

CHAPTER 3

Corruption and economic growth in the emerging markets: empirical evidence from heterogeneous dynamic panel data

Ferdinand Niyimbanira,¹  Thanyani S. Madzivhandila² 
& Nghamula Nkuna³ 

Introduction

Economic growth is key to reducing socio-economic challenges in society. Examples of these types of issues include poverty, inequality, and unemployment. Over the past two decades, the determinants of economic growth have attracted much attention in both theoretical and empirical research (Petraikos, Arvanitidis & Pavleas, 2007:3). Over time, nations have grown economically at various rates, with some sectors within a country's economy growing faster than others. Nelson and Winter (1974:887) explain that the growth results from an increase in the supply factors of production.

Petraikos and Arvanidis (2008:11) add technology and investment as determinants of growth, drawing from Robert Solow's theory on the neoclassical growth model as well as Romer and Lucas' endogenous growth theory. There are many other determinants of economic growth apart from the aforementioned, such as education and corruption. In his study of education as a determinant of economic growth, Robert Barro looks at education as part of the

1 University of Mpumalanga.
2 University of Limpopo.
3 University of Limpopo.

human capital. The term “human capital” refers generally to the acquisition of skills by workers through education and training. Human capital, which also includes health, is realised in the neoclassical model as a causal factor of economic growth (Barro, 1998:9; Iqbal and Zahid, 1998:125). Another determinant of growth is infrastructure. It has been proven that there is a positive relationship between economic growth and better infrastructure (Fedderke and Garlick, 2008:18).

There is no consensus in the literature on whether corruption helps the economy grow or cripples it. It is generally assumed in public discourse that corruption cripples economic growth. However, Mo (2001:66) indicates that some scholars and authors have conscientiously claimed that corruption is desirable for growth. For example, Bardhan (1997) recounted historical episodes from Europe and the USA, highlighting instances in which corruption may have inadvertently promoted development by enabling entrepreneurs to emerge from the ranks of bribe-givers. On the other hand, different scholars indicate that an increase in the presence of corrupt officials leads to an increment in public or government expenditure and rising prices, which ultimately suppress economic growth (Blackburn & Powell, 2011:227; Lin & Monga, 2012 and Christensen, Ojomo & Dillon, 2019). Scholars have long suspected that processes such as democracy and corruption are determinants of economic growth (Mauro, 1995; Mo, 2001; Méon & Sekkat, 2005; Swaleheen, 2011; Lisciandra & Emanuele, 2015; Huang, 2016; Chang & Hao, 2017 and Wang, 2016).

Corruption is defined as the abuse of public office for private or personal gain (Mo, 2001). This could be in terms of status or finances. Corruption includes bribery, facilitation of payments, any type of cartel and collusion used to restrict competition, nepotism, theft, and misappropriation of public resources (Drury et al., 2006; Bardhan, 1997). According to Robinson (1998), corruption has gained significant prominence, especially in developing nations. Despite its intricate nature, corruption can be classified into incidental, institutional, and systematic categories. Derrida (1994), on the

other hand, classifies corruption as large-scale fraud or white-collar crimes, exchange contraventions, and sanction busting. This chapter views corruption as public enemy number one. Contrary to popular views, it can be found in public, private, and non-government organisations.

The chapter would empirically examine the relationship between economic growth and its determinants, mainly focusing on corruption in fourteen emerging economies. The chapter follows a structured format. Section one introduced the topic; Section two delves into theoretical and empirical literature concerning the determinants of economic growth; and Section three provides a succinct overview of corruption's impact on the economy. Section four addresses the methodologies employed, and Section five reports, analyses, and discusses the results. Finally, Section six concludes by offering insights into the implications in terms of policy development.

Determinants of Economic Growth: Theoretical and Empirical Literature

As highlighted in the introduction, there are many variables that determine the level of economic growth in a country. Some of these determinants complement each other, while others are complex. This section will investigate the relationship between economic growth and investment; economic growth and human capital; and the relationship between population growth, health status, and economic growth.

Economic growth and investment

Theoretically, from the neoclassical and endogenous growth model perspectives, investment plays a crucial role in advancing economic growth. These models highlight investment or savings as an important growth determinant in the short run (Petraikos & Arvanidis, 2007:13). The neoclassical and endogenous models identify investment as the most fundamental determinant of economic growth. In the neoclassical model, investment exerts influence

over a transitional period, whereas, in accordance with the endogenous model, the impact is of a more enduring nature. Both investment and savings pertain to the gradual accumulation of capital by individuals over time (Petraikos et al., 2007:7). This aggregation of funds ensures that individuals have money at their disposal to spend or increase their wealth. Another form of investment is Foreign Direct Investment (FDI), representing capital flows between distinct countries. It has played a crucial role in internationalising economic activity, and it is one of the primary sources of economic growth (Petraikos et al., 2007:8). A study performed in Pakistan on macroeconomic determinants proves that open foreign trade, which refers to imports, exports, and FDI, would promote a country's economic growth (Iqbal & Zahid, 1998).

Grossman and Helpman (1991:86) have posited that many researchers have attempted to understand the determinants of long-term growth from an investment in human capital and a new technology perspective. Human capital is also classified as the main source of growth in several endogenous growth models as well as the neoclassical growth model. Innovation and research and development (R&D) activities play a major part in economic progress, increasing productivity and economic development. This is made possible by the use of technology, which enables the introduction of new and superior products and processes. The role of technology has been stressed by various endogenous growth models and affirmed by many empirical studies (Petraikos et al., 2007:3). An empirical study by Tolo (2011) identifies agricultural exports, investment, research and development, population growth, and political uncertainty as determinants of growth.

This study was conducted in the Philippines, and novel methods were applied to identify which factors have caused the Philippines' growth rate to lag behind its neighbours. Furthermore, panel regressions were applied and revealed that deficit, inflation, trade openness, and current account balance were other factors that could be classified as significant determinants of growth. A growth index that was constructed

in Tolo's (2011) study confirms that the determinants found in the panel regressions are also keys for both the absolute and relative performance of each emerging market over time. However, the level of human capital was also found to be a significant determinant of growth in any country.

Economic growth and human capital

Considerable focus is consistently directed towards economic policies and macroeconomic conditions when it comes to studying the determinants of economic performance (Kormendi and Meguire, 1985; Fischer, 1993). This is because these policies specify the framework within which economic growth takes place. Economic policies can influence several aspects of an economy, such as investment in human capital and infrastructure and the improvement of political and legal institutions. Macroeconomic conditions are seen as necessary but not sufficient for economic growth (Fischer, 1993). In general, a stable macroeconomic environment may favour growth, especially through the reduction of uncertainty. Whereas macroeconomic instability may cause a negative impact on growth through its effects on productivity and investment, for example, by generating higher risk (Petraikos et al., 2007).

Petraikos and Arvanidis (2008:14) are of the opinion that human capital is the primary source of economic development in several endogenous growth models as well as a key extension of the neoclassical growth model. There is notable evidence that an educated workforce is a key determinant of economic growth (Mankiw et al., 1992). Regarding human capital, Iqbal and Zahid (1998) highlighted that an increment of one percent in the enrolment of the labour force in primary school increases the increase rate in per capita income by 0.34 percent and real GDP by 0.35 percent. This is supported by the idea of Barro (1991) and Becker (1993) who argue that primary school labour-enrolment ratio proxying for the stock of human capital contributes to higher economic growth. According to Barro (1998), education, as a component of human capital, holds considerable significance, given that a

more educated labour force possesses the ability to rapidly use and comprehend foreign technologies. This, in turn, improves productivity, efficiency, and aggregate production.

Population growth, health status and economic growth

Based on the explanation of economic growth as an increase in GDP per capita, Harris (2007) argues that Adam Smith (1723–1790) viewed population growth as a hindrance to economic development. The classical growth theory, which can be traced back to the writings of Smith, argues that economic growth will end because of an increasing population and limited vision. David Ricardo (1772–1823), in his writings about diminishing returns, has since reaffirmed this viewpoint. Classical growth theory posits that temporary increases in real GDP per person would cause a population explosion that would consequently decrease real GDP (Cameron, 2007:1). Smith proposed that population growth is endogenous, meaning it depends on the availability of resources to accommodate the increasing workforce. Smith also believed that the division of labour is determined by the extent of the market, thus resulting in the economies of scale argument. As division of labour increases, output increases, with further division leading to further growth (Helpman, 2004). Based on this, it is understandable why certain scholars have questioned the importance of human capital, with population size used as a determinant of economic growth (Krueger & Lindahl, 2001; Petrakos & Arvanidis, 2008:13).

Doliger (2009:149) highlights, drawing from Jean Bodin's 1576 writings, the assertion that true wealth resides exclusively in people. This submission supports the view that the well-being and good health of people are critical factors for economic growth because a healthy workforce is more productive. Life expectancy is probably the single highest indicator of a nation's health levels. Good health and the country's economic growth and development are intertwined, as bad health and poor nutrition are attributed to low labour productivity (Nafziger, 1990:251). There is a positive relationship between health expenditure and economic

growth, as per Muysken (2003). Focusing on corruption as one of the economic growth determinants and as public health expenditure forms part of public or government spending, Blackburn and Powell (2011) valorise that corruption cripples public finance. This then contributes to poor health facilities and services, which jeopardise the nation's health and life expectancy and, thus, ultimately threaten economic growth.

Corruption and its Harm to the Economy

In global terms, corruption is a bad element that destroys credibility in any political system and thereby increases political risk in the economic system. This has a crippling effect on the determinants of economic growth, such as FDI. Fisman and Svensson (2007:64) state that the issue of corruption has been debated greatly over several years. This debate, as Mo (2001:66) further explains, is caused by a lack of clarity as far as the effects of corruption on economic growth are concerned. On one hand, there are authors who oppose the norm and argue that corruption is desirable for growth. Guillaumeméon and Sekkat (2005) submitted that the most popular justification of the beneficial effects of corruption rests on the so-called "grease the wheels" hypothesis. The argument is that an inefficient bureaucracy constitutes an impediment to investment and that some "speed" or "grease" money may help circumvent such bureaucracy, thereby raising efficiency, hence investment and, eventually, growth. On the other hand, corruption reduces economic growth through a negative influence on investments in human capital. Corruption also lowers the amount and quality of public infrastructure and leads to an increase in government expenditure (Ehrlich & Lui, 2000).

Del Monte and Papagni (2001) argue that an increase in public investment has a positive impact on economic development, while any increase in corruption has the opposite effect. Their work dictates that one standard deviation increase in corruption results in a 0.29 percent diminution in economic growth after two years. According to

Blackburn and Powell (2011), an increase in the presence of corrupt bureaucrats leads to a decline in the amount of public funds available to finance public expenditures. This raises the need to print more money, which then increases inflation and taxes. In the long run, this impacts monetary policy. In the cases where inflation is targeted, as in the case of South Africa, the results will be increased interest rates in an effort to curb rising prices. Other dire consequences are unemployment and poverty, which can also result from corruption when taking the latter observations into consideration (Derrida, 1994; Blackburn & Powell, 2011).

Research Methods

This section deals with the methodology applied in this chapter. The first part looks at sources of data and sample size followed by the research model and, later, the panel unit root test, lag selection and the application of ARDL model for long-run and short-run.

Source of data and sample size

This chapter applies the quantitative approach to investigate mainly the impact of corruption on economic growth in fourteen emerging economies. The sample period consists of 350 annual secondary data observations from fourteen countries for the period 1995–2019. This means that a sample size of 350 (14 x 25) observations is used which is big enough as it is suggested by different studies that results from a sample size equal to or greater than 30 are better than smaller sample size (Keller & Warrack, 2003; Mann, 2004; Niyimbanira, 2013 and Niyimbanira, *et al.*, 2015). There are many emerging markets identified by each group of analysts such as IMF, FTSE, EM Bond index, Dow Jones and Columbia University EMGP, but a sample of fourteen countries, namely Argentina, Brazil, China, Colombia, Greece, Hungary, India, Mexico, Poland, Russia, South Africa, South Korea, Turkey, and Singapore were used because data were available. The data for four variables was obtained from the OECD (Organisation

for Economic Co-operation and Development) and one variable from Transparency International. In terms of ethics, the chapter is based on quantitative data that is secondary in nature, which means that it was collected by someone other than the current users. In this regard, no potential harm (due to low or no ethical implications) in sample units can be anticipated. The economic theories that underpin this chapter is only utilised as the foundations for verifying the hypotheses by employing econometric methods to accept or reject them.

Research model specification

This chapter uses Heterogeneous Dynamic panel data. A starting point in analysing such data is the estimation of panel regression (Brooks, 2014). This chapter investigates the relationship between corruption and economic growth using econometric techniques. An autoregressive distributed lag (ARDL) panel model is used to establish the long- and short-run relationships between economic growth and its determinants in the model. According to Cobb and Douglas (1928), Production function is presented as follows:

$$Q = f(K, L) = AK^{\alpha}L^{\beta} \quad (1)$$

Where: Q is total production (the monetary value of all goods produced in a year), (usually use GDP);

A is productivity of existing technology (total factor productivity) (technical process, economic system etc.);

K is investment capital input represented by the total investment in fixed assets (the monetary worth of all machinery, equipment, and buildings) and

L is the quantity of the labour input (the total number of person - hours worked in a year).

Parameter α and β are the output elasticities to capital and labour, respectively.

Based on equation 1, mathematically, this chapter model is represented in the following format:

$$\text{Economic growth} = f(\text{Corruption, capital, Labour}) \quad (2)$$

where economic growth (EG) is a function of corruption (corr.), capital (K) and labour (L).

For this chapter, the following econometric equation is derived from equation 2:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_t \quad (3)$$

Hence:

$$EG_{it} = \alpha + \beta_1 \text{corr.}_{it} + \beta_2 K_{it} + \beta_3 L_{it} + \varepsilon_t \quad (4)$$

where EG_{it} = output (the dependent variable, state the measurement either gross output, or % of GDP, or growth rate etc.). Corr._{it} = Corruption perception Index (main explanatory variable of the chapter). K_{it} , L_{it} are capital and labour respectively or control variables (state their individual measurements either gross output, or % of GDP, or growth rate etc.). The generalised ARDL (p, q,...,q) model specification is as follows:

$$y_{it} = \sum_{j=1}^p \delta_j y_{it-j} + \sum_{j=0}^q \beta'_{ij} x_{it-j} + \varphi_i + \varepsilon_{it} \quad (5)$$

Where y_{it} is the dependent variable, x_{it} is a $k \times 1$ vector that allowed to be purity I(0) or I(1) or cointegrated: δ_{ij} is the coefficient of the lagged dependent variable called scalars, β_{ij} are $k \times 1$ coefficient vector; φ_i is the unit-specific fixed effect, $i=1, \dots, N$, $t=1, 2, \dots, T$; p, q are optimal lag orders ε_{it} is the Error term. To re-parameterized ARDL (p, q, ... q) error correction model is specified as:

$$\Delta y_{it} = \theta_i [y_{it-1} - \lambda' x_{it}] + \sum_{j=1}^{p-1} \xi_{ij} \Delta y_{it-j} + \sum_{j=0}^{q-1} \beta'_{ij} \Delta x_{it-j} + \varphi_i + \varepsilon_{it} \quad (6)$$

Where:

- $\theta_i = -(1 - \delta_i)$, group specific speed of adjustment coefficient (is expected to be < 0)
- λ' is the vector of long-run relationships
- $ECT = [y_{it-1} - \lambda' x_{it}]$, Error correction term

- ξ_{ij}, β'_{ij} are the short-run dynamic coefficients

Based on what is described in the model to be estimated and the theories discussed, Table 3.1 presents the data description and priori expected relationships. It is expected that the relationship between capital, labour, and economic growth will be positive; hence, the positive signs. The key explanatory variable in this chapter is expected to be negative. If the corruption perception index increases (low corruption), economic growth will increase. Thus, it is a positive sign; in another sense, the relationship is negative.

Panel unit root tests for ARDL model

Time series may be stationary or non-stationary. Brooks (2014), Gujarati and Porter (2008) axiomatically agree that non-stationary variables can result in spurious or nonsensical regression. This means the results from such regression may show that a relationship between variables does exist when there is none. Therefore, different panel unit root tests are used in this chapter to determine whether variables are stationary or non-stationary. These tests include:

1. Levin, Lin and Chu t^* ;
2. Im, Pesaran, and Shin W -stat;
3. ADF-Fisher Chi-square; and
4. PP-Fisher Chi-square.

In addition, Hadri's z -stat may be used to confirm the outcomes from these other tests. According to Habanabakize and Muzindutsi (2016:678), "the ARDL model is used only if none of the variables under study is $I(2)$." This means that all variables used in this chapter must be either $I(0)$ or $I(1)$; otherwise, the ARDL should not be used as the right approach (Arshed, 2014; Habanabakize & Muzindutsi, 2016). As exhibited in Table 2, none of the variables was $I(2)$; both labour and corruption are $I(0)$, while capital and economic growth are $I(1)$.

Before the ARDL model is estimated, it is advisable to conduct lag selection for a number of optimum lags to be used. The

Table 3.1: Data description and expected relationships

Variables	Proxies	Description	Priori expectation
<i>Economic growth</i>	<i>EG</i>	The annual percentage change (increase or decrease) in the real GDP.	Dependent variable
<i>Capital</i>	<i>K</i>	“Gross fixed capital formation (GFCF). The relevant assets relate to assets that are intended for use in the production of other goods and services for a period of more than a year.” OECD	Positive (+)
<i>Labour</i>	<i>L</i>	The labour force participation rate is a measure of an economy’s active workforce. The formula for the number is the sum of all workers who are employed or actively seeking employment divided by the total noninstitutionalised, civilian working-age population.	Positive (+)
<i>Corruption</i>	<i>Corr.</i>	“The Corruption Perceptions Index (CPI): index which ranks countries by their perceived levels of public sector corruption, as determined by expert assessments and opinion surveys”	Positive (-) +*

**the lower corruption is, the high its index is. Hence, a positive sign though it represents a negative relationship*

Table 3.2: Results from Panel unit root test

Variables	Level and difference	LLC	IPS	ADF	Fisher/P	Decision
K	Level	0.0142	0.0014	0.0014	0.0160	I(0)
	Level	0.1190	0.5707	0.8337	0.8794	I(1)
L	1 st Difference	0.0209	0.0000	0.0000	0.0000	
	Level	0.3869	0.0851	0.0819	0.0078	I(1)
Corr.	1 st Difference	0.6834	0.0000	0.0000	0.0000	
	Level	0.0000	0.0000	0.0000	0.0000	I(0)
EG						

Table 3.3: Optimal Lags Selection results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-3221.759	NA	58223.36	22.32355	22.37430	22.34388
1	-1467.249	3448.299	0.346762*	10.29238*	10.54611*	10.39405*
2	-1446.037*	41.10234*	0.334501	10.25631	10.71303	10.43932
3	-1433.280	24.36626	0.342148	10.27875	10.93846	10.54309
4	-1421.725	21.75135	0.352942	10.30951	11.17220	10.65519

*Indicates lag order selected by the criterion

different information criteria [such as AIC: Akaike information criterion; SBIC: Schwarz-Boyesian information criterion; and HQC (Hannan-Quinn information criterion)] were used to determine the number of lags to include in the model. The rule of thumb is that the smallest lag length is considered. However, a contradictory result may be obtained when selecting the number of lags, but it is up to the researcher to decide which length is suitable for the study based on the model and data. Hence, Table 3.3 shows the results of the lag selection process, and only one lag is used as indicated by the majority criterion (four out of six).

Analysis of Results and Discussion

Analysis of long-run and short-run relationships

The main results from the estimated ARDL model presented in Table 4, indicate that a statistically significant long-run relationship between growth and corruption does exist. It is shown that an increase of one unit in CPI (meaning reduction of corruption) will lead to an increase of 0.97 percent in GDP in emerging countries. This is in line with Mauro (1995) and Ahmad, Ullah and Arfeen (2012), who empirically confirmed that corruption does indeed impact economic growth. Amin, Ahmed and Zaman (2013) argue that corruption is one of the major factors impeding economic development. This implies that corruption keeps disproportionately burdening the poor through misdirecting investment funds, which could have changed the standard of living. In the long-run both capital and labour have positive relationships with growth. Surprisingly, labour was found to be statistically insignificant in both the short- and long-run.

In the short-run the results show that the error correction term is statistically significant, and has the correct sign as per convention, and is less than 1 (0.714001). Engle and Granger (1987) explain that a negative sign signals the correction of divergence occurring in one period during the next. In simpler terms, the Error Correction Term (ECT)

coefficient implies that nearly 71% of disparities between the long-run and short-run are rectified within a one-year timeframe. Furthermore, the findings reveal a statistically significant positive corruption coefficient of 0.413016.

This implies that for the merging countries examined in the study, a one-unit rise in the corruption perception index corresponds to a 0.41% increase in the economic growth rate of GDP. In this instance, the corruption perception index coefficient exhibits a magnitude twice as low in the short run compared to the long run, underscoring that corruption significantly detrimentally impacts a country's political system. In other words, the slow pace of economic growth caused by corruption makes it inimical to societal development. Therefore, the creation of anti-corruption agencies is a vital step and will make them independent from political interference by elites and multi-corporate organisations. In addition, citizens "should be educated about economic consequences of corruption to the society at large" (Ibraheem, Umar & Ajoke, 2013).

Table 3.4: Results from the ARDL model

Variable	Coefficient	Std. Error	t-Statistic	Prob*
Long Run Equation				
Corr__	0.975355	0.147034	6.63534	0.0000*
K	0.156828	0.030341	5.168876	0.0000*
L	0.005585	0.009856	0.566657	0.5714
Short Run Equation				
Corr__ (ECT)	-0.714001	0.076396	-9.345990	0.0000*
D(Corr__)	0.413016	0.112053	3.685887	0.0346*
D(K)	0.838532	0.279132	3.004066	0.0029*
D(L)	0.215430	0.363871	0.592052	0.5543

Having presented evidence in favour of "sand the wheels," the hypothesis that corruption affects economic growth in the foreign emerging markets, the focus is placed on the

results of individual countries by analysing the results from cross-sectional short-run coefficients. The results show that the average speed of adjustment returns from short-run to long-run equilibrium. According to Niyimbanira (2013), using the half-life formula of Ayto (1989), which is $\ln 0.5$ divided by the error correction term, the speed of adjustment for each country is estimated and presented in Table 5. All error correction terms have the correct sign and are statistically significant. The only unusual result is regarding the ECT for South Korea, which has the correct sign but is greater than one. That means that the series used in the model is explosive and overcorrects the disequilibrium.

Consequently, the speed of adjustment for economic performance in South Korea will need about six months to re-adjust to equilibrium. Eight countries have a speed adjustment of less than one year, meaning that it is quick to return to equilibrium. In addition, once equilibrium is disrupted by the independent variables in the model used in the chapter, it will take one year and two months in Hungary, India, and Poland to return to equilibrium. To be more specific, for South Africa, it will take one year and five months, while for Greece, it will take more than two years, and in China it will take more than four years to correct the discrepancies between the long-run and short-run. This means that the influence of the explanatory variables included in the model differs from one country to another. The results give more than enough reasons to declare a war on corruption in emerging markets. Additionally, the findings of the chapter provide empirical support for the theory that corruption harms the economy.

Table 3.5: Results from cross-section short-run and the speed of adjustment using the half-life formula

Country	Error Correction term (ECT)	Prob*	Speed of adjustment using half-life formula ($\ln 0.5/ECT$)
All Countries	-0.714001	0.0000*	0.97 = Approximately 1 Year

Country	Error Correction term (ECT)	Prob*	Speed of adjustment using half-life formula ($ln0.5/ECT$)
Argentina	-0.808711	0.0000*	0.9 = 11 Months
Brazil	-0.984276	0.0000*	0.7 = 8 Months
China	-0.143088	0.0007*	4.8 = 4 Years and 10 Months
Colombia	-0.819919	0.0000*	0.8 = 10 Months
Greece	-0.262570	0.0002*	2.6 = 2 years and 7 Months
Hungary	-0.595304	0.0003*	1.2 = 1 year and 2 Months
India	-0.557806	0.0005*	1.2 = 1 year and 2 Months
Mexico	-0.949587	0.0000*	0.7 = 8 Months
Poland	-0.558382	0.0001*	1.2 = 1 year and 2 Months
Russia	-0.801908	0.0001*	0.9 = 11 Months
South Africa	-0.509426	0.0126*	1.4 = 1 Year and 5 Months
South Korea	-1.123410	0.0000*	0.6 = 7 Months
Turkey	-0.918723	0.0000*	0.8 = 10 Months
Singapore	-0.962899	0.0002*	0.7 = 8 Months

*Statistically significant at 5% (as $p < 0.05$)

Conclusion

This chapter aims to estimate the impact of corruption on the economic growth of the country using heterogeneous dynamic or Autoregressive Distributed Lag (ARDL) panel data from 14 emerging markets with data from 1995 to 2019. It is expedient that a country sustains its positive economic growth to achieve other macro-economic objectives. Thus, corruption was used

as one of the estimators to investigate its impact on economic growth. Applying Transparency International's corruption perception index, the chapter establishes a statistically significant inverse correlation between corruption and economic growth, observed consistently in both the short-term and long-term. This means that a unit increase in the corruption perception index increases the growth rate of GDP by 0.97 percentage points in the long-run. In the short-run, the results show that an increase of one unit in the corruption perception index increases the GDP growth rate by approximately 0.41 percentage points.

Therefore, by lowering or eradicating corruption, it is expected that most emerging countries will achieve more in terms of economic growth. To achieve this, governments should facilitate the process by working with all other stakeholders, such as the private sector, media, religious organisations, and other non-profit organisations. Like cancer, corruption should be tackled in all possible ways to cure it. Achieving this goal entails fostering transparency, accountability, and the implementation of good governance principles in all governmental economic decisions. To effectively combat corruption, it is imperative to establish judicial efficiency and independence across all emerging markets examined in this study.

References

- Ahmad, E., Ullah, M.A. & Arfeen, M.I. (2012). Does corruption affect economic growth? *Latin American Journal of Economics*, 49(2), 277-305. <https://doi.org/10.7764/LAJE.49.2.277>
- Amin, M. Ahmed, A. & Zaman, K. (2013). The relationship between corruption and economic growth in Pakistan - looking beyond the incumbent. *Oeconomics of Knowledge*, 5(3), 16-45.
- Ayto, J. (1989). *20th Century words*. Cambridge University press.

Chapter 3

- Bardhan, P. (1997). Corruption and Development: A Review of Issues. *Journal of Economic Literature*, XXXV, 1320-1346.
- Barro, R. J. (1991). Economic Growth in a Cross Section of Countries. *The Quarterly Journal of Economics*, 106(2), 407-443. <https://doi.org/10.2307/2937943>
- Barro, R. J. (1998). *Education as a Determinant of Growth*. National Science Foundation, Harvard University.
- Becker, G. S. (1993). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. 3rd ed. Chicago: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226041223.001.0001>
- Blackburn, K. & Powell, J. (2011). *Corruption, Inflation and Growth*. UK: University of Manchester. <https://doi.org/10.1016/j.econlet.2011.06.015>
- Borensztein, E., De Gregorio, J. & Lee, J-W. (1998). How does Foreign Direct Investment affect Economic Growth? *Journal of International Economics*, 45, 115-135. [https://doi.org/10.1016/S0022-1996\(97\)00033-0](https://doi.org/10.1016/S0022-1996(97)00033-0)
- Brooks, C. (2014). *Introductory Econometrics for Finance*. 3rd ed. United Kingdom: Cambridge University Press. <https://doi.org/10.1017/CBO9781139540872>
- Cameron, G. (2007). *Classical Growth models new Palgrave dictionary of Economics*. London: Oxford University.
- Cervellati, M. & Sunde, U. (2011). Life expectancy and economic growth: The role of the demographic transition. *Journal of Economic growth*, 16(2), 99-133. <https://doi.org/10.1007/s10887-011-9065-2>
- Cobb, C.W. & P. H. Douglas (1929). Theory of Production. *American Economic Review*, 18(Suppliment), 169-165.
- Christensen, C.M., Ojomo, E. and Dillon, K. (2019). *The Prosperity Paradox: How Innovation Can Lift Nations Out of Poverty*. New York, HarperBusiness.

- Del Monte, A. & Papagni, E. (2001). Public expenditure, corruption, and economic growth: the case of Italy. *European Journal of Political economy*, 17(1), 1-16. [https://doi.org/10.1016/S0176-2680\(00\)00025-2](https://doi.org/10.1016/S0176-2680(00)00025-2)
- Derrida, J. (1994). *Apartheid grand corruption*. Cape Town: UCT.
- Doliger, C. (2009). *Comment on "Demographic change and economic growth on Sweden*. France: University of Strasbourg.
- Drury, A.C., Kriekhaus, J. & Lusztig, M. (2006). *Corruption, democracy and economic growth*. London: IPSA. <https://doi.org/10.1177/0192512106061423>
- Engle, R. F. & Granger, C.W.J. (1987). Co-integration and Error Corrections: Representation, Estimation and Testing. *Econometrica*, 55(2), 251-276. <https://doi.org/10.2307/1913236>
- Ehrlich, I. & Lui, F. T. (2000). Bureaucratic Corruption and Endogenous Economic Growth. *Journal of Political Economy*, 107(S6), S270-29. <https://doi.org/10.2139/ssrn.218928>
- Fedderke, J. & Garlick, R. (2008). *Infrastructure Development and Economic Growth in South Africa: A review of the accumulated evidence*. Cape Town: UCT.
- Fisman, R. & Svensson, J. (2007). *Are corruption and taxation really harmful to growth? Firm level evidence*. United States: Colombia Business School. <https://doi.org/10.1016/j.jdevco.2005.09.009>
- Fischer, S. (1993). The role of macroeconomic factors in growth. *Journal of Monetary Economics*, 32(3), 485-512. [https://doi.org/10.1016/0304-3932\(93\)90027-D](https://doi.org/10.1016/0304-3932(93)90027-D)
- Grossman, G. & Helpman, E. (1991). *Innovation and Growth in the Global Economy*. Cambridge, Mass: MIT Press.
- Guillaumeméon, P. & Sekkat, K. (2005). Does corruption grease or sand the wheels of growth? *Public Choice*, 122: 69-97. <https://doi.org/10.1007/s11127-005-3988-0>

Chapter 3

- Gujarati, D. N. & Porter, D. C. (2008). *Basic Econometrics*. 5th ed. New York: McGraw-Hill/Irwin.
- Habanabakize, T. & Muzindutsi, P. F. 2016. A cross-sector analysis of a dynamic interaction between investment spending and job creation in South Africa: application of ARDL model. In *The 28th Annual Conference of the Southern African Institute of Management Scientists (673-685)*, at the University of Pretoria.
- Harris, D. J. (2007). *The classical theory of economic growth. The New Palgrave Dictionary of Economics*. 2nd ed. London: Macmillan Publishers.
- Helpman, E. (2004). *The Mystery of Economic Growth, Classical Growth Models New Palgrave Dictionary of Economics*, 2nd ed. London: Harvard University Press.
- Hillman, L. (2004). *Corruption and public finance: An IMF perspective*. Germany: Bar Ilan University. <https://doi.org/10.1016/j.ejpoleco.2003.09.004>
- Ibraheem, N.K., Umar, G. & Ajoke, A.B. (2013). Corruption and economic development: evidence from Nigeria. *Kuwait chapter of Arabian journal of business and management review*, 3(2), 46-56. <https://doi.org/10.12816/0017454>
- Iqbal, K. & Zahid, M. G. (1998). Macroeconomic determinants of growth in Pakistan. Islamabad: *The Pakistan Development Review*, 37(2), 125-148. <https://doi.org/10.30541/v37i2pp.125-148>
- Keller, G. & Warrack, B. (2003). *Statistics for Management and Economics*. Australia: Thomson Learning. Inc.
- Kormendi, K. & Meguire, P. (1985). Macroeconomic determinants of growth: Cross-country evidence. *Journal of Monetary Economics*, 16(2), 141-163. [https://doi.org/10.1016/0304-3932\(85\)90027-3](https://doi.org/10.1016/0304-3932(85)90027-3)
- Krueger, A. B. & Lindahl, M. (2001). Education for Growth: Why and For Whom? *Journal of Economic Literature*, 39(4), 1101-1136. <https://doi.org/10.1257/jel.39.4.1101>

- Lin, J. Y. and Monga, C. (2012). Solving the Mystery of African Governance. *New Political Economy*, Vol. 17(5), 659-666. <https://doi.org/10.1080/13563467.2012.732277>
- Lisciandra, M. & Emanuele, M. (2015) The Economic Effect of Corruption in Italy: A Regional Panel Analysis. *MPRA Paper*. <https://doi.org/10.2139/ssrn.2568136>
- Mauro, P. (1995). Corruption and growth. *The Quarterly Journal of Economics*, Vol.110(3), 681-712. <https://doi.org/10.2307/2946696>
- Mann, P. S. (2004). *Introductory Statistics* (4th Ed.). New Jersey: John Wiley & Sons. Inc.
- Mente, A. D & Papagni, E. (2001). *Public expenditure, corruption, and economic growth: The case of Italy*. Italy: Dipartimento di Teori e Storia dell Economia Pubblica, Universita di Napoli "Federico 2" Via Cintia (Monte S. Angelo), 80126 Naples.
- Méon, P.-G. and Sekkat, K. (2005) Does Corruption Grease or Sand the Wheels of Growth?. *Public Choice*, 122, 69-97. <https://doi.org/10.1007/s11127-005-3988-0>
- Mo, P. H. (2001). Corruption and economic growth. Hong Kong: *Journal of Comparative Economics*, 29, 66-79. <https://doi.org/10.1006/jcec.2000.1703>
- Molefe, B. & Muzindutsi, P. F. (2016). Effect of capital and liquidity management on profitability of major South African banks. *In the Proceedings of the 28th Annual Conference of the Southern African Institute of Management Scientists, University of Pretoria, Pretoria.*
- Muysken, J. (2003). *Health as a principal determinant of economic growth*. Maastricht: Maastricht Economic Research Institute on Innovation and Technology.
- Nafziger, W E. (1990). *The Economics of Developing countries*. 2nd ed. New Jersey: Prentice – Hall International Editions.

Chapter 3

- Nasreen, S. & Anwar, S. (2014). Causal relationship between trade openness, economic growth and energy consumption: A panel data analysis of Asian countries. *Energy Policy*, 69, 82-91. <https://doi.org/10.1016/j.enpol.2014.02.009>
- Nelson, R. (1974). *Neoclassical vs Evolutionary theories of economic growth: Critiques and prospects*. University of Yale: Blackwell Publishing. <https://doi.org/10.2307/2230572>
- Niyimbanira, F. (2013). Stability of Money demand in a developing economy: Empirical evidence from South Africa. *International business and economics research journal*, 12(5), 565-572. <https://doi.org/10.19030/iber.v12i5.7831>
- Niyimbanira, F. (2013). An Overview of Methods for Testing Short- and Long-Run Equilibrium with Time Series Data: Cointegration and Error Correction Mechanism. *Mediterranean Journal of Social Sciences*, 4(4), 151-156. <https://doi.org/10.5901/mjss.2013.v4n4p151>
- Niyimbanira, F. (2017). Analysis of the impact of economic growth on income inequality and poverty in South Africa: The case of Mpumalanga Province. *International Journal of Economics and Financial Issues*, 7(4), 1-8.
- Niyimbanira, F., Nishimwe-Niyimbanira, R., Kuyeli, S.S. & Rangaza, K. (2015). The determinants of interest rate spreads in South Africa: A cointegration approach. *Journal of Economics and Behavioural Studies*, 7(2), 101-108. [https://doi.org/10.22610/jebs.v7i2\(J\).567](https://doi.org/10.22610/jebs.v7i2(J).567)
- Petrakos, G. & Arvanitidis, P. (2008). *Determinants of economic growth*. Greece: University of Thessaly Pedion Areos.
- Petrakos, G. Arvanitidis, P. & Pavleas, S. (2007). *Determinants of Economic Growth: The Experts' View*. Europe: DYNREG.
- Robinson, M. (1998). *Corruption and development: An introduction*. London: Fellow of the Institute of Development studies, University of Sussex.
- Tolo, J. (2011). *The Determinants of Economic Growth in the Philippines: A New Look*. New York: IMF. <https://doi.org/10.2139/ssrn.1971439>

Wang, L. (2016). The Impacts of Anti-Corruption on Economic Growth in China. *Modern Economy*, Vol. 7(2), 109-117.
<https://doi.org/10.4236/me.2016.72013>