THE RELATIONSHIP BETWEEN CORRUPTION AND ECONOMIC GROWTH IN MALAYSIA

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutions of learning.

(3) Equal contribution has been made by each group member in completing the research project.

(4) The word count of this research report is 17,923.

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LIST OF ABBREVIATIONS

ACA	Anti-Corruption Act
ADF	Augmented Dickey Fuller
AIC	Akaike Information Criterion
ARCH	Autoregressive Conditional Heteroscedasticity
ARDL	Autoregressive Distributed Lag
CPI	Corruption Perceptions Index
CUSUM	Cumulative Sum of Recursive Residuals
CUSUMSQ	Cumulative Sum of Recursive Residuals of Squares
ECM	Error Correction Model
ECT	Error Correction Term
FDI	Foreign Direct Investment
GCB	Global Corruption Barometer
GDP	Gross Domestic Product
GDPPC	Gross Domestic Production Per Capita
GNP	Gross National Product
GOV	General Government Final Consumption Expenditure
GTP	Government Transformation Programme
HC	Human Capital
ICRG	International Country Risk Guide

ICAC	Independent Commission Against Corruption
IIM	Integrity Institute of Malaysia
JB	Jarque-Bera
MACC	Malaysian Anti-Corruption Commission
MCB	Malaysia Corruption Barometer
NIP	National Integrity Plan
NKRAs	National Key Results Areas
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Square
PRS	Political Risk Services
SIC	Schwarz Information Criteria
TRADE	Sum of Imports and Exports in Goods and Services
3SLS	Three-Stage Least Squares Method
UECM	Unrestricted Equilibrium Correction Model
VECM	Vector Error Correction Model

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ABSTRACT

This study investigates the long run relationship between corruption and growth in Malaysia over the period from 1984 to 2013. This study would like to determine how the corruptions affect economic growth in Malaysia through various channels of transmission such as trade openness, government spending, investment and human capital. Autoregressive Distributed Lag (ADRL) approach is used to examine whether a long run relationship exists between corruption and growth in Malaysia while taking into account of other macroeconomic variable such as trade openness, investment, human capital and government spending. By using this approach, negative relationship is found between corruption and growth in the long run but it will have positive impact to economic growth through channels of trade openness and government spending. However, FDI and human capital are statistically insignificant to affect Malaysia's economic growth. This finding suggests that corruption is detrimental to Malaysia's economic growth in the long run and for policy wise the main concern of policymakers should be reducing corruption and increasing awareness of Malaysian to against the corruption in order to achieve high economic growth in Malaysia.

Chapter 1: Research Overview

1.0 Introduction

This chapter begins with general introduction on linkage between corruption and economic growth. With the aid of graphical analysis, it allows better understanding on the seriousness of corruption that happening worldwide. Furthermore, this study further explain about the definition of corruption, followed by categories of corruption, causes of corruption, benefits of corruption and harms of corruption. This study also further discuss about the corruption issue in Malaysia in order to form problem statement. After formulated the problem statement, research questions and research objectives are determined in respect of how the whole study is carried out. Last but not least, significance of study is discussed in this section as well.

1.1 Corruption

1.1.1 Definition of Corruption

Corruption is the misuse of entrust authority for extra positive gain (Petrou & Thanos, 2014). The terms of misuse often implies for the occurrence of illegitimate action. Not all the corruption consider as illegal some may merely behave dishonest or inappropriate.

1.1.2 Categories of Corruption

Corruption divided into 3 categories which are grand corruption, bureaucratic corruption and political corruption. Grand corruption is centralized because it involves only one party to receive the bribe. Bureaucratic corruption and political corruption are decentralized by which it is more than one party to receive the bribe.

1.1.2.1 Grand Corruption

Jain (2001) stated that grand corruption is the most vitiate type of corruption and it incurs within the political elite. As the corrupted decisions come from the absolute top of the public hierarchy, which is invented to balance the interests of the entire society, this type of corruption can affect everyone in the country. On top of that, this type of corruption refers to how the political elite manipulate economies policies with the purposes of creating the largest benefits for themselves. Centralized corruption occurs under this category where there is only one that charges a bribe for each governmental good. Bribes on complimentary goods are coordinated. The political elite able to affect or execute the national policies by serving his own preferences and therefore reroute the allocation of resources from the general public to themselves. Therefore, the person receives the good of government after paying bribe and there is no additional request for bribes in the upcoming period for the particular goods. Public spending allocated to the sectors where the greatest potential for private gains exists for the corrupted elite. Thus, it will produce severe consequences for a country.

1.1.2.2 Bureaucratic Corruption

Jain (2001) clarified that bureaucratic corruption includes two links while the first one is between the political elite and the bureaucrats and the second one is low-level corruption as it is presents in the lower levels of the public bureaucracy. For the low-level corruption, corrupted personnel take bribes to perform a service or to accelerate a bureaucratic procedure. Furthermore, the officials can extract bribes to perform tasks that allocated to them by the political leaders or to perform tasks in which they are not supposed or delegated to do. Low-level corruption can even be found in the judiciary where bribes can decrease the expenditure or legal penalties faces by a person. The bureaucratic corruption is decentralized that the bribes charged are not coordinated and involved bribe payment to many bureaucrats in order to speed up the bureaucratic procedure and escape from legal penalty. Bribing does not guarantee that the bureaucrats do not request for another bribes for the same good.

1.1.2.3 Political Corruption

Jain (2001) mentioned that political corruption is a kind of corruption that affects the voting behavior of the legislators. People with specific interests or groups of people who share the common interests can bribe the legislators to endorse laws that make it easier, more profitable, or favorable to pursue economic rents associated with their activities. Decentralized corruption occurs under this category as there is not only one party receiving bribes and the rent-seekers might be receiving bribes from more than one party. This type of corruption also includes "vote-buying" behavior, where legislators give or take bribes or perform other corrupted activities in their effort to be reelected. Personnel who wish some specific act passed and for this reason, perform corrupted actions, also fall under this notion.

This study focuses on bureaucratic corruption rather than political corruption because the ICRG corruption index took into account only the political risk of a country but it does not reflect the political voting behavior of the legislators. The ICRG corruption index assesses the corruption between the political elite and bureaucrat as well as the public bureaucracy instead of "vote buying" behavior.

1.1.3 Causes of Corruption

1.1.3.1 Laws

Duvanova (2014) stated that red tape is a source of regulatory pressure and leads to corrupt practices. Red tape is a potential source of rents. In a situation where political and legal institutions do not offer adequate deterrence against corruption, bureaucrats may profit from creating arbitrary impediments to regulatory compliance. Tanzi (1998) said that "When rules can be used to extract bribes, more rules will be created". Cutting through red tape and to replace with bribes will benefit businesses and bureaucrats without undermining the official regulatory policies. Thus, the corruption in some country acts as normal practices.

1.1.3.2 Cultures and Customs

Nwankwo (2014) also stated that corruption is an illness which caused by the cultural, political and economic development of any nation as well as any other factors that can devastate the operation of different organs of government. Parenthetically, some countries like Kenya, Malaysia, Vietnam and India have high degree of corruption for private gain (McLaughlin, 2013). At the immigration office, a middleman can simply get the visa extension

stamp on traveler passport. Yet, if someone goes against safety road rules, the police will open the passenger door and ask for the cash payment to avoid penalty (McLaughlin, 2013). In this case, more government servants will behave in this way and it becomes country culture sooner or later (McLaughlin, 2013).

1.1.3.3 Weak Governance

Mounts (2010) stated that weak government hypothesis refers to government fragmentation leads to higher public deficits and debt. As the government does not lead their follower properly, it will incur a country debt. As country growth does not perform well and thus the government servant's unable to get high salary. Lower salary earned by the public servants is unable to increase their standard of living. Thus, they are intending to look for some extra money when they perform their duties.

1.1.4 Benefits of Corruption

Some studies argued that corruption and economic growth have a positive relationship. Corruption is complement with the goods. Businessmen have been charging bribes on different types of permits that are needed for completing a project. For example, building a house or driving a distance on a road required different permits. Centralization corruption is not that damaging for the economy because the briber knows who to corrupt and the amount of bribery. For the case of decentralization, it is not always possible to know how much to bribe and who to bribe. In addition, it is not always possible to calculate in advance how much a project will cost but at least it can shorten the businessman waiting time.

From the red tape perspective, it could improve social welfare because businesses are able to shorten the processing time and paperwork, and the public benefits from the improved efficiency without sacrificing official regulatory standards at the same time as the bureaucrats amplify their incomes base. Manion (1996) further explained statement above by saying that "To avoid costly delays, applicants make corrupt overpayments to officers for enterprise licenses to which they are fully entitled. In making such payments, bureaucrats enhance their income base." As bureaucrats having extra money on hand thus they will spend in the market and the circulation of money leads the economic growth as well.

In addition, whether or not bureaucrats will resort to red tape creation depends on its expected utility, or the difference between potential benefits (sums and frequency of bribes) and costs (legal and institutional constraints on creating red tape and soliciting bribes) (Becker, 1968). When the potential benefits associated with this type of rent-seeking are high and risks are small, bureaucrats have strong incentives to generate red tape. Consider first the benefits of rent-seeking, or the potential amount of bribes the bureaucrats can charge for cutting through red tape. These are directly related to the willingness of those subject to bureaucratic regulation to pay bribes and ultimately reflect the profit margins and opportunity costs of regulated businesses. Most of the profitable sectors in the economy have more available surplus, enabling them to pay higher bribes. At the same time, resources spent on unofficial payments could be reinvested elsewhere and it leads to economic growth.

1.1.5 Harms of Corruption

However, numerous empirical studies indicated that there is negative relationship between corruption and economic growth. Many researchers argued that corruption hurts the economic growth because corruption may

create uncertainty environment thereby reduce investment, government spends less on public project when lower tax revenue, and exert of "informal cost" could cause other institution ineffective (Diaby & Sylwester, 2014).

Corruption is not only ruins the effectiveness of institution but it also hinders a country's economic growth (Mounts, 2010). According to Wei (1999), low growth of economic is caused by high corruption level. The cost of corruption can be separated into four major groups, which are economic, political, social, and environmental. Corruption is one of the biggest obstacles to economic and social development (Lauritzen & Sondergaard, 2012).

Corruption may create large opportunities for rent seeking and it is driving force that leads to many consequences. In a corrupted system, money is channeled through the industries, sectors or specific positions, where the certain officers or corrupted elite see large potential private gains. Financial incentive may lead talented or educated people to involve in rent seeking activities rather than in productive work. Furthermore, they may even be allocated to rent seeking activities especially in countries where grand corruption conquer. The corrupted elite may use all the talents to assist them to pursue their rent seeking activities. Talents will thus be misallocated based on where the highest rent can be received (Lauritzen & Sondergaard, 2012).

Another way that corruption may distort an economy is through investments (Lauritzen & Sondergaard, 2012). This is because the bribery cost incurred will increase the cost of investment and thus discourage investment (Bardhan, 1997). Corruption acts as undisclosed tax that is unable to claim on tax return. If an entrepreneur has to offer bribe to set up a business, the cost of bribery cannot be claimed as a loss of income even the business is unsuccessful. The money involves in bribery does not utilize in the public sources. In addition, secret bribes also reduce the tax revenue for government. Corruption may also reduce the innovation of a country and public funds are diverted away from productive projects (Mounts, 2010). Certain investment

projects may be favorable based on the potential for private gains rather than societal gains. Therefore, there will be over investments in high profile and potentially ineffective projects at the expense of more important and useful investments such as health and education, which the country really needs. Examples of over investments include excessively large infrastructure projects and investment in the national defense (Lauritzen & Sondergaard, 2012).

Moreover, corruption may also distort competition, which is detrimental to the economy's equilibrium level as it will disperse from its actual equilibrium based on how much corruption changes the demand and supply of goods and services. Officers may prohibit importation of some goods to induce substitution into others if the extraction of bribes is more easily hidden in these. The importation of specific foreign goods can be subjected to tariffs in order to protect a local industry. By bribing the government officers who are responsible for evaluating such tariffs, the local industry can secure a monopoly and thus the economic rents associated with such monopoly. This can apparently have significant effects on the economy, as prohibiting the importation limit the supply of the good and hinder competition (Lauritzen & Sondergaard, 2012).

Government may misuse their entrusted powers for private gains rather than societal gains. By doing this, government will loses the trust of the people. This can in turn produce an increasingly harder political and social environment in the country and it becomes increasingly difficult to develop into a less corrupted society. Corruption may also cause inequality since it produces a more unequal societal income and wealth distribution as well as sabotaging programs designed to help the poor (Lauritzen & Sondergaard, 2012).

1.2 Background of Study

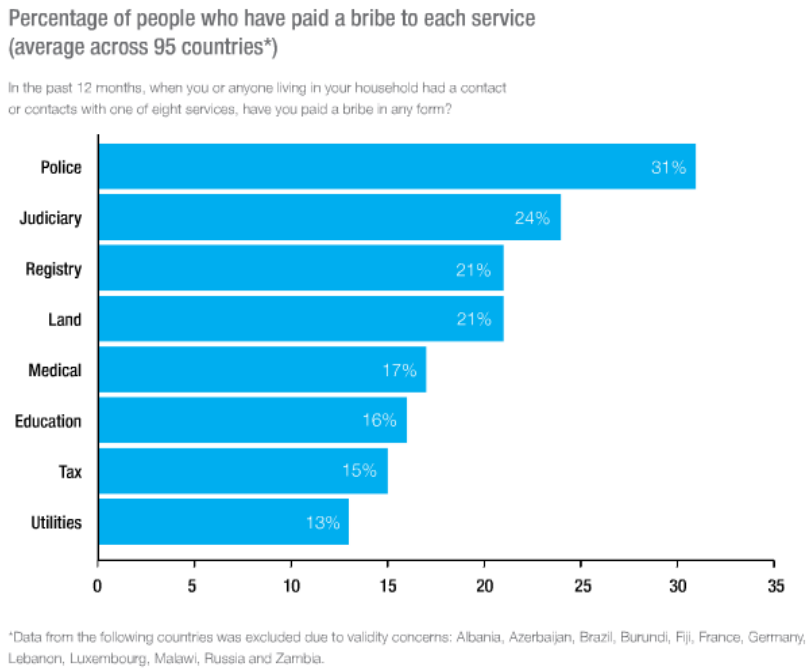
Corruption is a debatable issue that happens worldwide regardless the countries are rich or poor, dictatorships or democracies, socialist or capitalists. The findings of previous studies have indicated that the relationship between corruption and economic growth are ambiguous. Mauro (1995), Knack and Keefer (1995) and Brempong (2002) found that corruption is negatively related to economic growth. Brunetti, Kisunko and Weder (1998) failed to identify significant relationship between corruption and economic growth. Heckelman and Powell (2010) even found that corruption is able to promote the economic growth in countries with low levels of freedom. However, none of the country is able to immune from its consequences to be mentioned. Therefore, there are some international organizations such as the Organization for Economic Co-operation and Development (OECD) are participating to combat corruption (Lauritzen & Sondergaard, 2012).

Figure 1.1: Global Perceived Levels of Corruption

Source: Transparency International (2015)

Figure 1.1 shows the levels of corruption perceptions across the global in 2013. The dark red regions indicate the most corrupted countries which are Somalia, North Korea and Afghanistan. These countries are developing or transition economies with low levels of income. The countries that are perceived as least corrupted are colored in light yellow. The top three countries that are perceived as less corrupted, which are Denmark, followed by New Zealand and Finland. In summary, it shows more than two-thirds of countries are perceived to have serious corruption problem (Transparency International, 2015).

Figure 1.2: Bribery Rates by Services



Source: Transparency International (2015)

Figure 1.2 states that global bribery rates in eight common public services which are police, judiciary, registry, land, medical, education, tax and utilities across 95 countries. It shows that in 2013, 31% of citizens offer bribes when they are dealing with police compared to other major public services. This rate is in line with the outcome of previous Global Corruption Barometer in 2010 and 2011, which found that polices are the most corrupted authorities. The second most

corrupted institution is judiciary where it contributes to 24%. Bribes are least likely to be paid for utilities which accounted for 13% (Transparency International, 2015).

1.3 Corruption in Malaysia

According to the Transparency International (2015), Malaysia has achieved a Corruption Perception Index (CPI) score of 52 over 100 and ranked at 50 among 175 countries and being recognized as the second least corrupted nation in South East Asia. Compare to the previous year 2013, Malaysia has lifted up three notches whereby it was ranked at 53 out of 175 countries. The improvement of CPI ranking of Malaysia justifies the effectiveness of the efforts by the Malaysian Government to fight corruption. The effectiveness in eliminating corruption and improvement in corruption level is mostly depends on the functions of legislation and government strategies.

In legislation, Whistleblower Protection Act 2010 was launched to encourage report of corruption practices by providing protection to the individuals and officers. Rewards for reporting corruption cases are successfully prosecuted as well as the execution of Public Service Reform by which monitoring anti-corruption is part of its efforts. The government of Malaysia has established a goal to have 85%, 90% and 95% of all corruption cases being closed from the 2013 to 2016. In addition, Anti-Corruption Act 1997 was introduced in order to fight against corruption. However, the government replaced Anti-Corruption Act (ACA) 1997 with Malaysian Anti-Corruption Commission (MACC) Act in 1 January 2009 under the monitor of Malaysian Anti-Corruption Commission (MACC).

For government strategies, former Prime Minister Abdullah Badawi launched the National Integrity Plan (NIP) and the Integrity Institute of Malaysia (IIM) in 2014. The NIP identified a set of significant targets, including diminishing corruption and misuse of authority, raising the effectiveness of public

sector's service and improving corporate governance. On the other hand, IIM is responsible for the implementation of the NIP and organizes anti-corruption campaigns for citizens and companies. In January 2010, Prime Minister Najib Razak announced a Government Transformation Programme (GTP), which addresses 7 National Key Results Areas (NKRAs) aiming at recapturing the confidence of the citizens in government agencies, reducing leakages in government procurement and combating corruption (Business Anti-Corruption Portal, 2014). In a nutshell, Malaysia government is striving to eradicate corruption by improving institutional efficiency and in order to regain citizen's confidence in the country.

Apart from that, integrity of private sector also plays a vital role in the positive development of CPI score in Malaysia. In 2013, 150 companies had signed the Corporate Integrity Pledge to guarantee the commitment of shaping a transparent and equitable business environment. Based on Malaysia Corruption Barometer (MCB) findings, it shows that the incidence of bribery in the year 2014 in Malaysia has risen compared to the Global Corruption Barometer (GCB) 2013 results. The three major services which the respondents reported bribe had been paid to the police, registry services and land services over the year. 11% of the respondents that had deal with the police, 8% said they paid a bribe to the registry services, and 5% to the land services (Transparency International Malaysia, 2013). Police officers, as public servants commit in receiving bribe will reduce the nation trust on government institutions as well as policies. As a result, the accountability and credibility of government will be destroyed.

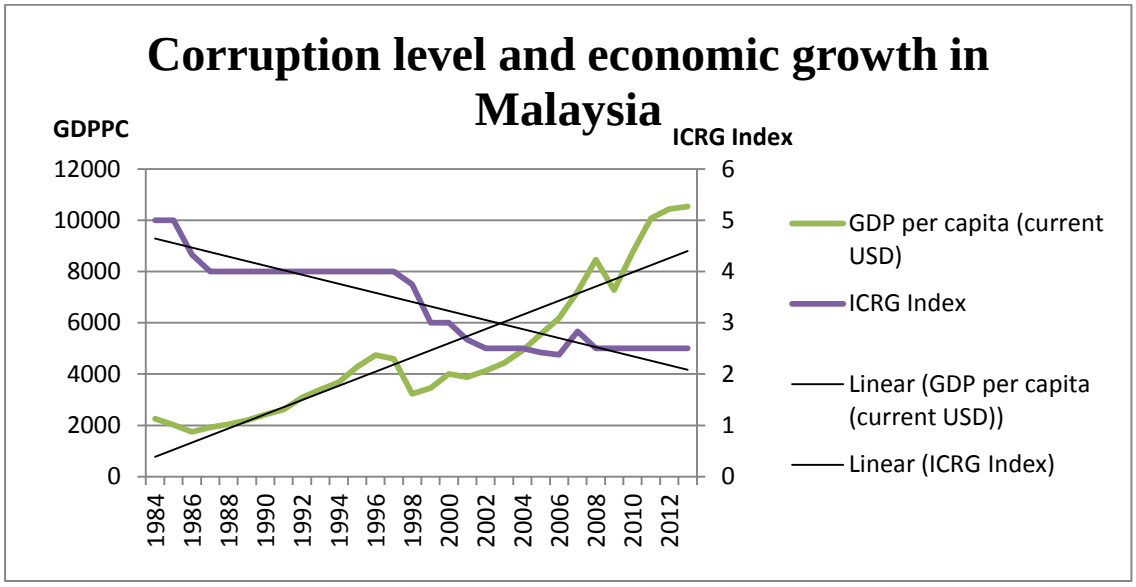
Furthermore, the corruption in the education sector had increased from 3% to 4% while the corruption in the medical sector had risen from 1% to 3% from year 2013 to 2014. Follow by corruption in the utilities sector which is from 2% to 5%. In overall, the rational of bribery is to avoid bureaucracy inefficiency in order to fasten the procedures. Surprisingly 22% of the respondents said that the only way to obtain an educational service is to offer bribe while 20% said the same for medical institutions and 30% for utilities services. The experiences of the

residents indicate that the rights to use basic services is being undermined unless they are willing to offer bribes (Transparency International Malaysia, 2013).

1.3.1 Is Corruption 'Grease the Wheel' or 'Sand the Wheel' in Malaysia?

The graphs below depict the relationship between economic growth and corruption level in Malaysia from 1984 to 2013. The economic growth is compared to two corruption index which are CPI and ICRG corruption index.

Figure 1.3: GDP Per Capita vs ICRG Corruption Index

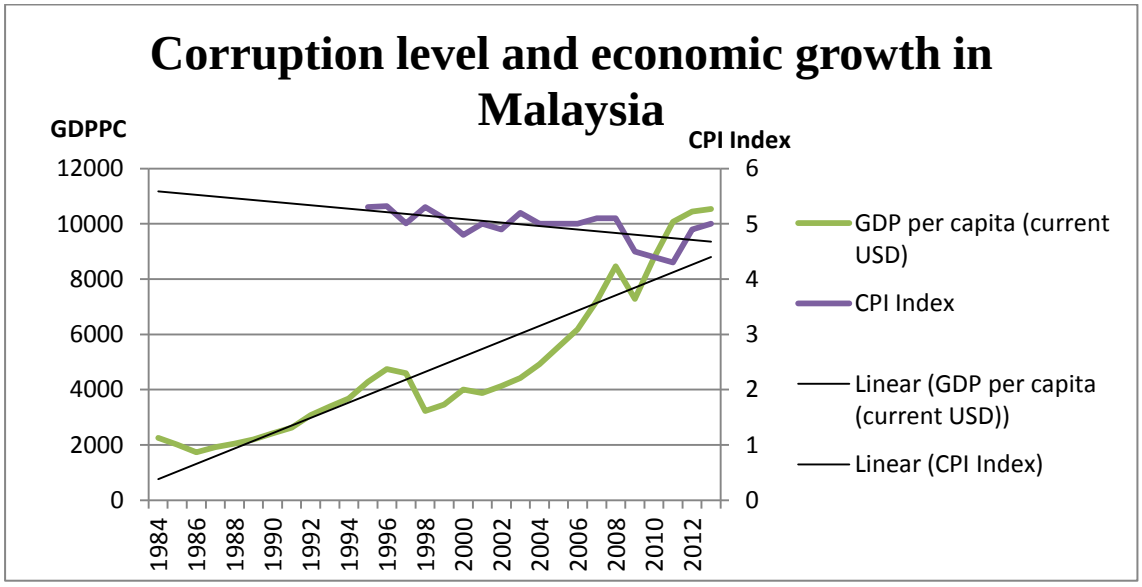


Source: The World Bank Group (2015)

The Figure 1.3 demonstrates upward trend of Gross Domestic Product (GDP) per capita and downward trend of ICRG corruption index over the years. Upward trend of GDP per capita is favorable because the economy of the country is growing and the nations become more prosperous. However, downward trend of ICRG corruption index indicates that corruption level is raising as lower ICRG index represent higher corruption in the country.

The ICRG corruption index achieved its highest level in 1984 and 1985 with scoring of 5 out of 6. From 1986 onwards to 2000, the ICRG corruption index has been slightly declined to average scoring of 4 over 6. Although the fall in ICRG corruption index represent increasing level of corruption, the corruption level is still consider acceptable and manageable. Moving forward from 2000 to 2013, the ICRG corruption index further decreased to average 2.5 points, which is the half of 1984 and 1985. This shows that the practice of corruption is getting widespread and serious in Malaysia. However, the GDP per capita is keep growing regardless the corruption has become rampant in Malaysia.

Figure 1.4: GDP Per Capita vs CPI Corruption Index



Source: The World Bank Group (2015)

Figure 1.4 illustrates the growing trend of GDP per capita and downward sloping of CPI. The downward trends of CPI shows that perceived corruption level is increasing because lower CPI corresponding to higher corruption in the country.

Unlike ICRG corruption index, the CPI is only available from 1995 onwards. The CPI recorded its highest index in 1995 to 2000 with average

scores of 5.3 over 10. From 2001 to 2010, the CPI has been decreased to average points of 4.9 and slightly falls to 4.7 from 2011 to 2013. As a result, the degree of corruption has become worsen as perceived by foreign businessmen.

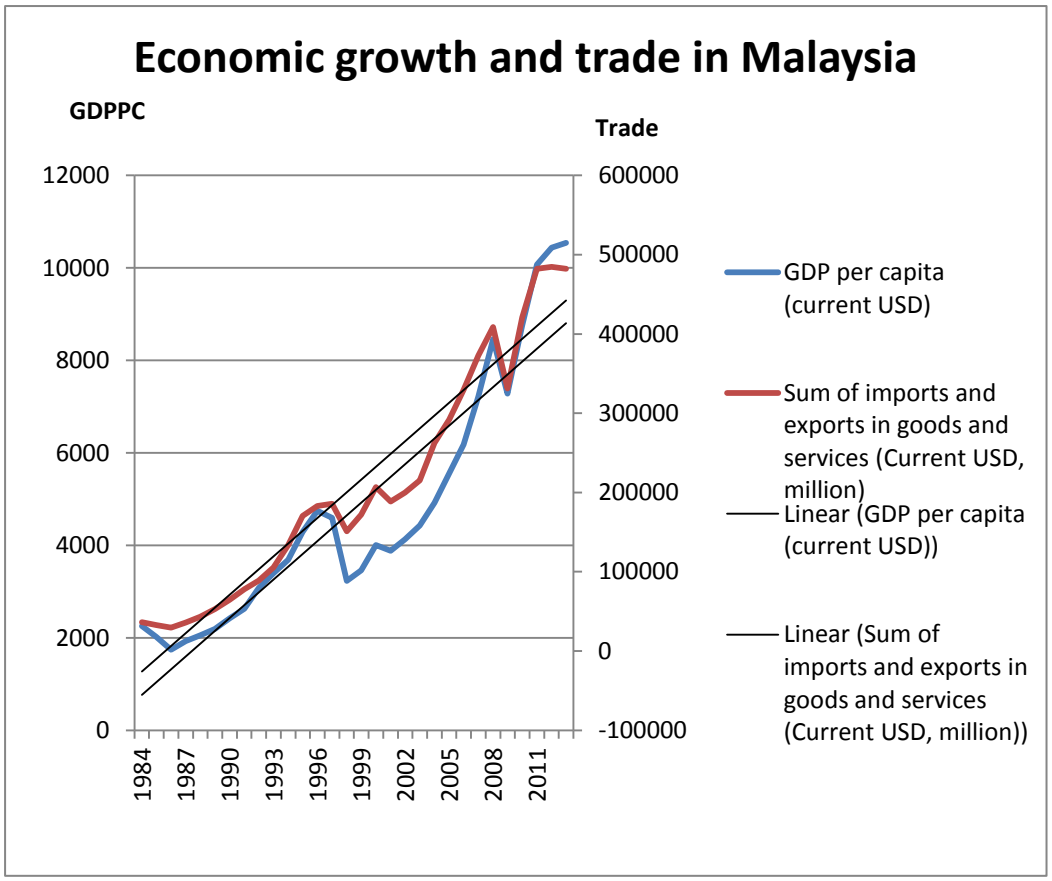
Despite using different measurement for corruption level, the relationship between economic growth and corruption is positive which means that high economic growth is associated with higher corruption level. Although the government has been emphasizing on the efforts to eradicate corruption, both CPI and ICRG corruption index are keep dropping from 1984 until 2013. Surprisingly, the economic growth of Malaysia maintains its annual average growth even though the corruption level is getting higher.

According to World bank, the annual growth rate of 2-3 percent is categorize as average, countries that maintain growth rate of 5 percent or more per year are routinely growing and those achieve 7-8 percent of annual growth rate has been achieving extraordinary economic performance. However, Malaysia has sustained stable annual growth rate from 1984 to 2013 which are around 7-9 percent regardless of the level of corruption is getting higher.

Although Figures 1.3 and 1.4 indicate positive relationship between corruption and economic growth, there are other factors that affect economic growth other than corruption such as trade openness, government spending, foreign direct Investment (FDI) and human capital. In fact, the degree of effect of these factors greater than the corruption index.

1.3.2 Economic Growth and Trade Openness in Malaysia

Figure 1.5: GDP Per Capita vs Sum of Imports and Exports in Goods and Services



Source: The World Bank Group (2015)

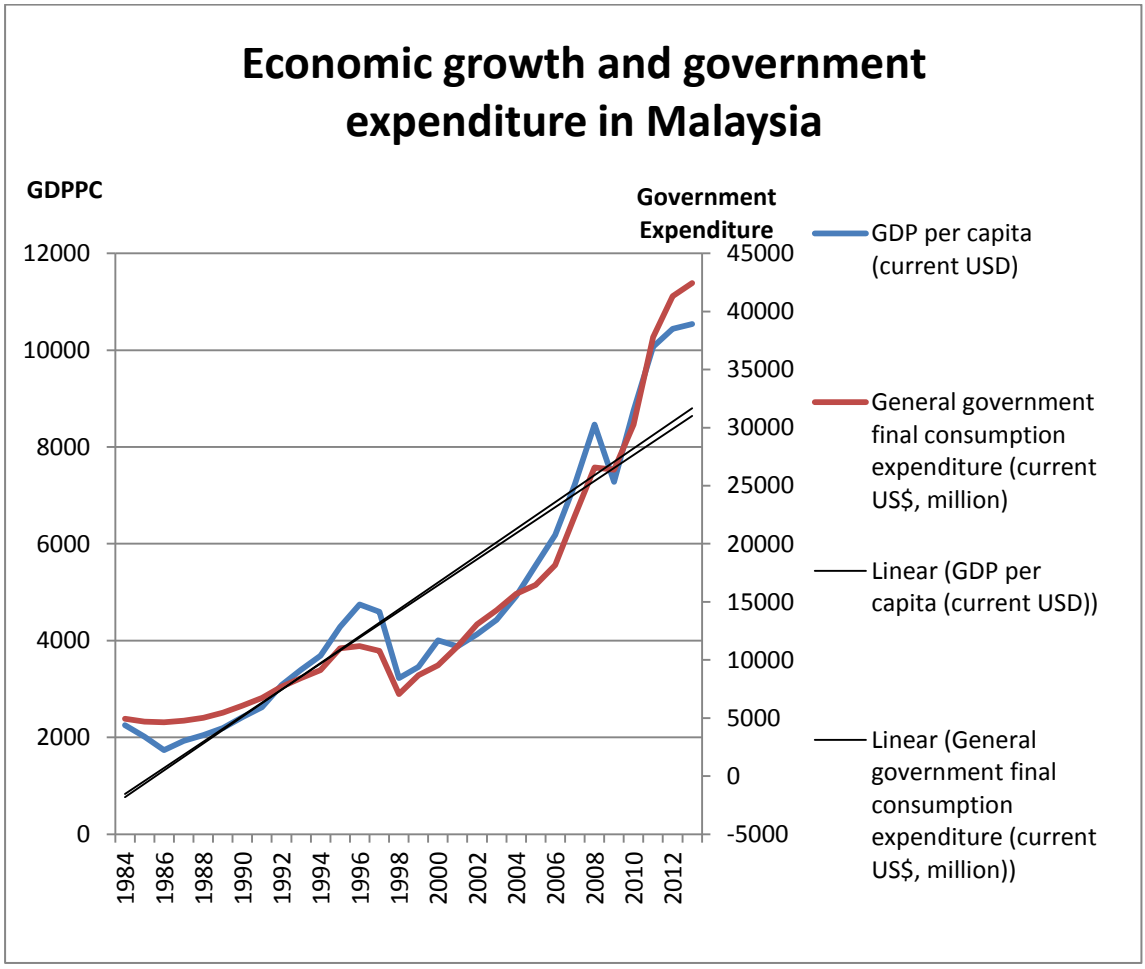
Figure 1.5 illustrates the growing trend of GDP per capita and upward sloping of trade. In this study, trade is measured by sum of imports and exports in goods and services. Trade of Malaysia achieve its highest records in 2010 to 2013 with an average of US$ 467 billion which is almost 14 times the average of the lowest records from 1984-1987. The growth of GDP per capita and trade were interrupted by financial crisis in 1997 and 2008 where the slopes of both variables were fluctuating during these periods. The 1997 Financial crisis fluctuation occur from 1998 to 2001. The GDP per capita will increase by US$ 0.02 on average for every US$ 1 million increase in trade volume during the period of 1998 to 2001. On the other hand, the 2008

financial crisis leads to another fluctuation for trade volume and GDP per capita from 2008 to 2010. For every US$ 1 million increase in sum of imports and exports in goods and services, GDP per capita will increase by US$ 0.02 on average. The increases in GDP per capita for every US$ 1 million rise in trade volume are close to each other due to the similar curve shape of GDP per capita and trade volume.

Increase in trade indicates that Malaysia is subjecting to international trade and such trade boosts economic growth by allowing flow of technological knowledge among trading partners and lead to production efficiency (Barro & Martin, 1995; Chang, Kaltani & Loayza, 2009; Romer, 1994).

1.3.3 Economic Growth and Government Expenditure in Malaysia

Figure 1.6: GDP Per Capita vs General Government Financial Consumption Expenditure



Source: The World Bank Group (2015)

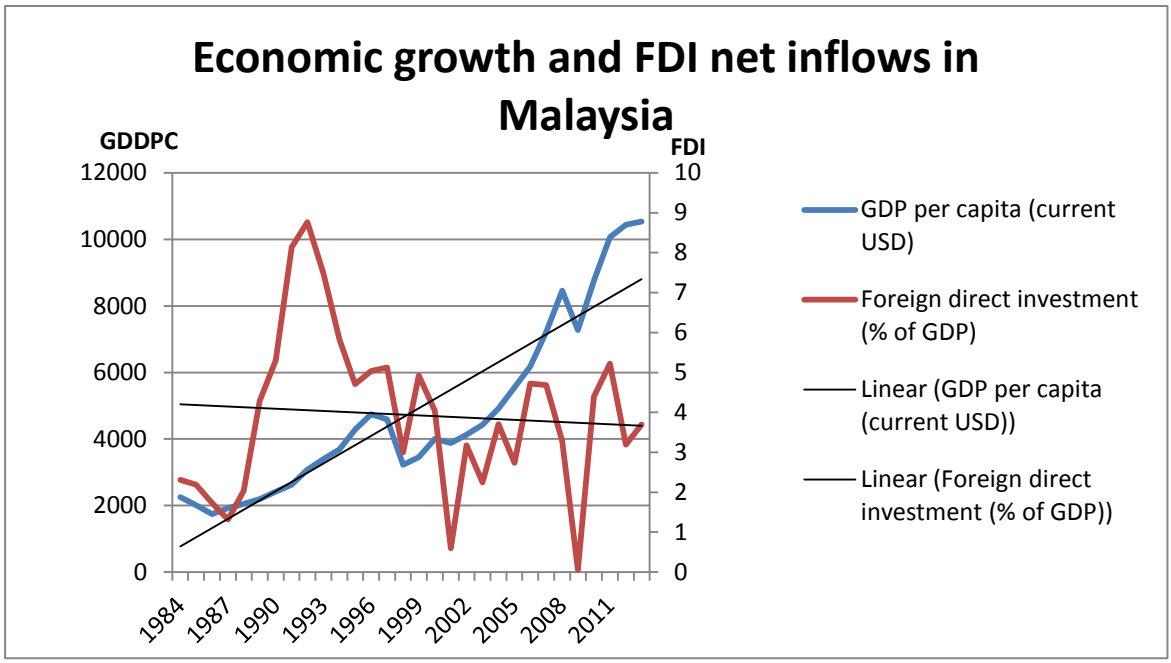
Figure 1.6 illustrates the growing trend of GDP per capita and upward sloping of government expenditure. In this study, government spending is measured in term of general government financial consumption expenditure. The government records its highest expenditure in 2013, achieving a US$ 42 billion which is approximately 9 times the initial spending of this study in 1984. GDP per capita increase by US$ 0.09 for every US$ 1 million increase in general government final consumption expenditure.

Same as the trade, the growth of government expenditure is affected by the financial crisis in 1997 as well as GDP per capita growth and caused the slops of both variables to fluctuate 1997 to 2001. However, the growth of government expenditure is not affect by 2008 financial crisis where economic growth does.

According to Glomm and Ravikumar (1997) and Barro (1990), government expenditure on public sector such as infrastructure, health and education is able to boost economic growth through improvement in labor force productivity.

1.3.4 Economic Growth and FDI Net Inflows in Malaysia

Figure 1.7: GDP Per Capita vs Foreign Direct Investment (FDI)



Source: The World Bank Group (2015)

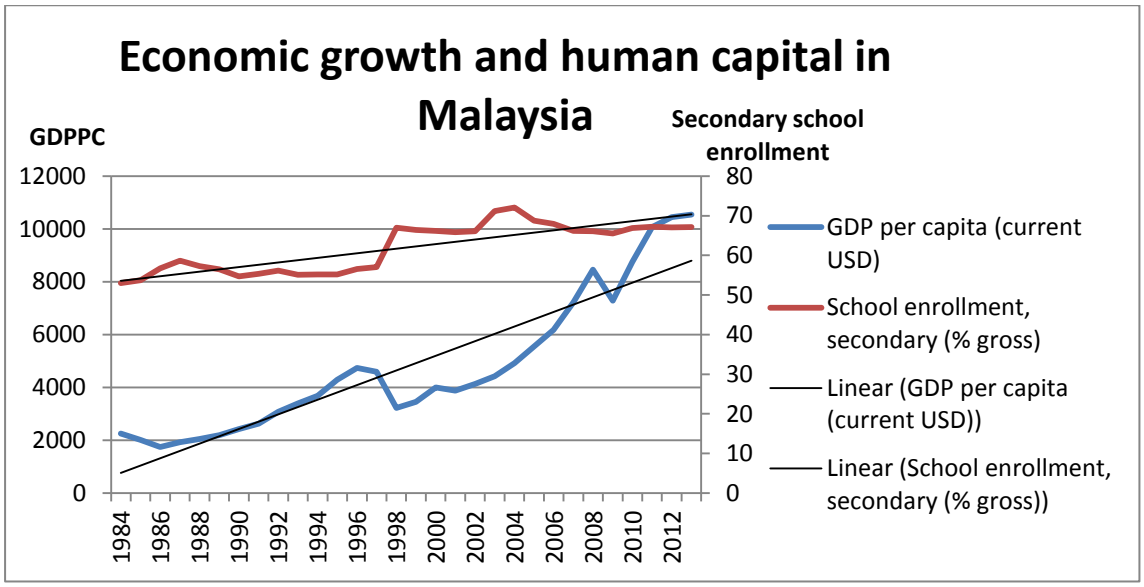
Figure 1.7 shows growing trend of GDP per capita and fluctuating trend of FDI. The fluctuation is separated into three large fluctuations which are from 1987 to 1995, 1998 to 2000 and 2007 to 2009. The inflow of FDI reached its peak in 1992 with 8.76% of GDP. In 1992, for every 1 percentage point increase in FDI inflow, GDP per capita will increase by US$ 726.32. In contrast, the inflow of FDI drops to its trough in 2009 with 0.06% of GDP. During this period, for every 1 percentage point increase in FDI inflow, GDP per capita will increase by US$ 367.0918 which is approximately half the results at the peak in 1992.

According to Bengoa and Robles (2003) and Zuzana (2014), FDI brings positive impact to a country by improving domestic productivity through inflow of technology. The authors' explanation is inverted with the demonstration in Figure 1.7.

However, FDI is measured in term of percentage of GDP. Since FDI is measured in term of percentage of GDP, the actual effect of FDI on GDP could be omitted as growing effect of FDI may be offset by the greater growing effect of GDP.

1.3.5 Economic Growth and Human Capital in Malaysia.

Figure 1.8: GDP Per Capita vs Secondary School Enrollment



Source: The World Bank Group (2015)

Figure 1.8 illustrates a growing trend in GDP per capita whereby the trend for secondary school enrollment is growing with slightly fluctuation above 50% of gross. Secondary school enrollment is used to indicate the impact of human capital towards economic growth. The trend of school enrollment is separate into two periods. From 1984 to 1997, the percentage of secondary school

enrollment is varying from 52.97% to 57.06%. From 1998 to 2013, the range of variation of percentage of secondary school enrollment rises to 65.51% to 72.03%. From 1997 to 1998 where the school enrollment is having extensive growth, the GDP per capita will decrease by US$ 137.62 for every 1 percentage point of secondary school enrollment increase.

The growing trends of both GDP per capita and secondary school enrollment is consistent as Haldar and Mallik (2010), Lucas (1988) and Mankiw, Romer, and Weil (1992). The authors mentioned that investment in human capital indirectly improve productivity of a country by enhancing the efficiency of workers while producing goods and services.

1.4 Problem Statement

The effect of corruption to a country's growth rate is always a debatable issue over the past decades because the empirical results to confirm whether corruption is "grease the wheel" or "sand the wheel" is ambiguous. Many organizations and communities claim that corruption is detrimental therefore eliminating corruption can greatly improve growth rate in Asian and developing countries. This is because developing countries need to fully utilize the government spending in developing the infrastructure and facilities in order to enhance the standard of living of the nations. If an Asian developing country with high level of corruption that will impedes its growth, costs use to combat corruption will distort the government spending that were initially use for the country's development purpose.

Corruption should be eradicated because it carries negative impacts to the economy. Allocation of public fund into the projects that brings higher opportunity for bribes payments impedes the economic growth of a country as the misuse of public fund is spent on unproductive projects. Corruption discourages international trading by which the rent seekers have resistance to remove the trade

restriction as the importers and exporters used to pay bribes to the officers in order to facilitate trades. Besides, the inflow of foreign capital from abroad is reduced as it involves high costs of doing business.

Corruption especially hurts small and developing countries such as Malaysia. In Malaysia, public perceived that corruption level is high and the economic growth is slow down by corruption. A strong relationship between corruption and weak corporate governance is found (Caron, Ficici & Richter, 2012). The failure for both government transformation program and economic transformation program are caused by weak governance in the country. Corruption ruins the public trust in government institution and damage the social capital as well as human capital. Social capital refers to the public trust on government where the human capital refers to labor productivity. The effect of social capital decline extensively on low income group and bring less incentive for the poor to participate in productive activity. Negative perception towards corruption in Malaysia is due to lack of ethics and moral value. The social capital of Malaysia is ruined and lowers the level of confidence of foreign investors towards Malaysia.

Economic growth in Malaysia sustains for the past 30 years despite the rising trend of corruption level. If corruption can promotes growth rate in Malaysia, should policymakers revoke the anti-corruption policy and encourage corruption to be maintained at a moderate level? However, the growth in economy might not be fully explained by the increase in corruption level. There might be other economic factors that contribute to the economic growth with higher degree of influence. If the influences of those economic factors offset the effect of corruption, can the economic growth achieve a higher level without corruption? As a result, policymakers must be aware of the real effect of corruption brings to economy and make decision to fight or promote corruption.

Another issue is that corruption might affect growth rate at different time frame. Sometimes corruption is more favorable in either short run or long run.

Theory suggests that corruption may neutralize government inefficiency and advance economic growth in the short run. However, corruption could negatively impact economic growth in the long run. In practical, most of the policymakers stress on long run effect while ignore the short run effect on economic growth. As a result, policymakers might not be aware of the importance to fight corruption in the short run and might face difficulties in controlling the corruption problem as it has become rampant in the long run.

1.5 Research Question

This study is focus on the following research questions:

1. Does corruption promotes or impedes economic growth in Malaysia?
2. What are the transmission channels that corruption can affect growth in Malaysia?
3. How does corruption affect economic growth through various channels?
4. Does corruption affect economic growth in short-run and long-run?

1.6 Objectives

The general objective of this study is to examine the relationship between corruption and growth in Malaysia from 1984 to 2013. The specific objectives are:

1. To identify and explain the linkage between corruption and economic growth through various channels of transmission such as trade openness, investment, human capital and government spending.

2. To examine the effect of corruption on economic growth through different transmission channels.
3. To investigate the long-run relationship between corruption and economic growth.

1.7 Significance of the Study

To the best of authors' knowledge, there is lack of empirical research which is solely done on corruption and growth in Malaysia. Previous research studied about the relationship between corruption and growth were mostly focus on the Asian countries or developing countries as a whole rather than Malaysia specifically. Therefore, the results might be inaccurate for Malaysian government to fight corruption. For that reason, it has triggered the researchers' interest to conduct an in-depth study in the case of Malaysia solely in order to close the gap that resulted from previous studies.

In addition, the study on the channels of transmission on which the corruption will affect economic growth is able to assist policymakers to target corruption correctly and more effectively. As a result, policymakers can pay more attention to the special channels with better allocation of government spending in order to spur economic growth.

Furthermore, most of the previous researches have used shorter time period in examining the effect of corruption on country's economic performance such as ten years and fifteen years. Hence, as suggested by Anderson, Burnham, Gould and Cherry (2001), this study utilize the latest available data and lengthening the time frame for a longer period to thirty years that may further enhance the results.

These contributions are vital in supporting policymakers to implement effective policies and strategies in the future and provide a better foundation in constructing policy by policymakers.

1.8 Organization of the Study

In this study, Chapter 1 discusses the overview of corruption and economic growth as well as the key focus in our study. Chapter 2 represents the literature review done by previous researchers, followed by description of the data used and methodology employed in Chapter 3. Empirical results are discussed in Chapter 4 before conclusion is made in Chapter 5.

Chapter 2: Literature Review

2.0 Introduction

This chapter emphasized on few theories and concepts that used to support the relationship between corruption and economic growth. Besides, this study discussed how the channel of transmission affect the corruption and resulting economic slowdown or boost up following by the gap of study.

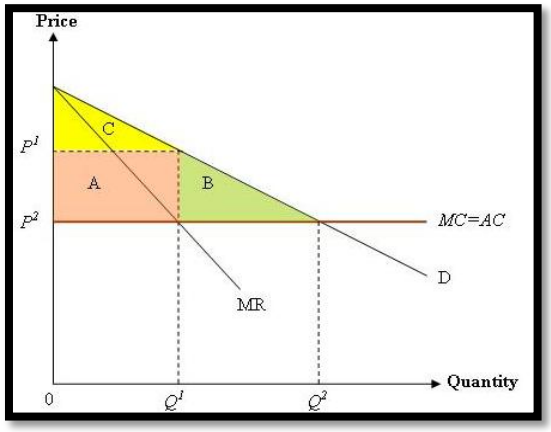
2.1 Review of Theories and Concepts

2.1.1 Rent Seeking

Graeff and Mehlkop (2003) stated that, from the perspective of theoretical, free economy tends to reduce corruption due to government does not intervene for the business activities and not imposing any tariff and non-tariff barriers. Authors also mentioned less government manipulates on it should come with less corruption. However, some competitor pressures to corrupt the authority servant in order to present themselves are more competent than one another. This situation can be easily observed when there is an international trading over the country. Ross (1999) argued that whichever country depends on the oil is always been corrupt due to poor governance and rent seeking culture. Lambsdorff (2002) also claimed that special interest group such as large corporations and politician always involve in rent seeking activities. These particular group of people tend to pay higher than opportunity cost to civil servant. Everyone is likely to receive something extra than opportunity cost thus author found that involvement of rent seeker in rent seeking activity is high (Lambsdorff, 2002). Kolstad and Soreide (2009) supported that

individuals or groups seek for extra income instead of allocating their time and skills at the right way. Arezki and Bruckner (2011) found out that higher civil independency will cause higher oil rents. This is because political elite do not want to lose rent income thus they will just loosen the political rights and get the oil windfalls.

Figure 2.1: Rent Seeking Diagram



Sources: Bade, R. & Parkin, M. (2013). *Foundations of Microeconomics.* United Stated, America: Person Inc.

Bade and Parkin (2013) also defined rent seeking activities as lobbying and other political activity intend to find the opportunities from trade and gain the profit in between. Figure 2.1 shows that politic elite charge on price, P^1 with the quantity, Q^1 which means charge at higher price with lower output by comparing P^2 and Q^2. Initially, the area A+B+C is belong to the consumer surplus but the misallocation of resources due to rent seeking culture makes substantial loss for area B. These activities can transfer the consumer surplus to producer surplus which is called redistributed effect (Bade & Parkin, 2013). Area B is a deadweight loss where nobody can enjoy that surplus and the social benefit is just gone away. Thus, it always fit to the empirical study where stated that most of the studies clarified that corruption brings negative impact to the economic growth (Mauro, 1995; Knack and Keefer, 1995; Brempong, 2002).

2.1.2 Queue Model

Huntington (1968) and Leys (1965) consent with corruption can brings positive impact to country's economic growth. That is due to corruption can increase efficiency and mostly occurs in the public sector. Thus, Elmukhtar and Ali (2013) formed a queue model of bribery where the model takes into consideration of social maximization.

Besides, Acemoglu and Verdier (1998) agreed that corruption have a positive relationship to the growth rate. Authors clarified that if corruption can boost up the economy, corruption is allow at a certain levels and property right does not fully implement. Authors also found out that it is applicable in developing countries with high levels of corruption and executing lower levels of property right.

The queue model recommended by Lui (1985) illustrated the condition where bureaucrats distribute business licenses to companies and grant privileged treatment to those who bribe the relevant bureaucrats in order to accelerate the procedures. If entrepreneur want to set up a factory at somewhere else by giving bribe, bureaucrats will lessen paperwork or process to go through and grant a license easily. That is due to corruption on the project mentioned earlier brings positive impact to the country and its lead to economic growth by employ more worker.

2.1.3 Transaction Cost Theory

Lambsdorff (2002) defined transaction cost of legal agreement include costs of searching partners, enforce contract terms and determine contract conditions. The meaning of transaction cost of corrupt agreement is differing from the cost of searching a partner, enforce terms and determine contract conditions. These transaction costs of corrupt agreements needs to be hidden

due to collaborators at the end will disclosure the information about each other. Hence, corrupt agreements most probably to employ middlemen.

Lambsdorff (2002) also examined if there is an exchange market for goods and services in the form of parochial corruption, the total transaction cost increase as the total number of potential contractors to be seek increase. The increasing cost comes from searching potential contractors, assessing the quality, competency of each products and individual ability as well as eagerness to comply with corrupt products. The number of contractors will stop at marginal transaction cost of searching additional one partner equal to the estimated gains resulting from a potentially superior deal with another competitor.

If corruption is lead to higher marginal transaction cost, the fewer of potential collaborator will seek for and entrepreneur can save the capital and invest in another giant project. As the project goes on, it will hire human capital to operate the machines and produce goods and services effectively. Thus, the buying and selling goods and services tend to enhance economic growth as well.

2.2 Channel of Transmission

Based on rent seeking theory, queue model, transaction cost theory and empirical evidences, corruption affects economic growth through four channels of transmission. They are trade openness, government spending, investment and human capital.

2.2.1 Trade Openness

Graeff and Mehlkop (2003) suggest that less government manipulation leads to lower corruption and it caused lower chance for rent-seeker to receive bribes. Since there is less restriction from the government, the procurement of business activities are merely based on competition. Krueger (1974) emphasizes the implication of rent seeking on theory of trade. The author concludes that barrier of import leads to rent seeking activities due to competition for import license. Grossman and Helpman (1994) pointed out the problem of rent seeking whereby more resources are used to pay bribes to corrupt officers in application of certain procurement and those bribes payment deem as deadweight loss in the economy.

Graeff and Mehlkop (2003) indicate that weak legal formation leads to higher opportunity for corruption as for trade theory, poorly governed trade activities easing corruption as well. The corrupted officers are reluctant to promote trade openness as the chance for receiving bribes declines (Southgate, Canelos, Saa & Stewart, 2000). Farooq, Shahbaz, Arouri and Teulon (2013) stated that the bidirectional causality relationship is applicable to trade openness and economic growth as well as the relationship between trade openness and corruption.

Lambsdorff (2002) further mentioned that corruption increase the transaction cost, not only the bribes payment but also the risk of building illegal agreement and the possibility of breach of agreement by the other party. Bidders are forced to accept higher cost and risk in order to achieve certain procurement in economic environment with lower degree of trade openness which in turn reduces the incentive of investors to invest.

Hodge, Shankar, Rao and Duhs (2011) claimed that greater trade openness contribute to higher potential of corruption as restriction on trade such as quota, tariff and license provides mean for rent-seeking. Hodge et al. (2011)

suggests that the movement toward free trade eliminate the opportunity to collect bribes so that corrupt parties have resistance to compromise such movements.

2.2.2 Government Spending

According to Shleifer and Vishny's (1993) point of view, the structure of government spending always altered in favor of civil servant due to opportunity engage in rent seeking activities. Many researchers have shown that how corruption affect a country public spending portion. Mauro (1998) reported that high corruption level associated with inefficient government service on education. Corruption will negatively affect the adult literacy rate due to distortion of government spending structure. Gupta, Mello and Sharan (2001) found that corruption reduces allocation of government spending on children healthcare. Wade (1982) found that low quality of roads and more frequent number of electricity interruption when the presence of corruption in government budgetary allocation.

Corruption affects the structure of public spending through supply and demand of government project. Delavallade (2006) discovered government official who have authority on allocation of public project, it leads to the creation of rent seeing behavior due to majority of them have high negotiating power. Supply the government project to local or foreign contractor will bring government in oligopsony position. It is because government offers a limited and huge amount of money contract, while many contractors are willing to accept this government contract. Firm or contractor is more willing to offer high bribes in the bidding contract process because they expect high return from government large scale construction (Beck & Maher, 1986).

A reduction of government spending on public sector wages will cause corruption arise. Rijckeghem and Weder (2001) stated that lower wages in

public sector may increase a person's incentive to involve in rent seeking activities, such as bribery. A change of public expenditure on civil servant wages may slower economic growth (Baldacci, Hillman & kojo, 2004).

Alesina and Angeletos (2005) argue that civil servant find less opportunity to manipulate structure of government spending for their own interest if size of government is small. This contrast with the view of Mendez and Sepulveda (2006) argue that bigger size of government create more opportunity to engage in bribe seeking activities on government spending.

2.2.3 Investment

Corruption discourages domestic and foreign direct investment due to reason of transaction cost. Corruption is additional cost of production in conducting targeted project. Sarkar and Hassan (2001) stated that corruption will lead to higher output price, demand for such output decrease and lead to decrease in output capital ratio. Bardhan (1997) mentioned that entrepreneur believe that speed money is need to start up their business in a country. If an entrepreneur pay bribe to start their business, he or she will shut down or force out from market if business profit is less than amount of bribe. Consequently, corruption reduces the incentive to investment because higher bribes decline profitability on productive investment as stated by Mauro (1995). Investment with corruption brings uncertainty to local and foreign investors because bribe payment is illegal. Uncertainty arise due to detection of corruption involve punishment that cause heavy loss to the investor if punishment fee more than profit earned (Myint, 2000).

Corruption encourages domestic and foreign investment in several ways. Lui (1985) argued that payment of bribes is able to get firm license easily and minimize the opportunity cost of time in order to enhance the growth rate of investment. Civil servant is a monopolist selling the government produced

goods to those firms that need it. Romer (1994) stated that monopolistic corruption may attract more investment in a country because firm have the property right in running their business after getting the government produced goods such as business license or permit, right to use government road. The supply of bribes by firm or entrepreneur is good for investment because bribes speeds up procedure in obtaining government produced goods. Corruption allows entrepreneur to overcome the complex and difficult regulation as stated out by Shleifer et al. (1993).

2.2.4 Human Capital

Rumyantseva (2005) stated the presence of corruption in education institution leads to low quality of human capital. Transmission of knowledge is the main function of education institutions, high level of educational achievement means that high quality of human capital as stated by (Sleezer, Conti & Nolan, 2004). The existence of bribes will cause the suboptimal use of human capital, thus harm a country economic development. It is because people without skill and knowledge have chances to obtain high level of profession by offering bribe to the education institution (Murphy, Schleifera & Vishny, 1991).

Rent seeking activities exits when an individual have incentive to bribe and incentive to accept bribe. Drury et al. (2006) found that grading corruption is a kind of supply side of corruption, lecturers or universities are willing to receive bribe due to extra money earned without any additional effort. In the other hand, Heyneman (2004) stated that student willing to offer bribe in order get better grade or result without any knowledge transmission. Education system with corruption may lower the quality of human capital through no actual knowledge learned by student (Latova & Latov, 2008).

Lederman, Loayza and Soares (2005) argued that high level of education achievement associated with low level of corruption. This argument agreed by Beets (2005). The author found that benefit of education reduces the corruption participation in a country. Schooling can reduce the likelihood of participate in crime, increased tendency to exhibit good citizenship as pointed by Heynemann (2002). Therefore, high education may decrease the potential of corruption occur.

On the contrary, low level of human capital can be signaling of the availability less educated person that significant influence economic growth (Barro, 1991). It is because less educated person has little understanding regarding the law and regulation of illegal activities such as bribe, red tape, and so on. As stated by Graeff and Mehlkop (2003) corruption is more favourable with high level of illiteracy individual. At last, corruption is continue to spread because most of the uneducated person are less aware of anti-corruption programs.

2.2.5 Review on Variables that Derive the Transmission Channels

In order to examine the effect of corruption on each transmission channel, few of the independent variables are added in the regression of each transmission channel based on previous researchers' empirical literature.

2.2.5.1 Consumption Per Capita

Chioma (2009) explained a positive relationship between consumption and GDP where increase in consumption leads to increase in GDP. Abel, Bemanke and Croushore (2014) further explained a bidirectional relationship between

consumption and GDP. The authors clarified that increase in consumption leads to increase in GDP as well as national income. The pattern of consumption of the household is based on the income after tax by which the household consume more with higher level of income (Ramli & Andriani, 2013). Increase in consumption due to rises in income leads to increase in GDP as consumption is one of the components to compute GDP under expenditure approach.

When the income of consumer increase indicated they tends to shift their preference to luxury goods instead of basic goods. Thus, the consumption of imported goods directly increases as the demand increases in which it leads to country's trade volume enhanced. Author also found that the effect of consumer's income is greater than the effect of exchange rate volatility in terms of world import to expenditure ratio (Mark & Maria, 2004).

2.2.5.2 Domestic Credit Provided by Financial Sector

Hericourt and Poncet (2009) claimed that FDI has a positive relationship with the domestic credit provided by financial sector. If the domestic companies facing difficulty in cash flow or ineffective capital allocation, the investment will be delay. Gozgor (2014) stated that trade and domestic credit provided by financial sector are positively affect each other. As implementation of expansionary monetary policy, financial sector capital base increase and lead to increase in trade. Author also declared that huge domestic credit based circulates in a developing economy brings significant effect on country welfare.

2.2.5.3 Real Effective Exchange Rate

Guechari (2012) concluded that the real effective exchange rate has favorable effect on trade balance in long term and unfavorable effect on trade balance in short term. Depreciation of a nation's currency increase the demand for goods and services in domestic and abroad as the price of goods and services become relatively cheaper than other nations and causing net export to increase (Duasa, 2007). Ng, Har and Tan (2008) further explained that existence of real effective exchange rate in long run worsen the trade balance as the value of exports decline while the value of imports increases.

2.2.5.4 Unemployment Rate

Dutt, Mitra and Ranjan (2007) found that trade openness is negatively correlated with unemployment rate by using cross-country data. Their findings show that trade liberalization will reduce unemployment rates across countries and within countries over the period and it is consistent with Ricardian model framework. This is due to international trade can provide job opportunities for firms in exporting sector. However, there is no evidence for the Hecksher-Ohlin model framework which indicate the effect of trade policies on unemployment is depends on whether the country is capital abundant and labor abundant.

2.2.5.5 Public Spending on Education

Government allocate public funds on education is to make improvement in the formation of human capital. According to OCED (2011), public education expenditure includes public and private educational institutions, and subsidies for private entities such as students, companies and labor organization. Education is the mechanism to increase the quality of human capital (Lucas,

1988; Griliches & Regev, 1995). Public expenditure on education allows individual to accumulate knowledge, skills and attitudes thus enhance the productivity of human capital (Edame & Eturoma, 2014). Educated labor force is more expert in problem solving and communication thus the workers can be accomplished their duties in more effective way. Educated individual also able to enhance productivity via develop more advanced technologies.

2.3 Review of Empirical Studies

2.3.1 Corruption to Economic Growth

Most of the earlier studies pointed out that corruption affect economic growth adversely. Dridi (2013) found that corruption is harmful to economic growth through several channels for a cross-section of 82 countries from 1980 to 2002 by using three-stage least squares method (3SLS). In this study, human capital and political instability are the paramount factors which causes corruption to diminish economic growth, whereas investment are insignificant as a transmission variable to corruption. There are several empirical studies also generated the similar result as previous research which shows the significant negative nexus between corruption and economic growth (Mauro, 1995; Knack & Keefer, 1995; Brempong, 2002). The study of Farooq et al. (2013) in Pakistan revealed that corruption weakens economic growth by using time series data from 1987 to 2009 while involving financial openness and trade openness in the model. Nwankwo (2014) also found that corruption influence Nigeria's economic growth negatively by using ordinary least square (OLS). Nigeria is facing difficulty to develop fast even though the country is resourceful due to its increasing rate of corruption that will reduce a country's development.

On the other hand, some researchers have doubted the validity of the empirical linkage between corruption and economic growth. Brunetti, Kisunko and Weder (1998) disagreed with the existence of relationship between corruption and economic growth whereas other authors claimed that the effect is sensitive to the presence of other significant factors of growth. Numerous studies had proven that the significant correlation between corruption and economic growth is likely to vanish when other specific variables are incorporated in the regression model. Mauro (1995) claimed that the relationship between corruption and economic growth becomes irrelevant after taking into account of investment. Mo (2001), Pellegrini and Gerlagh (2004) and Pellegrini (2011) have also found identical evidence and claimed that the impact of corruption on economic growth becomes statistically insignificant after including human capital, trade openness, investment and political instability.

There are more empirical literatures pointed out that the impact of corruption on economic growth is unexplained with the absence of institutional framework of nations. Numerous studies disagreed with the linear relationship between corruption and economic growth due to the effect of corruption on economic growth in different countries might not be the same according to the quality of institution. Aidt, Dutta and Sena (2008) have found out that the impact of corruption on economic growth is indicated by the quality of political institutions and claimed that corruption has a large negative impact on economic growth in the countries with high quality institutions, while corruption has no impact on economic growth in countries with low quality institutions. The critical role of institutions in the determination of the correlation between corruption and economic growth was also investigated by Heckelman and Powell (2010). This study found that corruption can have a positive effect on economic growth by letting people to circumvent inefficient public policies and it only works when countries have low levels of freedom in the areas of government size, freedom to trade internationally and regulation of credit, labor, and business. Wang and You (2012) also found that corruption

is likely to contribute to firms' growth in China when financial markets are underdeveloped from micro-level. They stated that low-quality institutions are bad for growth, but their influence could be diminished by the presence of corruption. At the current development stage, corruption helps circumvent cumbersome regulations as "speed money" and therefore, improves efficiency and extends to stimulate economic growth. These findings are consistent with the queue model theory by Lui (1985). Leff (1964) and Huntington (1968) also stated that corruption can enhance economic growth by allowing individuals to pay bribes to circumvent inefficient rules, bureaucratic delays and shortening the amount of time waiting in queues in accordance to queue model.

Rock and Bonnett (2004) concluded that size of nations, politics of corruption, industrial organization of corruption, amount of state power and long term strategy of corrupt officials are the important determinants that will affect the relationship between corruption and economic growth. They found that the impact of corruption on investment and growth in small developing countries is greater than large developing by using cross-country regression tests. This empirical evidence has proved the existence of East Asian paradox where the countries are experienced high corruption level but associated with high growth. They divided the region into three groups which are SINGHKMAL[1], LEANICS[2], and SASIAP[3]. SINGHKMAL are having low level of corruption associated with high economic growth. LEANICS have enjoyed high economic growth and investment associated with high levels of corruption. SASIAP have suffered low economic growth associated with high levels of corruption. Rock and Bonnett (2004) explained that SINGHKMAL have faced high economic growth because they are small and self-governing countries that have committed to operating without corruption. While,

[1] Malaysia is grouped with Singapore and Hong Kong (SINGHKMAL) because it is a relatively small country with relatively low corruption scores.
[2] Countries in the large East Asian newly industrializing economies (LEANICS) category include China, Indonesia, Korea, Thailand and Japan and they are included in this group because of strong similarities in their political economies of corruption.
[3] The Philippines is combined with South Asia (SASIAP) because its client dominated patron – client networks are similar to those in South Asia.

LEANICS has facing with high economic growth and high corruption "reflects monopoly control of corruption networks by strong centralized states". A high level of corruption impedes economic growth in South Asia and the Philippines because decentralized corruption networks with independent monopolists with short-term time horizons who compete for control of the networks.

The above studies concluded a mix result of relationship between corruption and economic growth. Several studies have shown significant adverse effect of corruption on growth, whereas some others found that the effect is statistically insignificant, while others claimed that the effect to be heterogeneous with different institutional quality. Mauro (1995), Mo (2001), Pellegrini and Gerlagh (2004) and Pellegrini (2011) found the similar results where corruption will influence economic growth but it tends to vanish when other specific factors are added into the regression model. Rock and Bonnett (2004) also unveiled that corruptions may have diverse effects from country to country due to some factors. Svensson (2005) stated this as "differential effect of corruption" and suggested to study the linkage of corruption and economic growth in a single country instead of cross-country study.

2.3.2 Trade Openness to Economic Growth

First of all, most of the studies ended up with the conclusion of positive impact of trade openness towards economic growth. Bouoiyour (2013), Chang, Kaltani and Loayza (2005) indicated that trade liberalization allow exchange in technology and sharing of technical knowledge among trading partners to improve productivity which in turn improve GDP. Furthermore, Chang et al. (2005) further suggested that global efficiency could be improve as trade liberalization encourage competition between both local and international market. Yanikkaya (2003) also suggested that trading with developed countries have larger benefits in term of technology advancement.

There are studies opposing positive impacts of trade openness on growth as well. Yanikkaya (2003) tested the relationship between trade openness and GDP by using trade barriers as measurement for trade openness. His result shows that trade barrier is positively affecting growth, by which trade openness is negatively affecting growth.

There are arguments arise in the studies of Andersen and Babula (2008) even though they proposed the positive impact of trade openness in economic growth. Firstly, the authors highlighted the ambiguous causality between trade and growth as the relationship between two variables could be endogenous. Secondly, the measurement used in the estimation leads to confusing results. Some authors employ more than one measurement for the trade openness in the same study and came out with different results for different measurement. Yanikkaya (2003) indicates that larger trade volume enhances economic growth but estimation he used trade barriers as measurement for trade openness indicates that trade restriction safeguard economic growth under certain conditions.

2.3.3 Government Spending to Economic Growth

Government spending can be an effective tool to stimulate a country's economic growth. According to Barro (1990) stated that productive and unproductive of government spending will bring a significant impact on overall economic development. A productive government spending on public infrastructure especially transportation will bring positive significant impact to economy. Easterly and Rebele (1993) claimed that better transportation infrastructure leads to lower production cost and higher productivity. Government spending on health and education sector can ensure economic growth due to higher quality and productive of labor force (Glomm & Ravikumar, 1997). Chude and Chude (2013) suggested that a productive public spending lead to low unemployment rate in a country. For example,

government have to employ huge number of construction workers for infrastructure projects, thus unemployed workers gain the jobs and they will have more income to consume.

Ihugba (2014) mentioned that government spending become unproductive when the law of diminishing return begins operation and further increase of government spending. They explained that current government spending is productive at margin whereby additional government spending beyond margin will become unproductive. Government spending becomes a burden when outlays are misallocated. Wiggins and Brooks (2010) found that cost of government exceed the benefit when subsidy is transferred to public sector due to inefficiency. Mishan (1963) pointed out government spending is financed by increasing taxes and borrowing, which means public spending is significantly associated with output growth. This is because after increase in tax income will encourage people to make saving instead of spending and government borrowing create excessive national debt.

2.3.4 Investment to Economic Growth

Theory explains that FDI stands significant role to finance country's balance of payments, not astoundingly, it had intensification of output, productivity and exports. Zuzana (2014) clarified that FDI and export carry the impact towards the country's GDP. This is due to export boosts up the volume of output and leads to economy growth. Author also mentioned that GDP and export were adjusted due to seasonal changes. Bengoa & Robles (2003) also agreed that investment enhance the economic growth as the condition of efficient human capital, trade openness, political and economic stability. Mello (1997) stated that degree of local firms' efficiency had correlation with FDI and which lead the host country economic growth as well. While, authors also pointed out long term growth relies on rate of time preference, productivity of domestic capital and the degree of mutually beneficial trade between host and

foreign capital. Boyd and Smith (1992) claimed that FDI may affect economic growth because of poor allocation of resources or certain deformation that exist in the trade. Vuksic (2005) also stated that restrictions on the international trade or lack of updated machinery may affect the relationship between investment and GDP.

2.3.5 Human Capital to Economic Growth

Gross enrolment rates or average years of schooling is extremely insufficient to explain contribution of human capital to economic growth if investment return in human capital or quality of human capital is substantially different across the countries. The weak relationship between economic growth and rise in educational achievement across the countries is found by Benhabib and Spiegel (1994).

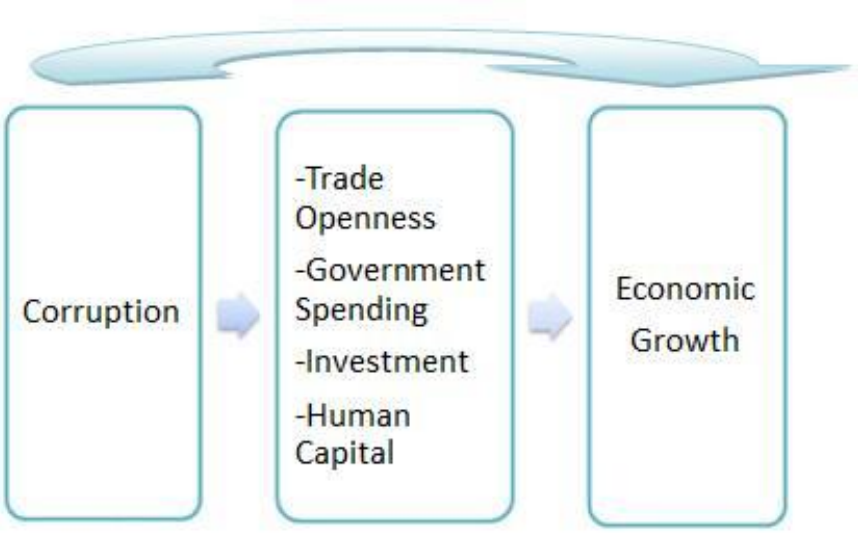
Knowles and Owen (1995) claimed that human capital is statistically insignificant when life expectancy and base period output per capita are included in the growth model. However, Barro and Martin (1995), McMahon (1998), Temple (1999) and Bils and Klenow (2000) found that schooling is positively correlated with the growth rate of per capita GDP across countries.

Haldar (2009) found that among the three growth models which are physical capital, human capital and export led growth, the human capital accumulation led growth model is more applicable to economy in India by using the time series data. Haldar and Mallik (2010) found that the investment in human capital is significantly affected Gross National Product (GNP) per capita in long run by using time series data from 1960 to 2006 in India. This is due to increased investment in human capital will lead to higher productivity and individual earnings. This has been supported by Lucas (1988) and Mankiw, Romer, and Weil (1992) by observing that human capital

accumulation will raise other factors' productivity and subsequently lead to economic growth.

2.4 Theoretical Framework

Figure 2.2 Theoretical Framework



Given the research questions and discussion in literature on corruption, trade openness, government spending, investment and human capital, this study has developed its conceptual framework from the rent seeking, queue model and transaction cost model.

From rent seeking model and queue model, it shows that there is unidirectional relationship between corruption and economic growth. Rent seeking model shows that corruptions may cause misallocation of resources, thus impedes economic growth of a country. However, queue model is contradicted to rent seeking model which stated that corruptions will bring positive impact to country economic growth due to corruption circumvent inefficient rules and bureaucratic delays.

Corruption brings impact to economic growth indirectly through one of the channel which is trade openness. There is a relationship between corruption and trade openness. The presence of trade restriction provides opportunities for rent-seeking activities as the procurement requires bribes as part of the business cost. On the other hand, the corrupted parties have resistance to remove quota and restriction as free trade provide no space for corruption. As the economy moving towards liberalization, the countries are gained from sharing of technological knowledge and improve production efficiency. In addition, trade liberalization encourages global competition which in turn improves global efficiency. Therefore, greater trade openness promotes economic growth as production efficiency improved.

Corruption can influences public spending allocation through several channels, such as transportation, education, and healthcare. With the presence of corruption, government spending is no longer productive. It is because corruption encourages rent seeking behavior, especially civil servants have more opportunities involve in corruption activities. Thus, the speed money makes them perform inefficient in their job scope. Unproductive allocation of government's funds brings negative effect on country economic performance. In contrast, a productive public spending can boost up economic growth.

Corruption reduces the motivation to invest, because political servants demand for bribery will increase the cost of doing business, which in turns lead to shrinking in economic growth. Even though the some procedures can be leaving out, but entrepreneurs or individuals will still facing difficulty in decentralized corruption. As a result, it will affect the country's growth by less injection in investment due to high transaction cost. From the literature review, this study observed that the investment as mediating variable which unable to bring long term benefit for entrepreneur and individuals. In opposite, when corruption reduces, investment improved leads volume of output increased that will only mutually beneficial between both countries and boost up economic growth.

There is relationship between human capital and corruption. Education is a vital source of human capital production for a country. Corruption make talented and productive people become unproductive due to own benefit seeking and external forces. Further, economic growth is in relation to investment in human capital. A country's economy becomes more productive as the proportion of educated workers increases, since they are able to carry out tasks more efficiently compared to those low educated workers. The more educated workers in the country, it makes the country grows prosperously.

Other than the direct relationship between corruption and economic growth, the effect of corruption can be transferred to economic growth through several mediating factors including trade openness, government spending, investment and human capital.

2.5 Gap of the Study

There are few studies discussed the relationship between corruption and GDP solely in Malaysia and most of them are studied about Asian countries and other regions. Furthermore, most of the domino effects and results in cross-country studies are firm due to fixed effects (Rock & Bonnett, 2004; Mendez & Sepulveda, 2006; Brempong & Camacho, 2006). However, the result in the real world is infirm because of changing economic condition in fast pace and corruption levels are also spread in developed and emerging economies. Therefore, this study intends to fill the gap by using time series analysis to find out the long run and short run relationship between corruption and economic growth in Malaysia. Previous studies concluded different results. Some have confirmed the existence of relationship between corruption and economic growth while others opposed this relationship. Moreover, most previous studies focused at the micro level and investigate the firm behavior impact on corruption (Wang & You, 2012; Ayaydin & Hayaloglu, 2014; Fisman & Svensson, 2007). Fewer studies examined economic outcomes from corruption at the nation-state (macro) level (Farooq, et

al., 2013; Paul, 2010; Adenike, 2013; Dridi, 2013). This study fills up this gap and focuses more on macro level in examining the relationship between corruption and GDP in Malaysia.

Chapter 3: Methodology

3.0 Introduction

The econometric approaches used in this study is cointegration concept which was introduced by Granger (1981) along with Granger and Weiss (1983) to illustrate that if two or more series are to form a long run equilibrium relationship then the series will tend to move together over time even though each of the series does not has the properties of stationarity (Gujarati & Porter, 2010). Autoregressive Distributed Lag (ARDL) model is applied to test the long run and short run effect between corruption and economic growth.

In addition, Augmented Dickey Fuller (ADF) test is used to test whether variables are stationary in order to avoid spurious result. Besides, Autoregressive conditional heteroscedasticity, serial correlation LM test, Ramsey RESET test and Jarque-Bera (JB) test is used for diagnostic checking. Cumulative sum of recursive residuals (CUSUM) and cumulative sum of recursive residuals of squares (CUSUMSQ) are used to detect changes and stability of the ARDL parameters.

Channel Methodology developed by Tavares and Wacziarg (2001) is applied to examine the indirect relationship of how corruption can significantly impact economic growth in Malaysia through different mechanisms such as investment, trade openness, government spending and human capital. The secondary data collected from various reliable sources such as World Bank and Political Risk Services (PRS) Group is used for analysis in this study on annual basis from 1984 to 2013 in Malaysia.

3.1 Data Description

Time series analysis is exercise to examine the effect of corruption on economic growth in Malaysia. The secondary data was collected from various sources for the year 1984 to 2013 based on annual basis.

Table 3.1: Summary of Variables, Abbreviation of Data and Source of Data

	Abbreviation	Variable	Source
Economic Growth	lnGDPPC	GDP per capita	World Bank
Corruption Index	lnICRG	International Country Risk Guide (ICRG)	Political Risk Services (PRS) Group
Investment	FDI	Foreign direct investment, net inflows (% of GDP)	World Bank
Trade	lnTRADE	Trade (current USD)	World Bank
Government Spending	lnGOV	General government final consumption expenditure (current USD)	World Bank
Human Capital	HC	School enrollment, secondary (% gross)	World Bank

Adapted from: World Bank Indicator

3.1.1 Dependent Variables and Measurements

3.1.1.1 GDP Per Capita

The dependent variable used in this study is GDP per capita expressed in current USD. This variable was gathered from the World Development Indicators.

3.1.2 Independent Variables and Measurements

3.1.2.1 ICRG Corruption Index and CPI Corruption Index

The key independent variable which is corruption index is available in two alternative measurements which are International Country Risk Guide (ICRG) published by a private firm namely Political Risk Services (PRS) Group and Corruption Perception Index (CPI) provided by Transparency International.

The ICRG assesses three categories of risks such as political risk, financial risk and economic risk. This ICRG consists of 12 weighted variables which include corruption index. The corruption index in ICRG ranges from 0 to 6 whereas lower point indicates higher degree of corruption while higher point indicates lower degree of corruption. On the other hand, CPI is assembled by Transparency International and this index ranges from 0 to 10. As same as ICRG corruption index, lower CPI illustrates higher perceived corruption level while higher CPI illustrates lower perceived corruption level in a country (Yadav, 2011).

In this study, ICRG corruption index has been chosen instead of CPI due to several reasons. ICRG is chosen because the data is available from 1984 to 2013 while CPI is only available from 1995 onwards. As a result, CPI is less appropriate to be used in this study due to limited years of data available (Yadav, 2011). In addition, CPI is merely the expertise's perception of corruption level in a country and lack of sensible measurement of corruption. However, ICRG corruption index is computed by analyzing political, financial and economic data and information, then transforming these data and information into risk index on a basis of formula. Therefore, ICRG index is more comprehensive compare to CPI as CPI ignores the institutional quality of a country. In addition, ICRG disaggregates risks into numerous factors such as corruption is caused by political risks can provide more accurate analysis. ICRG corruption index has been transformed into annual basis from monthly basis by adding up the twelve months corruption index then divided by twelve.

3.1.2.2 Foreign Direct Investment

Net inflow of foreign direct investment expressed in proportion of GDP was extracted from World Development Indicator. Net inflow of foreign direct investment is derived from new investment inflows in acquiring at least ten percent management interest of any business entities in a country deduct disinvestment. It is the total of equity capital, earnings on reinvestment, long term and short term capital in the balance of payment.

3.1.2.3 Trade Openness

Trade variable extracted from World Development Indicator is the sum of exports and imports of goods and services expressed in current USD. This variable serves as a proxy for trade openness.

3.1.2.4 Government Spending

The general government final consumption spending expressed in current USD was extracted from World Development Indicators. General government final consumption spending consists of government spending on all goods and services, national defense and security, except military expense.

3.1.2.5 Human Capital

Gross secondary school enrollment was extracted from World Development Indicators. Secondary school enrollment ratio serves as a proxy to measure the human capital development in a country. This proxy for human capital is not expressed in natural logarithms after considered the criticism by Benhabib and Spiegel (1994).

All the variables are transformed into log-linear model because this specification can enhance the precision of the results (Shahbaz, 2012). Besides, log-linear model also allow the estimates coefficients to be interpreted as elasticities.

3.2 Econometric Model

The functional form of growth model is construed as below:

Growth = F (Corruption, Investment, Trade Openness, Government Spending, Human Capital) (Eq. 3.1)

$$GDPPC_t = F (ICRG_t, FDI_t, TRADE_t, GOV_t, HC_t) \quad \text{(Eq. 3.2)}$$

Log-linear model is use as it can provide more efficient results (Shahbaz, 2012).

$$\ln GDPPC_t = \alpha_0 + \alpha_1 \ln ICRG_t + \alpha_2 FDI_t + \alpha_3 \ln TRADE_t + \alpha_4 \ln GOV_t + \alpha_5 HC_t + \mu_t \quad \text{(Eq. 3.3)}$$

3.3 Econometric Techniques

In this study, ARDL approach is used to examine the long run relationship between corruption and growth in Malaysia. However, unit root test need to be conducted to ensure all the series have achieved stationary before proceed to test the long run relationship.

3.3.1 Unit Root Test

Augmented Dickey-Fuller (ADF) test is exercised to determine whether all the variables have achieved properties of stationarity to avoid spurious regression and misleading conclusion. Spurious regression arises when the R^2 is greater than the value of Durbin Watson. Subsequently, standard error of the estimated parameter will become biased and inefficient, t-ratio and p-value become invalid will lead to misleading conclusion. According to Kyung,

Pesaran and Shin (2003), the benefit of ADF includes it is able to test for a bigger and more complex time series model. Intercept with trend will be chosen when testing in level form while intercept will be selected when testing in first difference. Testing unit root in first difference is necessary if the series does not achieve stationary in level form.

Even though ARDL cointegration approach allows variables to achieve stationary at different integrated of order, however, the unit root test is still necessary to ensure that none of the variables follow integrated of order 2 (I~2). When there is any variable follows integrated of order 2, the ARDL cointegration method is no longer applicable because the F-statistic produced by Pesaran, Shin and Smith (2001) will no longer valid. On the other hand, the optimal lag length is determined by Schwarz Information Criteria (SIC) in order to avoid autocorrelation between error terms to reinforce the robustness of the results.

3.3.2 ARDL Approach to Cointegration

The test of cointegration in this study is using ARDL bounds testing method to investigate the long run relationship between corruption level and Malaysia's economic growth, while taking into consideration of other macroeconomic variables such as investment, trade, government spending and human capital (Pesaran & Pesaran, 1997; Pesaran & Shin, 1999; Pesaran et al., 2001). The cointegration concept was introduced by Granger (1981) along with Granger and Weiss (1983) to illustrate that if two or more series are to form a long run equilibrium relationship then the series will tend to move together over time even though each of the series is not stationary (Gujarati & Porter, 2010).

ARDL approach has an advantage as it is applicable regardless the stationary properties of each independent variable, that is, it does not require

all the independent variables to be integrated at the same order solely at I(0) or I(1) (Pesaran & Pesaran, 1997). According to Harris and Sollis (2003), ARDL approach has a comparative advantage over Johansen and Juselius test and Engle-Granger two step procedures because it is able to produce more accurate and reliable results in small sample size such as this study. In addition, ARDL approach can presents unbiased parameters for the model. Besides, ARDL approach can tolerates the model with uneven lag length unlike the Johansen's VECM (Ahmed, Muzib & Roy, 2013).

ARDL approach has two stages procedures in estimating the long run relationship between corruption and growth. The first stage is to investigate the existence of long run relationship while the second stage is to estimate the short run and long run coefficients and the criteria to proceed to second stage is that long run relationship must be established in first stage (Ahmed, Muzib and Roy, 2013). The Wald F-Statistic in ARDL bounds testing method is to test the existence of long run relationship in unrestricted equilibrium correction model (UECM).

In order to study the long run relationship between corruption and economic growth in Malaysia, the equation of unrestricted error correction model (UECM) is construed as follow:

$$\Delta \ln GDPPC_t = \alpha_0 + \alpha_{ICRG} \ln ICRG_{t-1} + \alpha_{FDI} \ln FDI_{t-1} + \alpha_{TRADE} \ln TRADE_{t-1} + \alpha_{GOV} \ln GOV_{t-1} + \alpha_{HC} \ln HC_{t-1} + \sum_{g=0}^{l} \alpha_g \Delta \ln GDPPC_{t-1} + \sum_{h=0}^{m} \alpha_h \Delta \ln ICRG_{t-1} + \sum_{i=0}^{n} \alpha_i \Delta \ln FDI_{t-1} + \sum_{j=0}^{o} \alpha_j \Delta \ln TRADE_{t-1} + \sum_{k=0}^{p} \alpha_k \Delta \ln GOV_{t-1} + \sum_{l=0}^{q} \alpha_l \Delta \ln HC_{t-1} + \mu_i$$

(Eq. 3.4)

The null hypothesis to test the existence of long run relationship is stated as H_o: $\alpha_{GDPPC} = \alpha_{FDI} = \alpha_{TRADE} = \alpha_{GOV} = \alpha_{HC} = 0$, which specifies there is no long run relationship while alternative hypothesis is stated as H_1: At least one $\alpha_x \neq 0$

(where x = lnGDPPC, FDI, lnTRADE, lnGOV and HC), specifies long run relation exist if at least one of the independent variables is not equal to zero.

Next, the existence of long run relationship is determined by computed F-statistic whether to reject or accept H_o. If the computed F-statistic is greater than upper critical bound, null hypothesis is rejected and conclude that the model contains long run relationship. On the other hand, if the computed F-statistic is lower than lower critical bound, null hypothesis is accepted and conclude that the model does not contains long run relationship. However, if the F-statistic falls between lower and upper critical bound, then the existence of long run relationship in this model becomes inconclusive (Pesaran et al., 2001).

Once cointegration exits, the long run model can be regressed as:

$$lnGDPPC_t = \beta_0 + \sum_{i=0}^{n}\beta_1\ lnGDPPC_{t-1} + \sum_{i=0}^{n}\beta_2\ lnICRG_t + \sum_{i=0}^{n}\beta_3\ FDI_t + \sum_{i=0}^{n}\beta_4\ lnTRADE_t + \sum_{i=0}^{n}\beta_5\ lnGOV_t + \sum_{i=0}^{n}\beta_6\ HC_t + \mu_t \quad \text{(Eq. 3.5)}$$

Next, the error correction model (ECM) has incorporated an error correction term (ECT) associated with the long run equation to form a short run model as follow:

$$\Delta lnGDPPC_t = \gamma_0 + \sum_{i=0}^{n}\gamma_1\ \Delta lnGDPPC_{t-1} + \sum_{i=0}^{n}\gamma_2\ \Delta lnICRG_t + \sum_{i=0}^{n}\gamma_3\ \Delta FDI_t + \sum_{i=0}^{n}\gamma_4\ \Delta lnTRADE_t + \sum_{i=0}^{n}\gamma_5\ \Delta lnGOV_t + \sum_{i=0}^{n}\gamma_6\ \Delta HC_t + \delta ECT_{t-1} + \mu_t \quad \text{(Eq. 3.6)}$$

The ECT_{t-1} captures the residual in the long run model and δ represents the speed of adjustment in the short run towards long run equilibrium. The sign of ECT_{t-1} must be negative value and statistically significant. In addition, the coefficient of ECT_{t-1} must fall within the range from 0 to -1 (Ahmed, Muzib & Roy, 2013).

3.4 Channel Methodology

Channel Methodology developed by Tavares and Wacziarg (2001) is applied to examine through which channels of transmission the corruption is likely to influence economic growth whereby a set of additional five equations have been formed. The growth equation is regressed on consumption per capita and the four channels of transmission. The remaining four transmission channels equations are regressed on ICRG index and relevant independent variables based on the previous researchers' empirical literature. The regression of FDI channel consists of corruption index, GDP, trade, government spending and domestic credit provided by financial sector (Mauro, 1995; Hericourt & Poncet, 2009; Belloumi, 2014; Bengoa & Sanchez, 2003; Tariq & Ahmad, 2008). The trade channel is regressed on corruption index, GDP, government spending, FDI, human capital, real effective exchange rate, consumption per capita and unemployment rate (Duasa, 2007; Muller, 2008; Khraiche, 2014; Auer & Mehrotra, 2014; Egger, Larch & Pfaffermayr, 2004; Henri, Gert & Piet, 2005; Dutt, Mitra & Ranjan, 2007; Mark & Maria, 2004). For the government consumption equation, corruption index, GDP per capita, FDI, trade and human capital are included (Loizides & Vamvoukas, 2005; Ifeakachukwu, Omodadepo & Olosuen, 2013; Dixit, 2014; Quiggin, 1999). Human capital regression has incorporated corruption index, GDP per capita, FDI, trade and public spending on education (Yildirim & Tosuner, 2014; Annabi, Harvey, & Lan, 2011). Ordinary Least Square (OLS) estimation is applied to investigate the effect of transmission channels on growth as well as the effect of corruption on each channel. Eventually, the effect of corruption on growth transmitted through different channels can be derived by multiplying the effect of transmission channels on growth and effect of corruption on each intermediating factor.

$$\ln GDPPC_t = \delta_0 + \delta_1 FDI_t + \delta_2 \ln TRADE_t + \delta_3 \ln GOV_t + \delta_4 HC_t + \delta_5 \ln CPC_t + \mu_t \quad \text{(Eq.3.7)}$$

$$FDI_t = \varphi_0 + \varphi_1 \ln ICRG_t + \varphi_2 \ln GDP_t + \varphi_3 \ln TRADE_t + \varphi_4 \ln GOV_t + \varphi_5 \ln DCFS_t + \mu_t \quad \text{(Eq.3.8)}$$

$$\ln TRADE_t = \lambda_0 + \lambda_1 \ln ICRG_t + \lambda_2 \ln GDP_t + \lambda_3 \ln GOV_t + \lambda_4 HC_t + \lambda_5 FDI_t + \lambda_6 REER_t + \lambda_7 \ln CPC_t + \lambda_8 UN + \mu_t \quad \text{(Eq.3.9)}$$

$$\ln GOV_t = \chi_0 + \chi_1 \ln ICRG_t + \chi_2 \ln GDPPC_t + \chi_3 FDI_t + \chi_4 \ln TRADE_t + \chi_5 HC_t + \mu_t \quad \text{(Eq.3.10)}$$

$$HC_t = \theta_0 + \theta_1 \ln ICRG_t + \theta_2 \ln GDPPC_t + \theta_3 FDI_t + \theta_4 \ln TRADE_t + \theta_5 \ln PSE_t + \mu_t \quad \text{(Eq.3.11)}$$

Table 3.2: Model Specification for Growth and Transmission Channels Equations

Dependent variables	lnGDPPC	FDI	lnTRADE	lnGOV	HC
Equation	(3.7)	(3.8)	(3.9)	(3.10)	(3.11)
Independent variables					
Corruption Index		*	*	*	*
GDP per capita				*	*
GDP		*	*		
FDI	*		*	*	*
Trade	*	*		*	*
Government spending	*	*	*		
Human Capital	*		*	*	
Consumption per capita	*		*		
Domestic credit provided by financial sector		*			
Real effective exchange rate			*		
Unemployment			*		
Public spending on education					*

Adapted from: World Bank Indicator

3.5 Diagnostic Checking

The results will become biased, inconsistent and inefficient if econometric problems such as heteroscedasticity, serial correlation, model mis-specification and non-normality of error term occur in the model. Therefore, diagnostic checking is essential to ensure the model is free from econometric problems.

3.5.1 Autoregressive Conditional Heteroscedasticity (ARCH) Test

Heteroscedasticity means the variance of error terms are not constant and vary depends on the value of independent variables. ARCH test is the most appropriate test to detect heteroscedasticity in time series data. The null hypothesis of heteroscedasticity test is set as there is no heteroscedasticity problem while alternative hypothesis is set as there is heteroscedasticity problem in the model. The null hypothesis will be rejected if p-value of χ^2 is less than the significance level (α) at 1%, 5% or 10%. Besides, the minimum Akaike Information Criterion (AIC) and SIC of ten lagged residuals will be chosen in order to find out the best lag length. The ARCH test will be performed by using E-View 6 (Gujarati & Porter, 2010).

3.5.2 Breusch-Godfrey Serial Correlation LM Test

Serial correlation happens when the error terms correlate with each others. Serial correlation is most likely occurs in time series data. The benefits of using Breusch-Godfrey Serial Correlation LM test instead of Durbin-Watson and Durbin's h test is because this test is able to detect higher orders of autocorrelation as well as the lagged dependent variable. The null hypothesis of LM test is set as there is no autocorrelation problem while alternative

hypothesis is set as there is autocorrelation problem in the model. The null hypothesis will be rejected if p-value of χ^2 is less than the significance level (α) at 1%, 5% or 10%. Besides, the minimum AIC and SIC of ten lagged residuals will be chosen in order to find out the best lag length. The Breusch-Godfrey Serial Correlation LM test will be performed by using E-View 6 (Gujarati & Porter, 2010).

3.5.3 Ramsey RESET Test

Ramsey RESET test can only be used to detect wrong functional form of dependent and independent variables. The null hypothesis of Ramsey RESET test is indicated as the model specification is correctly formed while alternative hypothesis is indicated as the model specification is wrongly formed. The null hypothesis will be rejected if p-value of F-statistic is less than the significance level (α) at 1%, 5% or 10%. The Ramsey RESET test will be performed by using E-View 6 (Gujarati & Porter, 2010).

3.5.4 Jarque-Bera (JB) Test

Jarque-Bera (JB) test is used to identify the normality of error term. The null hypothesis of JB test is indicated as the error term is normally distributed while alternative hypothesis is indicated as the error term is not normally distributed. The null hypothesis will be rejected if p-value of χ^2 is less than the significance level (α) at 1%, 5% or 10%. The JB test will be performed by using E-View 6 (Gujarati & Porter, 2010).

3.5.5 CUSUM and CUSUMSQ Test

Cumulative sum of recursive residuals (CUSUM) and cumulative sum of recursive residuals of squares (CUSUMSQ) introduced by Brown, Durbin and Evans (1975) are recursive estimates that are useful in testing the stability of the coefficients (Pesaran & Pesaran, 1997). The plot of CUSUM and CUSUMSQ must fall within the range of the straight line at 5% significant level to indicate that the parameters are stable. The CUSUM and CUSUMSQ test will be performed by using E-View 6.

Chapter 4: Results and Interpretation

4.0 Introduction

This chapter interprets the results of the long run relationship between corruption and Malaysia's economic growth as well as through which intermediating factors the corruption is likely to influence economic performance.

Table 4.1 and table 4.2 present the outcome of ADF unit root test and diagnostic checking for equation 3.3. Besides, Figure 4.1 and Figure 4.2 illustrate the structural stability of the model 3.3 by using CUSUM and CUSUMSQ stability test. The result of bounds testing for cointegration is presented in table 4.3. After long run relationship has established, the results of long run and short run estimations are shown in table 4.4 and table 4.5 respectively. Table 4.6 is the results of diagnostic checking for long run and short run estimation. Table 4.7 and Table 4.8 shows the results of diagnostic checking as well as the results of the effect of corruption on economic growth through various channels of transmission

4.1 Unit Root Test

Table 4.1 (refer to Appendix 1) illustrates the result of Augmented Dickey-Fuller (ADF) unit root test at level form and first difference form. None of the variable achieves stationarity at level form with intercept and trend because the t-statistics are lower than the critical value at 1%, 5% and 10% significance. Therefore, it is necessary to proceed to first difference form with intercept only. All the t-statistics of the variables indicate the rejection of null hypothesis at 1% significance level. As a result, all the variables achieved stationary at first difference and follow integrated order of I ~ (1).

Table 4.1: Results of Augmented Dickey-Fuller Unit Root Test

Variables	ADF	
	Level form (Intercept with trend)	First difference (Intercept)
lnGDPPC	-2.4466	-4.6870***
lnICRG	-1.7138	-5.4418***
FDI	-2.6345	-4.5393***
lnTRADE	-1.3524	-4.4996***
lnGOV	-1.9218	-4.7710***
HC	-1.7881	-4.9030***
Remark: ***, ** and * referring to the rejection of null hypothesis at significance level 1%, 5% and 10% respectively.		

4.2 Diagnostic Checking and Bounds Test for Cointegration

Before proceeding to ARDL bounds testing and estimation of long run and short run models, several diagnostic checking which include normality test, autocorrelation, heteroscedasticity, model specification and structural stability test have been carried out to ensure the model 3.3 is free from econometric problems. Results from table 4.2 (refer to Appendix 2) show that the equation 3.3 does not commit any econometric problems at 5% significant level. The p-value of Jarque-Bera normality test (0.3483), serial correlation LM test (0.8195), ARCH test (0.5017) and Ramsey RESET test (0.2598) are greater than α at 0.05, therefore the null hypothesis of normally distribution of error term, no autocorrelation problem, no heteroscedasticity problem and model is correctly specified and must not be rejected.

Figure 4.1 and Figure 4.2 show no evidence of structural instability of the model throughout the period of the study because the plot of CUSUM and CUSUMSQ are fall within the straight line of critical bounds at 5% significant level.

Table 4.2: Results of Diagnostic Checking for Eq. 3.3

Diagnostic testing	Chi-square/F-statistic	p-value	Conclusion
Jarque Bera normality test	2.1089	0.3483	Normally distributed
Serial correlation LM test	0.0520	0.8195	No autocorrelation problem
ARCH test	0.4512	0.5017	No heteroscedasticity problem
Ramsey RESET test	1.3347	0.2598	No model mis-specification bias
Remark: ***, ** and * referring to the rejection of null hypothesis at significance level 1%, 5% and 10% respectively.			

Figure 4.1

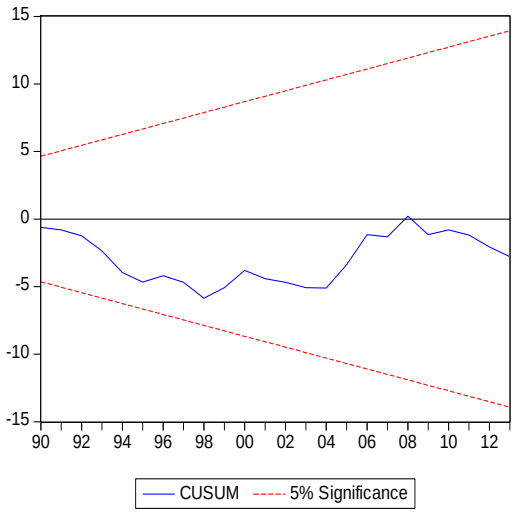
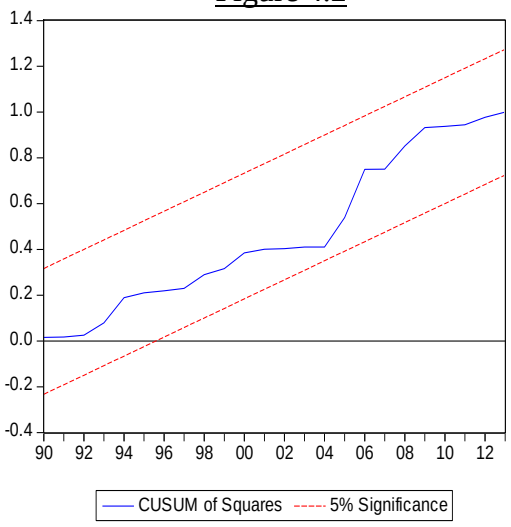


Figure 4.2



After confirming the model is free from econometric problems and no structural instability, ARDL bound testing is the most appropriate test to examine the existence of long run relationship between corruption and economic growth in

this study because the sample size is small (Harris & Sollis, 2003). The Wald F-statistic showed in table 4.3 (refer to Appendix 3) for equation 3.3 presents the existence of long run relationship between the variables and economic growth in Malaysia. The lower critical value provided by Pesaran et al. (2001) that follows I~(0) is 2.62 while upper critical value that follows I~(1) is 3.79 at 5% significance. If the F-statistic is less than lower critical value, null hypothesis has to be accepted and should reject null hypothesis when F-statistic is greater than upper critical value which indicate long run relationship is found between the variables. However, if the F-statistic is fall within lower and upper critical value, the decision becomes inconclusive. Since the F-statistic of equation 3.3 is 3.87, which is more than upper critical value of 3.79 at 5% significant level, conclusion can be drawn as long run relationship is found between the series and Malaysia's economic growth. On the other hand, the optimal lag length for GDP per capital, ICRG index, FDI, trade openness, government spending and human capital are (1,3,2,0,0,2) respectively and chosen based on the lowest SIC.

Table 4.3: Result of Bound Tests for Cointegration

Equation 3.3	Optimal lag length	F-Statistic	Conclusion
$F_{lngdppc}$ (lnGdppc/lnIcrg, Fdi, lnTrade, lnGov, Hc)	(1,3,2,0,0,2)	3.870242 **	Cointegration
Remarks: The critical values are extracted from Table C1.iii: unrestricted intercept and no trend by Pesaran et al. (2001). ** indicates significant at 5% for k=5.			

4.3 The Long Run Relationship between Corruption and Malaysia's Economic Growth

Results from table 4.4 (refer to Appendix 4) illustrates that corruption will negatively retards growth in the long run but trade openness and government consumption have positive impact to the economic growth. Besides, FDI and human capital are statistically insignificant to affect growth in long run.

The finding of insignificant effect of FDI on economic growth is consistent with several studies (Chen & Feng, 2000; Kenny & Williams, 1999; Barro & Martin, 1995). Kenny and William (1999) further reported that only investment itself cannot fully explain the deviation in growth. In addition, the insignificant results may be due 3 noticeable fluctuations occurred in 1987 to 1995, 1998 to 2000 and 2007 to 2009 during financial crisis. The insignificant result might become significant when the periods of study change from periods to another. On the other hand, the insignificant effect of human capital on economic growth in this study is similar to the studies of Benhabib and Spiegel (1994) as well as Krueger and Lindahl (2001). Topel (1999) criticized that this insignificant phenomenon might be arises from mis-specification of the human capital variable in linear form. The author claimed that it is more appropriate to express the human capital in exponential function instead of linear function.

A 1% increase in the corruption index (lower corruption level) will stimulates economic growth by 0.34% in the long run. This negative relationship between corruption and economic growth is consistent with the studies of Farooq al et. (2013), Paul (2010), Adenike (2013) and Dridi (2013) for the case of Pakistan, Bangladesh, Nigeria and Tunisia respectively. The similarity between Malaysia, Pakistan, Bangladesh, Nigeria and Tunisia is that all are developing economies.

Besides, the results in this study support the cross-country study on corruption and economic growth by Rock and Bonnett (2004) who stated that corruption is detrimental to small and developing countries such as Malaysia but accelerate growth in large East Asian newly industrialized countries such as China and Thailand. Rock and Bonnett (2004) further explained that the negative effect of corruption on economic growth in small developing countries is greater and more damaging than in large developing countries. In addition, there are more studies have revealed a negative impact of corruption on the economic growth (Ehrlich & Lui, 1999; Welsch, 2004).

Moreover, the negative effect of corruption on investment, trade openness, government spending and human capital will hinder economic growth. From the investment and trade openness perspective, corruption will discourage FDI and trade because paying bribe before starting a business act as inefficient tax which will increase the transaction cost and production cost for foreign investors (Wei, 2000). When the transaction cost and production cost is high, producers are refused to produce which will lead to lower production and economic growth. Lambsdorff (2003) points out that exporter from less corrupt nation experience difficulty in trading with importer from high corrupt nation. From the government and human capital perspective, corruption will distort allocation of government spending on public projects and education where the government funds were channeled into various campaigns to combat corruption (Tanzi & Davoodi, 2002). As a result, human capital accumulation become weaker which will lead to lower productivity, lower individual earning and hinder economic growth.

On the other hand, 1% raise in trade openness and government consumption will accelerates Malaysia's economic growth by 0.25% and 0.56% respectively in the long run. This finding support the results of Shahbaz (2012) who claimed that trade openness will lead to higher total factor productivity, domestic production and subsequently enhance economic growth. Moreover, trade liberalization in Malaysia has open new market and provides more opportunities for importers and exporters. Edwards (1992) revealed that developing and open economies grow quicker because the nations can absorb new technology through international trade and lead to long turn growth. Apart from that, government spending on public projects such as improving infrastructure, goods and services, invest in technology in supporting private sectors can reduce the unemployment rate effectively which in turn promotes long term economic growth (Abdullah, 2000; Glomm & Ravikumar, 1997). As a result, the positive economic growth is largely contributed by government spending followed by trade openness while higher corruption will impedes economic growth in the long term.

ICRG corruption index, trade openness and government spending are statistically significant at 1% while FDI and human capital are insignificant in the short run. The short run coefficient of ECT is presented in table 4.5 (refer to Appendix 5). The coefficient of ECT is statistically significant at 1%, and it is less than one with appropriate sign. The coefficient of ECT of - 0.6948 indicates that the speed of adjustment is moderate towards the long run equilibrium path. The short run will adjust 69.48% per year to achieve long run relationship and it takes about 1.4 years to fully adjust to long run equilibrium.

Table 4.4: Estimated Long Run Coefficients of ARDL Approach

Variable	Optimal lag length	Coefficient	Std. Error	t-statistic (p-value)
lnIcrg	3	0.3428	0.1435	2.3893(0.0259)**
FDI	2	-0.0017	0.0052	-0.3387 (0.7380)
lnTrade	0	0.2542	0.0396	6.4100(0.0000)***
lnGov	0	0.5667	0.0640	8.8481(0.0000)***
Hc	2	-0.0018	0.0037	-0.4793 (0.6364)
Remarks: ***, ** and * referring to the rejection of null hypothesis at significance level 1%, 5% and 10% respectively.				

Table 4.5: Estimated Short Run Coefficient of ARDL Approach

Variable	Optimal lag length	Coefficient	Std. Error	t-statistic (p-value)
lnIcrg	3	0.2144	0.0897	2.38999(0.0280)**
FDI	2	-0.0034	0.0033	-1.03883(0.3126)
lnTrade	0	0.3584	0.0706	5.07238(0.0001)***
lnGov	0	0.5671	0.0682	8.31176(0.0000)***
Hc	2	0.0035	0.0026	1.3228 (0.2024)
ECT_{t-1}		-0.6948	0.2083	-3.3341 (0.0037)***
Remarks: ***, ** and * referring to the rejection of null hypothesis at significance level 1%, 5% and 10% respectively.				

4.4 Diagnostic Checking for Long Run and Short Run Estimation

Diagnostic checking results from table 4.6 (refer to Appendix 4 and 5) indicate that neither the long run regression nor short run regression have committed any econometrics problem at 5% significant level. This is because all the p-value are greater than α at 0.05, therefore the null hypothesis of normally distribution of error term, no autocorrelation problem, no heteroscedasticity problem and model is correctly specified and must not be rejected.

Table 4.6: Results of Diagnostic Checking for Long Run and Short Run Estimation

Diagnostic testing	Long run estimation	Short run estimation	Conclusion
Jarque Bera normality test	1.7266 (0.4217)	0.4551 (0.7964)	Normally distributed
Serial correlation LM test	0.0163 (0.8982)	1.2915 (0.2558)	No autocorrelation problem
ARCH test	0.2317 (0.6302)	1.4480 (0.2288)	No heteroscedasticity problem
Ramsey RESET test	3.4063 (0.0791)	0.2821 (0.6021)	No model mis-specification bias
Remark: ***, ** and * referring to the rejection of null hypothesis at significance level 1%, 5% and 10% respectively.			

4.5 Diagnostic Checking for Equation of Transmission Channels

Before proceeding to examine the effect of corruption on economic growth via channels of transmission, several diagnostic checking which include normality test, autocorrelation, heteroscedasticity, model specification and structural stability test have been carried out to ensure the model 3.7 to 3.11 is free from econometric problems. Diagnostic checking results from table 4.7 (refer to Appendix 6 to 10) indicates that neither the growth equation (eq. 3.7) nor equation

of each transmission channel (eq. 3.8 to eq. 3.11) have committed any econometrics problem at 5% significant level. This is because all the p-value are greater than α at 0.05, therefore the null hypothesis of normally distribution of error term, no autocorrelation problem, no heteroscedasticity problem and model is correctly specified must not be rejected.

Table 4.7: Results of Diagnostic Checking for Equation 3.7 to Equation 3.11

	lnGDPPC	FDI	lnTRADE	lnGOV	HC
Equation	(3.7)	(3.8)	(3.9)	(3.10)	(3.11)
Jarque Bera normality test	0.9148 (0.6329)	2.4508 (0.2936)	1.4306 (0.4890)	2.1664 (0.3385)	0.8192 (0.6639)
Serial correlation LM test	1.3655 (0.2426)	1.4597 (0.2270)	0.0271 (0.8690)	0.1034 (0.7477)	2.4810 (0.1152)
ARCH test	0.8094 (0.3683)	0.3779 (0.5387)	0.2335 (0.6289)	0.2956 (0.5866)	0.3280 (0.5668)
Ramsey RESET test	0.6805 (0.4179)	2.3165 (0.1416)	1.3630 (0.2591)	2.1139 (0.1595)	0.1935 (0.6641)
Remark: Figures in parenthesis presents the p-value. ***, ** and * referring to the rejection of null hypothesis at significance level 1%, 5% and 10% respectively.					

4.6 Effect of Corruption on Economic Growth via Channel of Transmissions

After study the long run relationship between corruption and growth and confirm that none of the model has econometric problems, Table 4.8 shows the results of the effect of corruption transmitted through each intermediating factor.

Table 4.8: Results of Effect of Corruption on Growth through Each Transmission Channel

Transmission channel	Channel's effect on growth	Corruption's effect on each channel	Corruption's effect on growth through each channel
FDI	-0.0027 (0.5689)	11.7514 (0.0004)	-0.0317
Trade	0.2721 (0.0000)***	-0.0909 (0.0000)***	-0.0247***
Government	0.2439 (0.0170)**	-0.7427 (0.0001) ***	-0.1811***
Human capital	-0.0120 (0.0000)***	-18.6967 (0.0003)***	0.2256***
Remarks: Figures in parenthesis presents the p-value. ***, ** and * denote statistically significant at 1%, 5% and 10% respectively.			

The table 4.8 summarizes the effect and the linkage between corruption and Malaysia's economic growth through various intermediating factors. The second column represents the effects of FDI, trade openness, government spending and human capital on growth are -0.0027, 0.2721, 0.2439 and -0.0120 respectively based on equation 3.7 (refer to Appendix 6). The third column represents the effect of corruption on FDI, trade openness, government spending and human capital are 11.7514, -0.0909, -0.7427 and -18.6967 respectively based on equation 3.8 to 3.11 (refer to Appendix 7 to 10). The coefficients in the last column indicate the corruption's effect on growth through each channel by multiplying second and third column. The effects of corruption on economic growth through each of the transmission channel need to be interpreted cautiously in order to avoid misleading conclusion. Positive sign indicates negative relationship because an increase in corruption index (the corruption level decrease) is associated with higher economic growth. Negative sign indicates positive relationship because an increase in corruption index (the corruption level decrease) is associated with lower economic growth.

According to the results in Table 4.8, 1% increase in corruption index (lower corruption level) will lead to lower growth by 0.03% through FDI inflow. The positive relationship between corruption and economic growth through investment is in line with the study by Lui (1985). This finding supports the queue model proposed by Lui (1985) indicates that higher corruption is desirable

because offering bribe is able to help entrepreneurs to save costs in term of time and uncertainty. Besides, paying bribe to government authorities can fasten and simplify the procedures to obtain business permits to start up a business. Moreover, public contracts are usually awarded to the firms who can offer highest grafts in the bidding process (Beck & Maher, 1986; Lien, 1986). However, FDI is statistically insignificant to affect growth in Malaysia. This is possibly due to three large fluctuations on FDI inflow to Malaysia happened in the year from 1987 to 1995, 1998 to 2000 and 2007 to 2009. Therefore, the effect of corruption on growth transmitted through FDI inflow is statistically insignificant and is similar with the results from the researches done by Mauro (1995), Mo (2001), Pellegrini and Gerlagh (2004) and Pellegrini (2011).

Next, 1% increase in corruption index (lower corruption level) will lower the growth by 0.02% and 0.18% through trade openness and government consumption channels respectively. This means that higher corruption level is likely to promote economic growth through trade openness and government consumption channels. The results are consistent with the study by Hodge et al. (2009). The rationale behind is that when a country imposed high trade barriers, it provides incentive for government officers to engage in rent-seeking activities. In addition, global competitiveness becomes more intensive when Malaysia is moving towards trade liberalization. Therefore, exporters and importers are more willing to corrupt the government officers in order to ease the trade activities. When trading environment becomes more liberalized, this will encourage the transfer of technology between countries and hence increase the factor productivity and economic growth. This finding is supported by rent seeking theory.

Besides, higher corruption is accompanied by higher government spending and which will enhance economic growth. This result is consistent with the finding of Dridi (2013). Higher corruption will increase government spending because corrupt bureaucrats tend to spend more public resources on those items which are difficult to monitor the exact value and also will try to keep the dishonest activity in secret (Mauro, 1998). Corrupt bureaucrats will loosen the

rules and regulations after receiving grafts. As a result, investment and trading activities become trouble-free, efficient and in turn accelerate economic growth.

On the other hand, growth can be boosted by 0.23% through human capital when corruption index climb by 1% (lower corruption level). This signifies that higher corruption level will retards growth through human capital channel and consistent with the results of Dridi (2013). The reason is due to students are willing to corrupt educators in order to obtain good grades but with no actual knowledge gained. As a result, education system with corruption will lower the quality of human capital which is disadvantage to the future development of the country (Latov & Latova, 2008). Murphy et al. (1991) also pointed out that corruption will cause misallocation of talented individuals from productive activities to rent-seeking activities if the returns on productive activities are lower than rent-seeking activities. Consequently, corrupted economies are associated with lower human capital accumulation and lower productivity which in turn harm economic performance.

The total positive indirect effect of corruption on growth transmitted through the mechanisms of trade openness and government consumption is accounted for 0.20% while the total negative indirect effect of corruption on growth transmitted through human capital is 0.23%. This result indicates that the negative effect of human capital has larger impact on growth than trade openness and government spending. However, the net total effect of corruption on growth transmitted through the three mechanisms which are trade openness, government consumption and human capital will retards growth by 0.03% when there is 1% increase in corruption index (lower corruption level). The results of this study show that corruption is beneficial to Malaysia's economic growth via greater trade openness and government spending but will impedes growth via human capital. This suggests that moderate level of corruption is favorable to economic performance through trade openness and government spending but the benefits will start to diminish when the corruption exceeds the optimal level.

Chapter 5: Discussion, Conclusion and Implications

5.0 Conclusion

This section presents the summary of the study. The findings suggested that there is significant relationship between corruption and economic growth in Malaysia. This happens through various transmission channels such as trade openness, government expenditure, investment and human capital. Besides, this section includes the policy recommendations, limitations of the study and recommendations for future researchers.

5.1 Summary

Based on the result in chapter 4, positive effect of corruption on economic growth through trade openness and government expenditure is offset by negative effect of corruption on economic growth through human capital. Therefore, corruption is harm to Malaysia's economic growth through transmission channels. Corruption is positively significant to influence economic growth through transmission channel of trade openness. The result is consistent with Krueger (1974) and Hodge et al. (2009). Trade provides incentive for government official involve in rent seeking activities. Rent seeking theory applied in the case of approval the application of certain procurement, such as import license. Queue model applied where bureaucrats distribute license to traders who bribe for accelerate the procedures. High trade barriers are associated with corrupted economies may allow more sharing of technology knowledge among trading partners. Transaction cost theory also applied when international traders are more willing to corrupt as they consider bribes are part of business cost when involve in international trade.

This study concluded that the impact of corruption on economic growth through transmission channel of government expenditure is positively significant. The study's findings supported by Delavallade (2006) and Beck and Maher (1986). Corruption affects the structure of allocation government expenditure through supply and demand government project. Rent seeking theory applied when government official seek for extra income by supplying the public project to contractors. Contractors are willing to offer high bribes in bidding process of large development project. Such large development project can boost up economic growth by maximizing society welfare and reduce the unemployment problem which is against transaction cost theory.

This study found that there is no significant impact of corruption on economic growth through transmission channel of investment. This is does not support queue model. Asiedu (2002) pointed out that a good measure of FDI should include the reliability and availability of data. However, there are huge fluctuations on FDI inflow that happen in Malaysia from year 1987 to 1995, 1998 to 2000 and 2007 to 2009. In contrast, the result obtained from this study differs from Zuzana (2014) and Omri and Kahouli (2014). They found that investment is significant factor that influences economic growth.

This study proved that the impact of corruption on economic growth through transmission channel of human capital is negatively significant. Latova and Latov (2008), Dridi (2013) and Heyneman (2004) explained that the practice of corruption could impede the economic growth through human capital. This is supported by rent seeking theory. Individual have incentive to offer and accept bribe in the educational institution. Demander and supplier of grading corruption lower the quality of human capital through no actual knowledge transmitted. Corruption gives chances to non-skilled people to obtain high level of professions which required high level of skills and subsequently slow down the economic growth.

5.2 Policy Recommendations

This study found out that there is negative net effect of corruption on Malaysia's economic growth through several transmission channels. Without a doubt, findings of this study suggest that Malaysia government must combat corruption in order to enhance economic performance.

Reforming educational system is a ways to prevent corruption happen in a country (Eschborn, 2004). Formal anti corruption education in schools can be launched as part of reforming education system to combat corruption. It is because appropriately reforming able increase understanding level of causes and impacts of corruption on economic growth. The country of Slovakia had introduced corruption control as a school subject in secondary schools. Informal anti corruption education in school launched through civil campaigns and pupil conferences. In the year of 2010, World Bank Institute gathered fifty young people around the world into Global Youth Anti-Corruption Forum for exchange their experience and formulate action plans in control corruption.

Awareness is one the foremost things needed to combat corruption. Anti-corruption talks and campaigns can rise up the awareness of corruption that happen in public and private sector. Anti-corruption laws and solutions must be introduced to public in order to detect, monitor and prevent corruption. The United Nation' International Anti-Corruption Day is annually observed on December 9 to raise public awareness of corruption and effectively fight against corruption. Corruption can be recognized as a significant phenomenon to citizens through the channels of mass media, such as newspapers, magazine, TVs, radio and internet. Eltantawy and Wiest (2011) found that countries of Philippines, Paraguay and Egypt using mass media transmit the issue of corruption to all citizens. Brazilians use social network such as Facebook to mobilize citizens aware the issues of corruption.

Policy maker should enforce a transparency while implementing policies to stabilize the economy (Mitchell, 1998). A relatively transparent policy which managed executively under laws of legislature could create prevention toward corruption. It also can increase the quality of policies due to open access information and leave no chance for any individual involve in rent seeking activities. Singapore and South Korea are move toward greater transparency in term of government procurement. Both countries publish accurate report on allocation of government expenditure at its e-Government portal. The disclosure of information includes procurement policies and procedures, administrative structure and relevant laws. For instance, Singapore disclose the information on purchases project worth SGD 200,000 in term description of purchase and the name of purchasing ministry or state board.

A country able to eliminate corruption with effort of learning the anti-corruption strategy from least corrupted countries. Since the nature of countries is different, anti-corruption strategy need to be adapted to fit the Malaysia current situation. Malaysia should wisely import and imitate the anti-corruption efforts of other countries to curbing corruption. Independent Commission Against Corruption (ICAC) in Hong Kong is a good agency that Malaysia can properly imitate in order to control corruption. An independent in term of structure, staffing, finance, and power are key components of ICAC successfully reduced the corruption in Hong Kong (Quah, 1995).

5.3 Limitations

This study investigated the impact of corruption on economic growth as measured by Gross Domestic Product (GDP). However, the measurement is generalized and standardized that cannot trace the impact of corruption on various sectors of the economy. The growth in each sector such as manufacturing and agriculture may not be the same in order to cope with economic and environmental change. Besides, this study does not specifically examine the level

of corruption in each sector as well as the impact of corruption level on the growth rate in each sector.

This study does not estimate the optimal corruption level that is beneficial to economic growth. Positive relationship between corruption and economic growth sustain until the corruption reach the optimal level. When corruption level exceeds the optimal level, the impact on economic growth turns into negative (Mendez & Sepulveda, 2006).

Moreover, this study does not capture the impact of financial crisis on the corruption and economic growth. The growth pattern of economy could have critical difference before and after the crisis as well as to the corruption. Back to the economic side, FDI is proved to be insignificant in this study and the trend of its growth is fluctuating for the period 1984 to 2013 in this study. One of the reasons could be the impact from financial crisis.

This study only focuses on how corruption could bring impact to economic growth through several transmission channels while ignoring the reverse impact of economic growth to corruption. The two-way causality between corruption and economic growth might be significant in such a way the reverse influence from GDP to corruption may contribute to different outcome for wider range of analysis (Hodge et al., 2011; Dzhumashev, 2014)

5.4 Recommendations

In order to generate more precise results, future researchers could make more specific analysis on the performance of each industry including agricultural, manufacturing and tertiary and how the corruption influence each sector at different intensive level. According to Ross (1999), poor governance and rent-seeking culture always occur in oil-dependent countries and leads to high

corruption level. Thus, the researchers could include other oil-exporting countries such as Brunei and Saudi Arabia in their research and make comparison to give more ideas about the corruption and economic growth.

Future researchers could estimate the value of optimal corruption level which is the turning point of economic growth from positive to negative. The policymakers could establish criteria to anti-corruption whereby action should be taken when the level of corruption exceeds the optimal level.

Since the economic growth pattern would be change after crisis, future researchers could study the effect of corruption during pre-crisis and post-crisis period. Since the corruption influence economic growth through various mediating factors, the researchers should analyze the effect of financial crisis on the factors as well such as FDI.

In addition, future researchers could make analysis based on bidirectional relationship between corruption and economic growth as the cyclical effect between both variables plays important role in explaining the nature of relation between corruption and economic growth. However, the researchers have to be careful when dealing with the duplication effect of the variables since the effect pass through various transmission channels.

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APPENDICES

Appendix 1: Augmented Dickey-Fuller Test

Level form: Intercept with trend

Null Hypothesis: LNGDPPC has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.446698	0.3499
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

Null Hypothesis: LNICRG has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.713825	0.7191
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

Null Hypothesis: FDI has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.634504	0.2690
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

Null Hypothesis: LNTRADE has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.352423	0.8535
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

Null Hypothesis: LNGOV has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.921853	0.6175
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

Null Hypothesis: HC has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.788112	0.6843
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

First difference: Intercept

Null Hypothesis: D(LNGDPPC) has a unit root

Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.687099	0.0008
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LNICRG) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.441831	0.0001
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

Null Hypothesis: D(FDI) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.539342	0.0013
Test critical values:	1% level	-3.699871	
	5% level	-2.976263	
	10% level	-2.627420	

Null Hypothesis: D(LNTRADE) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.499634	0.0014
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

Null Hypothesis: D(LNGOV) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.771034	0.0007
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

Null Hypothesis: D(HC) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.903015	0.0005
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

Appendix 2: Growth Model (Equation 3.3)

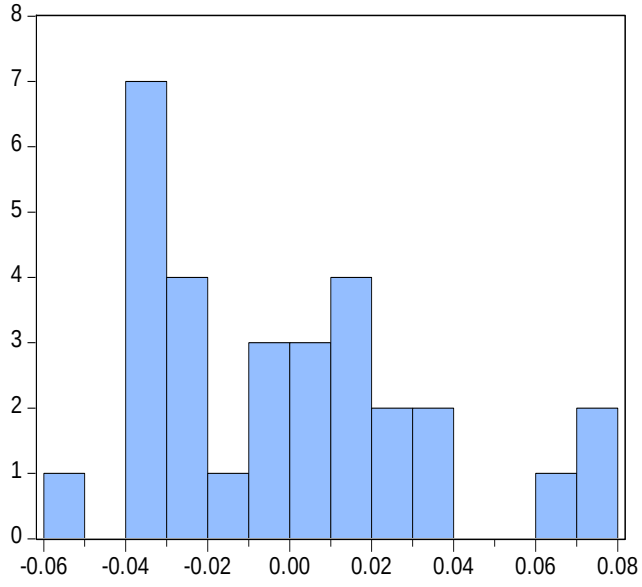
Ordinary Least Squares (OLS)

Dependent Variable: LNGDPPC
Method: Least Squares
Date: 03/12/15 Time: 22:14
Sample: 1984 2013
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNICRG	0.417710	0.105401	3.963077	0.0006
FDI	-0.004343	0.004499	-0.965244	0.3440
LNTRADE	0.256022	0.031203	8.205130	0.0000
LNGOV	0.596037	0.036161	16.48280	0.0000
HC	-0.000888	0.003680	-0.241202	0.8114
C	-12.49307	0.697760	-17.90454	0.0000

R-squared	0.995735	Mean dependent var	8.332130
Adjusted R-squared	0.994846	S.D. dependent var	0.537709
S.E. of regression	0.038602	Akaike info criterion	-3.494163
Sum squared resid	0.035763	Schwarz criterion	-3.213924
Log likelihood	58.41245	Hannan-Quinn criter.	-3.404512
F-statistic	1120.584	Durbin-Watson stat	1.770801
Prob(F-statistic)	0.000000		

Jarque Bera Normality Test



Series: Residuals
Sample 1984 2013
Observations 30

Mean	-2.90e-15
Median	-0.003407
Maximum	0.074391
Minimum	-0.054890
Std. Dev.	0.035117
Skewness	0.607970
Kurtosis	2.543204
Jarque-Bera	2.108967
Probability	0.348372

Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.039991	Prob. F(1,23)	0.8433
Obs*R-squared	0.052071	Prob. Chi-Square(1)	0.8195

ARCH Test

Heteroskedasticity Test: ARCH

F-statistic	0.426782	Prob. F(1,27)	0.5191
Obs*R-squared	0.451263	Prob. Chi-Square(1)	0.5017

Ramsey RESET Test

Ramsey RESET Test:

F-statistic	1.334764	Prob. F(1,23)	0.2598
Log likelihood ratio	1.692352	Prob. Chi-Square(1)	0.1933

Appendix 3: Bounds Test for Cointegration

Ordinary Least Sqaure (OLS)

Dependent Variable: D(LNGDPPC)

Method: Least Squares
Date: 03/02/15 Time: 12:37
Sample (adjusted): 1986 2013
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-21.83029	4.848556	-4.502431	0.0004
LNGDPPC(-1)	-1.540190	0.333207	-4.622315	0.0003
LNICRG(-1)	1.243147	0.368966	3.369269	0.0042
FDI(-1)	-0.004985	0.008702	-0.572865	0.5752
LNTRADE(-1)	0.382334	0.105124	3.636997	0.0024
LNGOV(-1)	0.957850	0.203394	4.709340	0.0003
HC(-1)	0.019413	0.008650	2.244231	0.0403
D(LNGDPPC(-1))	0.097326	0.266077	0.365781	0.7196
D(LNICRG)	0.828861	0.244328	3.392411	0.0040
D(FDI(-1))	0.002210	0.007257	0.304494	0.7649
D(LNTRADE(-1))	-0.130149	0.228397	-0.569834	0.5772
D(LNGOV)	0.792608	0.097205	8.153968	0.0000
D(HC(-1))	-0.012736	0.006740	-1.889484	0.0783

R-squared	0.900267	Mean dependent var	0.059077
Adjusted R-squared	0.820481	S.D. dependent var	0.115344
S.E. of regression	0.048871	Akaike info criterion	-2.894862
Sum squared resid	0.035825	Schwarz criterion	-2.276339
Log likelihood	53.52807	Hannan-Quinn criter.	-2.705773
F-statistic	11.28352	Durbin-Watson stat	1.762937
Prob(F-statistic)	0.000020		

Wald F-Test

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	3.870242	(6, 15)	0.0156
Chi-square	23.22145	6	0.0007

Appendix 4: ARDL Long Run Estimation

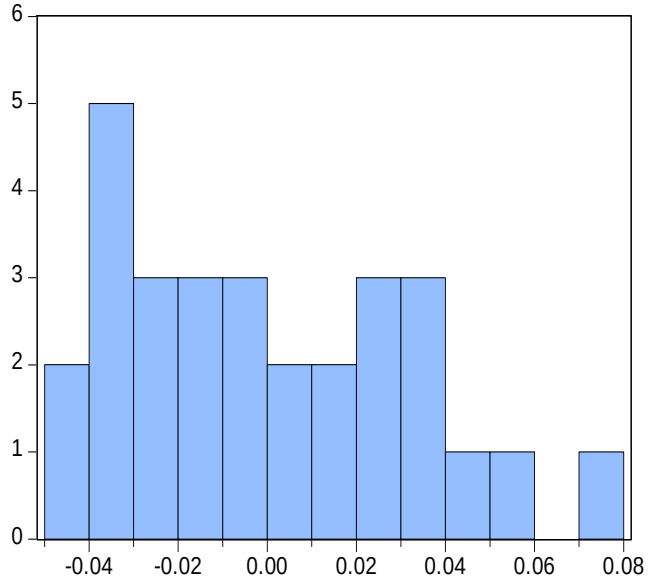
Ordinary Least Square (OLS)

Dependent Variable: LNGDPPC
Method: Least Squares
Date: 03/02/15 Time: 13:00
Sample (adjusted): 1985 2013
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11.86174	1.545303	-7.676000	0.0000
LNGDPPC(-1)	0.027440	0.087709	0.312855	0.7573
LNICRG	0.342869	0.143501	2.389305	0.0259
FDI	-0.001794	0.005295	-0.338761	0.7380
LNTRADE	0.254219	0.039659	6.410081	0.0000
LNGOV	0.566737	0.064051	8.848163	0.0000
HC	-0.001818	0.003792	-0.479341	0.6364

R-squared	0.996312	Mean dependent var	8.353217
Adjusted R-squared	0.995306	S.D. dependent var	0.534453
S.E. of regression	0.036616	Akaike info criterion	-3.570171
Sum squared resid	0.029496	Schwarz criterion	-3.240135
Log likelihood	58.76749	Hannan-Quinn criter.	-3.466808
F-statistic	990.5708	Durbin-Watson stat	1.910712
Prob(F-statistic)	0.000000		

Jarque Bera Normality Test



Series: Residuals
Sample 1985 2013
Observations 29

Mean	2.02e-15
Median	-0.003156
Maximum	0.072449
Minimum	-0.044415
Std. Dev.	0.032456
Skewness	0.450774
Kurtosis	2.215040
Jarque-Bera	1.726649
Probability	0.421758

Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.011852	Prob. F(1,21)	0.9143
Obs*R-squared	0.016358	Prob. Chi-Square(1)	0.8982

ARCH Test

Heteroskedasticity Test: ARCH

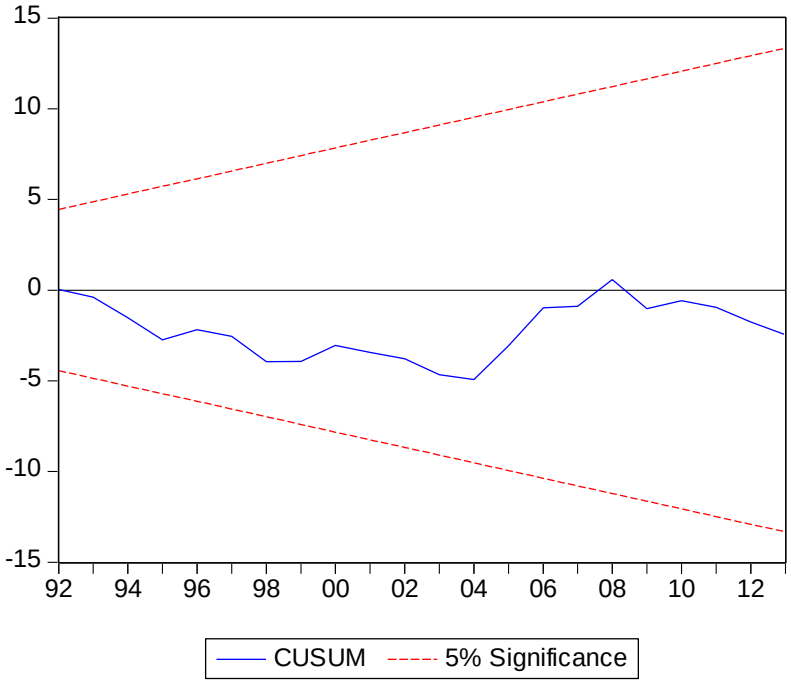
F-statistic	0.217012	Prob. F(1,26)	0.6452
Obs*R-squared	0.231770	Prob. Chi-Square(1)	0.6302

Ramsey RESET Test

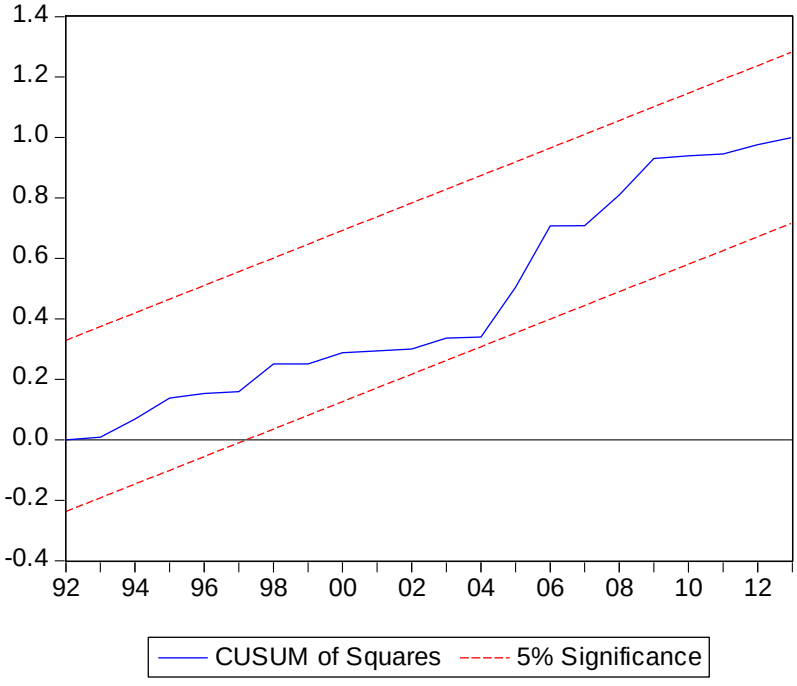
Ramsey RESET Test:

F-statistic	3.406376	Prob. F(1,21)	0.0791
Log likelihood ratio	4.359337	Prob. Chi-Square(1)	0.0368

CUSUM Test



CUSUMSQ Test



Appendix 5: ARDL Short Run Estimation

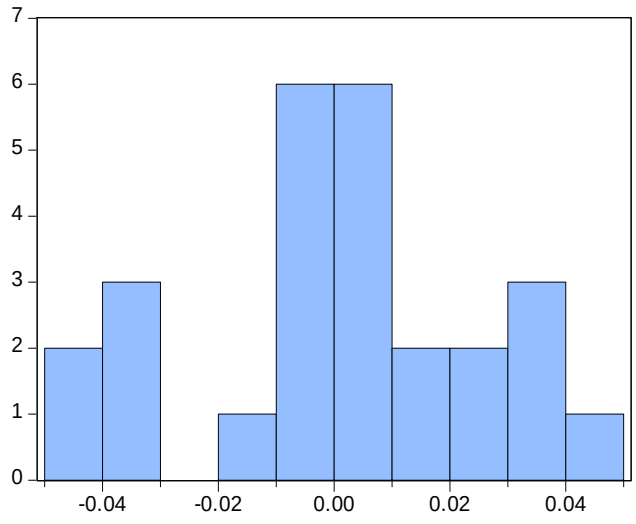
Ordinary Least Square (OLS)

Dependent Variable: D(LNGDPPC)
Method: Least Squares
Date: 04/03/15 Time: 13:46
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.027478	0.009230	-2.977088	0.0081
D(LNGDPPC(-1))	0.204635	0.059248	3.453902	0.0028
D(LNICRG(-3))	0.214448	0.089727	2.389998	0.0280
D(FDI(-2))	-0.003468	0.003338	-1.038835	0.3126
D(LNTRADE)	0.358447	0.070666	5.072386	0.0001
D(LNGOV)	0.567176	0.068238	8.311762	0.0000
D(HC(-2))	0.003520	0.002661	1.322854	0.2024
ECT(-1)	-0.694820	0.208396	-3.334137	0.0037

R-squared	0.946438	Mean dependent var	0.065354
Adjusted R-squared	0.925608	S.D. dependent var	0.112108
S.E. of regression	0.030577	Akaike info criterion	-3.889446
Sum squared resid	0.016830	Schwarz criterion	-3.502339
Log likelihood	58.56279	Hannan-Quinn criter.	-3.777973
F-statistic	45.43659	Durbin-Watson stat	1.679781
Prob(F-statistic)	0.000000		

Jarque Bera Normality Test



Series: Residuals
Sample 1988 2013
Observations 26

Mean	1.31e-17
Median	0.000895
Maximum	0.048038
Minimum	-0.048081
Std. Dev.	0.025946
Skewness	-0.127211
Kurtosis	2.403863
Jarque-Bera	0.455119
Probability	0.796475

Serial correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.888607	Prob. F(1,17)	0.3591
Obs*R-squared	1.291536	Prob. Chi-Square(1)	0.2558

ARCH Test

Heteroskedasticity Test: ARCH

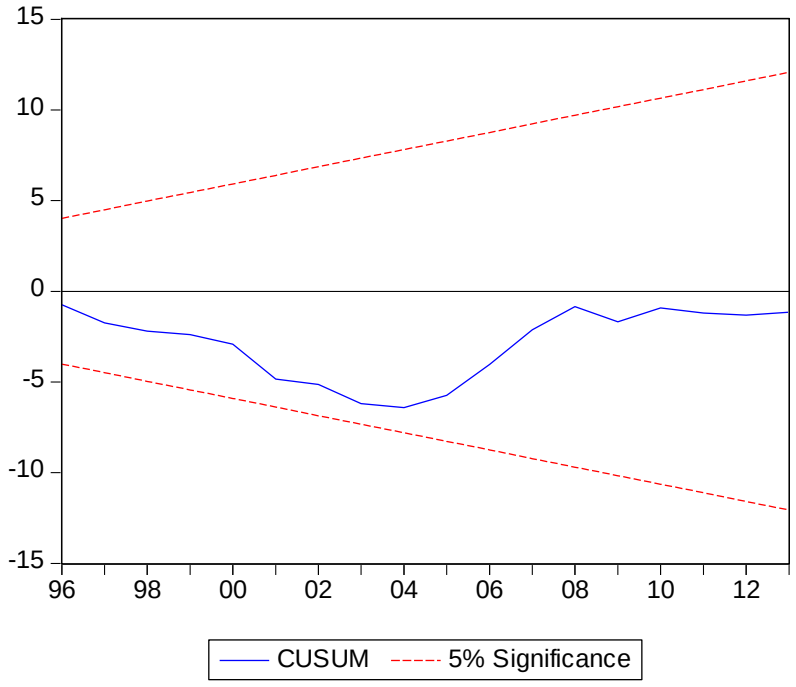
F-statistic	1.414086	Prob. F(1,23)	0.2465
Obs*R-squared	1.448022	Prob. Chi-Square(1)	0.2288

Ramsey RESET Test

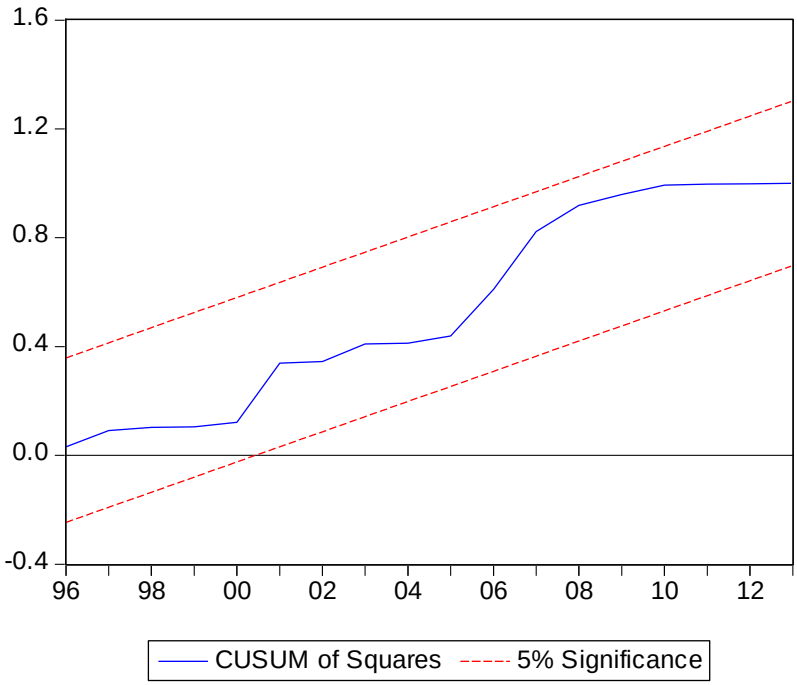
Ramsey RESET Test:

F-statistic	0.282193	Prob. F(1,17)	0.6021
Log likelihood ratio	0.428046	Prob. Chi-Square(1)	0.5129

CUSUM Test



CUSUMSQ Test



Appendix 6: Effect of Channels of Transmission on Growth (Equation 3.7)

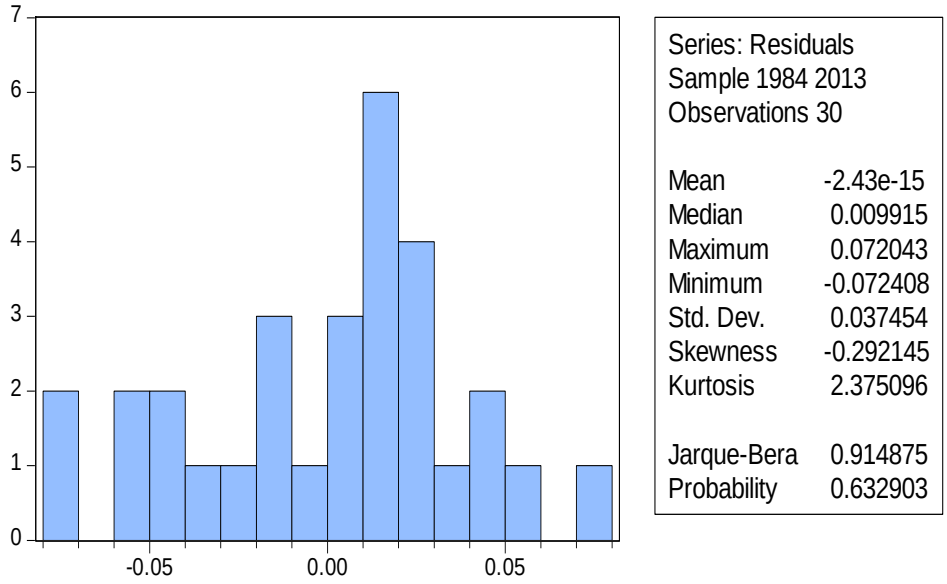
Ordinary Least Square (OLS)

Dependent Variable: LNGDPPC
Method: Least Squares
Date: 03/07/15 Time: 22:36
Sample: 1984 2013
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	-0.002790	0.004831	-0.577660	0.5689
LNTRADE	0.272151	0.033536	8.115157	0.0000
LNGOV	0.243956	0.095162	2.563597	0.0170
HC	-0.012071	0.002444	-4.939753	0.0000
CONSPC	0.000265	8.03E-05	3.302495	0.0030
C	-4.119699	1.794251	-2.296054	0.0307

R-squared	0.995148	Mean dependent var	8.332130
Adjusted R-squared	0.994138	S.D. dependent var	0.537709
S.E. of regression	0.041170	Akaike info criterion	-3.365334
Sum squared resid	0.040680	Schwarz criterion	-3.085094
Log likelihood	56.48001	Hannan-Quinn criter.	-3.275683
F-statistic	984.5518	Durbin-Watson stat	1.460252
Prob(F-statistic)	0.000000		

Jarque Bera Normality Test



Serial correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.096868	Prob. F(1,23)	0.3058
Obs*R-squared	1.365573	Prob. Chi-Square(1)	0.2426

ARCH Test

Heteroskedasticity Test: ARCH

F-statistic	0.775306	Prob. F(1,27)	0.3864
Obs*R-squared	0.809491	Prob. Chi-Square(1)	0.3683

Ramsey RESET Test

F-statistic	0.680561	Prob. F(1,23)	0.4179
Log likelihood ratio	0.874809	Prob. Chi-Square(1)	0.3496

Appendix 7: Effect of Corruption on FDI (Equation 3.8)

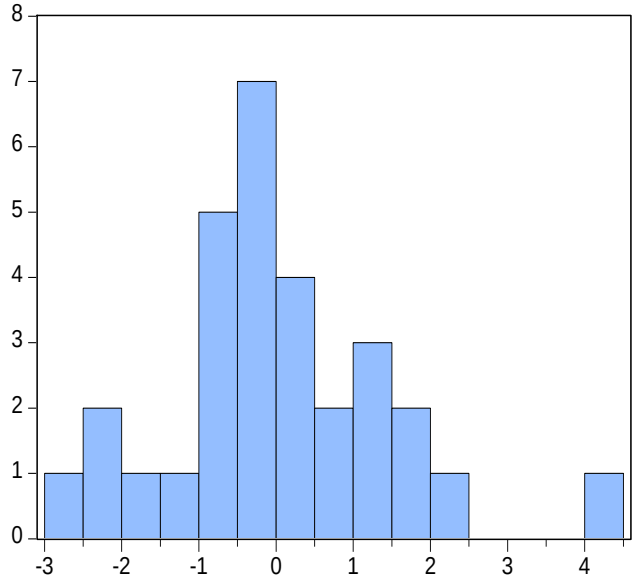
Ordinary Least Square (OLS)

Dependent Variable: FDI
Method: Least Squares
Date: 03/07/15 Time: 22:45
Sample: 1984 2013
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNICRG	11.75114	2.839355	4.138664	0.0004
DCBFS	-0.043010	0.019069	-2.255484	0.0335
LNGOV	6.325745	5.808298	1.089087	0.2869
LNTRADE	11.09173	3.500586	3.168535	0.0041
LNGDP	-15.05191	8.571883	-1.755964	0.0919
C	-57.37893	22.39193	-2.562483	0.0171

R-squared	0.480950	Mean dependent var	3.930695
Adjusted R-squared	0.372815	S.D. dependent var	2.038165
S.E. of regression	1.614125	Akaike info criterion	3.972320
Sum squared resid	62.52962	Schwarz criterion	4.252560
Log likelihood	-53.58480	Hannan-Quinn criter.	4.061971
F-statistic	4.447666	Durbin-Watson stat	1.522540
Prob(F-statistic)	0.005223		

Jarque Bera Normality Test



Series: Residuals
Sample 1984 2013
Observations 30

Mean	2.08e-14
Median	-0.233600
Maximum	4.237415
Minimum	-2.705050
Std. Dev.	1.468398
Skewness	0.550979
Kurtosis	3.863942
Jarque-Bera	2.450883
Probability	0.293628

Serial correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.176399	Prob. F(1,23)	0.2893
Obs*R-squared	1.459770	Prob. Chi-Square(1)	0.2270

ARCH Test

Heteroskedasticity Test: ARCH

F-statistic	0.356549	Prob. F(1,27)	0.5554
Obs*R-squared	0.377969	Prob. Chi-Square(1)	0.5387

Ramsey RESET Test

Ramsey RESET Test:

F-statistic	2.316594	Prob. F(1,23)	0.1416
Log likelihood ratio	2.878975	Prob. Chi-Square(1)	0.0897

Appendix 8: Effect of Corruption on Trade Openness (Equation 3.9)

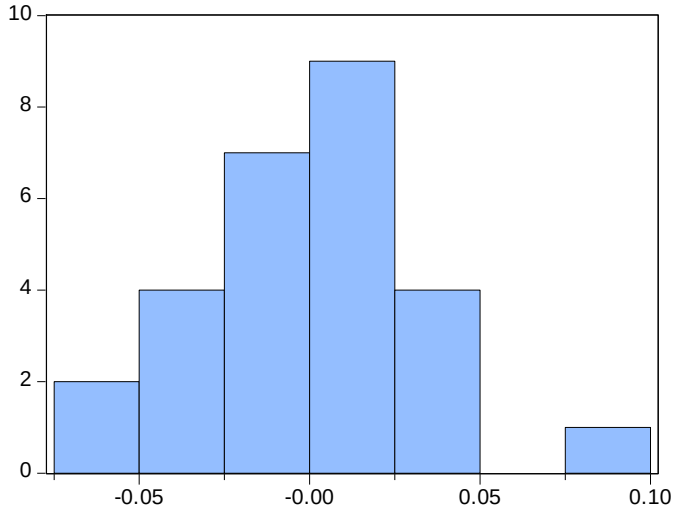
Ordinary Least Square (OLS)

Dependent Variable: LNTRADE
Method: Least Squares
Date: 04/03/15 Time: 00:30
Sample (adjusted): 1984 2012
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNICRG	-0.090913	0.138413	-0.656819	0.5196
LNGOV	-0.183781	0.149013	-1.233324	0.2333
HC	0.002532	0.004044	0.626164	0.5391
FDI	-0.006366	0.005295	-1.202409	0.2448
CONSPC	-0.000468	0.000108	-4.314143	0.0004
REER	-0.592118	0.126792	-4.669980	0.0002
UNEMPLOYMENT	-0.077116	0.014468	-5.330191	0.0000
LNGDP	1.544640	0.158671	9.734859	0.0000
C	-4.948686	3.281274	-1.508160	0.1489

R-squared	0.998740	Mean dependent var	25.73273
Adjusted R-squared	0.998180	S.D. dependent var	0.896262
S.E. of regression	0.038239	Akaike info criterion	-3.428706
Sum squared resid	0.026320	Schwarz criterion	-2.996760
Log likelihood	55.28753	Hannan-Quinn criter.	-3.300266
F-statistic	1783.145	Durbin-Watson stat	1.719573
Prob(F-statistic)	0.000000		

Jarque Bera Normality Test



Series: Residuals
Sample 1984 2012
Observations 27

Mean	-9.21e-16
Median	0.000229
Maximum	0.088307
Minimum	-0.064913
Std. Dev.	0.031817
Skewness	0.358103
Kurtosis	3.871060
Jarque-Bera	1.430658
Probability	0.489031

Serial correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.017133	Prob. F(1,17)	0.8974
Obs*R-squared	0.027184	Prob. Chi-Square(1)	0.8690

ARCH Test

Heteroskedasticity Test: ARCH

F-statistic	0.216175	Prob. F(1,22)	0.6465
Obs*R-squared	0.233532	Prob. Chi-Square(1)	0.6289

Ramsey RESET Test

Ramsey RESET Test:

F-statistic	1.363084	Prob. F(1,17)	0.2591
Log likelihood ratio	2.082483	Prob. Chi-Square(1)	0.1490

Appendix 9: Effect of Corruption on Government Spending (Equation 3.10)

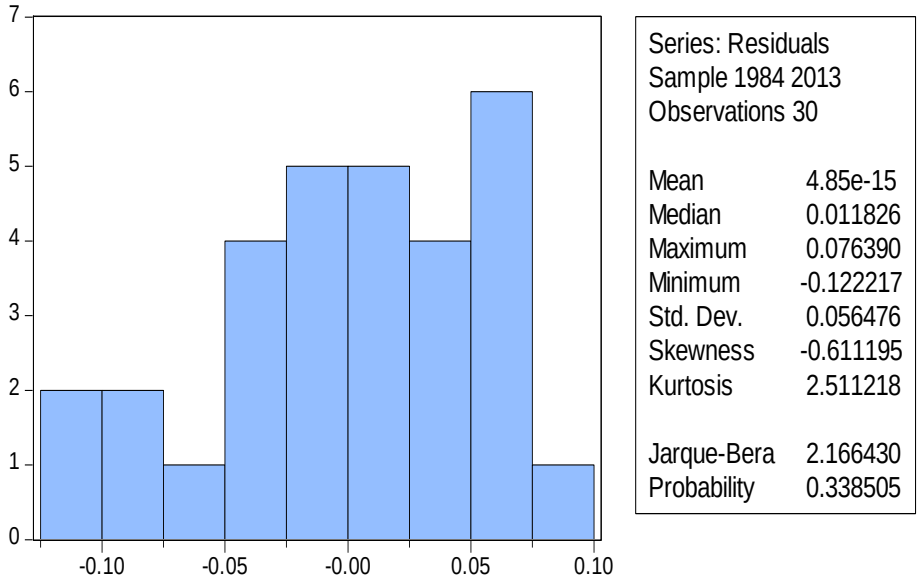
Ordinary Least Square (OLS)

Dependent Variable: LNGOV
Method: Least Squares
Date: 03/07/15 Time: 22:52
Sample: 1984 2013
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNICRG	-0.742797	0.156672	-4.741080	0.0001
LNGDPPC	1.541569	0.093526	16.48280	0.0000
FDI	0.003415	0.007342	0.465162	0.6460
LNTRADE	-0.337741	0.069491	-4.860238	0.0001
HC	-0.002644	0.005900	-0.448136	0.6581
C	20.05230	1.151045	17.42095	0.0000

R-squared	0.993268	Mean dependent var	23.17269
Adjusted R-squared	0.991866	S.D. dependent var	0.688346
S.E. of regression	0.062081	Akaike info criterion	-2.543910
Sum squared resid	0.092496	Schwarz criterion	-2.263671
Log likelihood	44.15865	Hannan-Quinn criter.	-2.454259
F-statistic	708.2653	Durbin-Watson stat	1.742613
Prob(F-statistic)	0.000000		

Jarque Bera Normality Test



Serial correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.079585	Prob. F(1,23)	0.7804
Obs*R-squared	0.103448	Prob. Chi-Square(1)	0.7477

ARCH Test

Heteroskedasticity Test: ARCH

F-statistic	0.278057	Prob. F(1,27)	0.6023
Obs*R-squared	0.295610	Prob. Chi-Square(1)	0.5866

Ramsey RESET Test

Ramsey RESET Test:

F-statistic	2.113918	Prob. F(1,23)	0.1595
Log likelihood ratio	2.637840	Prob. Chi-Square(1)	0.1043

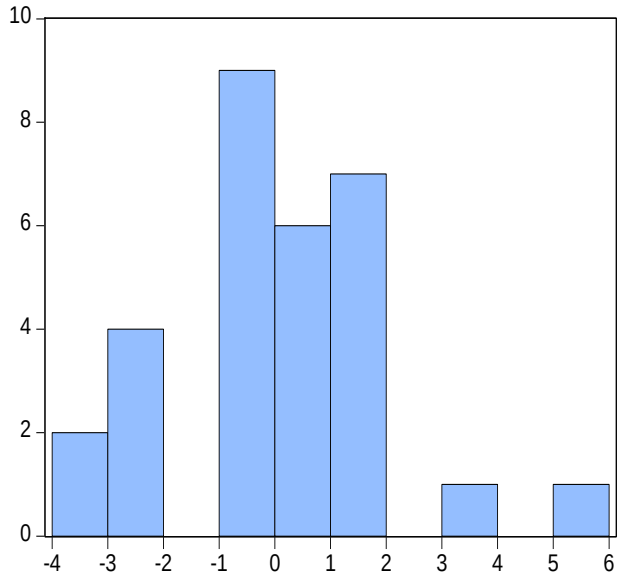
Appendix 10: Effect of Corruption on Human Capital (Equation 3.11)

Dependent Variable: HC
Method: Least Squares
Date: 03/07/15 Time: 22:59
Sample: 1984 2013
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNICRG	-18.69672	4.395417	-4.253686	0.0003
LNGDPPC	-7.577725	2.851788	-2.657184	0.0138
PUBLIC	0.093251	0.589003	0.158319	0.8755
FDI	-0.482256	0.241720	-1.995101	0.0575
LNTRADE	5.245575	2.215813	2.367337	0.0263
C	13.51502	45.14191	0.299390	0.7672

R-squared	0.897303	Mean dependent var	61.95101
Adjusted R-squared	0.875907	S.D. dependent var	6.093971
S.E. of regression	2.146711	Akaike info criterion	4.542608
Sum squared resid	110.6009	Schwarz criterion	4.822847
Log likelihood	-62.13911	Hannan-Quinn criter.	4.632259
F-statistic	41.93922	Durbin-Watson stat	1.454248
Prob(F-statistic)	0.000000		

Jarque Bera Normality Test



Series: Residuals
Sample 1984 2013
Observations 30

Mean	-2.56e-15
Median	0.018578
Maximum	5.344213
Minimum	-3.274962
Std. Dev.	1.952901
Skewness	0.347979
Kurtosis	3.413571
Jarque-Bera	0.819246
Probability	0.663900

Serial correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.073625	Prob. F(1,23)	0.1633
Obs*R-squared	2.481044	Prob. Chi-Square(1)	0.1152

ARCH Test

Heteroskedasticity Test: ARCH

F-statistic	0.308886	Prob. F(1,27)	0.5829
Obs*R-squared	0.328013	Prob. Chi-Square(1)	0.5668

Ramsey RESET Test

Ramsey RESET Test:

F-statistic	0.193549	Prob. F(1,23)	0.6641
Log likelihood ratio	0.251398	Prob. Chi-Square(1)	0.6161