054 percent or vice versa. The higher levels of corruption hinder economic growth by misallocation of resources, distrust of investors, and suboptimal utilization of domestic funds. The negative and significant coefficient on government expenditures is hinting towards the misallocation of public sector spending due to corruption.

Table 3 shows the random effect results which are similar to the fixed effect estimation. The coefficients on secondary school enrollment, investment, and trade openness are positive and significant. Human capital formation, investment, and trade openness encourage economic growth. Population pressure, corruption, and government expenditure are negatively and significantly related to the per capita GDP. The random effect results reveal that a one-unit increase in corruption lowers GDP per capita by 0.05 percent or vice versa. Any rise in government expenditures in the presence of corruption leads to reduce GDP per capita due to misallocation and the appropriation of public funds. Our empirical results are in line with Gounder and Saha (2013); Holmberg and Rothstein (2011) and many others.

6. Conclusion

This study examines the relationship between corruption and economic growth in emerging market economies. The annual data for the period 1997-2020 on the selected 23 Emerging Market Economies is used for the estimation. The econometric approaches employed are the panel data fixed and random effect regressions. After controlling for government spending, investment, human capital, trade openness, and population. Most of the data are obtained from the WDI database. The level of corruption is measured using the corruption index constructed by International Country Risk Guide. The empirical results show that corruption has a significantly negative impact on the per capita GDP of emerging market economies. The estimation results reveal that on average, a one unit increase in corruption lowers GDP per capita growth by 0.05 percent or vice versa. Another notable point is exposed by the empirical findings that the effect of government spending becomes negative in the presence of massive corruption due to misallocation and the misappropriation of public funds.

The policy should be aimed at lowering corruption through institutional reforms and proper law enforcement. The procedure of fair accountability without any type of political intervention is required. Literacy and public awareness about corruption are also needed to reduce corruption bottlenecks in the process of economic development and to speed up economic growth. The grass-root level digitalization of public services may help reduce corruption and stimulate long-term economic growth in emerging market economies.

Authors Contribution
Muhammad Atiq ur Rehman: introduction, literature search, data collection
Furrukh Bashir: study design and concept, writing-original draft
Muhammad Khalid Rashid: data analysis, data interpretation
Altaf Hussain: proofreading, critical revision

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