MODERATING EFFECT OF INSTITUTION ON RELATIONSHIP BETWEEN FOREIGN DIRECT INVESTMENT, ECONOMIC GROWTH AND POLLUTION

TUN YIN LI

FEP 2019 13

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By

TUN YIN LI

Thesis Submitted to the School of Graduate Studies, University Putra Malaysia in Fulfilment of the Requirement for the Degree of Doctor of Philosophy.

January 2019

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

MODERATING EFFECT OF INSTITUTION ON RELATIONSHIP BETWEEN FOREIGN DIRECT INVESTMENT, ECONOMIC GROWTH AND POLLUTION

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January 2019

Chair : Wan Azman Saini Wan Ngah, PhD
Faculty : Economics and Management

Evidence shows that the benefits brought by foreign direct investment (FDI) are not uniformly enjoyed by all FDI recipients. Several recent literatures suggest that this ununiformed is due poor domestic condition such as human capital, financial markets, trade openness, economic freedom, formal institution, etc. The present study takes its cue from recent literature which emphasise on the importance of institutions in economic performance. This is because institutions are critical in determining transaction and production cost, resources allocation, business networking, and overall decision making. Three dimensions of institutions covered in this thesis are competition, business environment and corruption.

The first objective examines the role of competition plays in moderating the growth-effect of FDI. To test this objective empirically, this study uses a sample of 117 countries over 2000-2014 period. Using System Generalized-Method-of-Moment (GMM) panel estimator, the findings reveal that the interaction term between competition and FDI (which is used to capture the moderating effect of competition) enters the estimated equation with a positive sign and statistically significant at the 1% level. This finding implies that the effect of FDI on growth is increasing along with the level of competition. The next objective is to investigate the role played by business environment reforms on the impact of FDI on economic growth. Using two-stage least square estimator on this cross section analysis with a sample of 103 countries, over the averaging data from the year 1976 to 2015, exhibits that business environment is critically important in moderating the growth effect of FDI and this result robust to several sensitivity checks. The final objective provides insights into the role played by corruption in the link between FDI and pollution. To test the conditional effect of FDI on pollution through the level of corruption, static threshold regression analysis is adopted and a sample of 70 developing countries over 2003-2013 period is chosen. The result reveals that FDI-pollution link depends on the level of corruption. Specifically,

the impact is positive when corruption level is high. This finding is consistent with the view that a more corrupted environment attracts a more polluted industry.

This thesis provides empirical evidence on the importance of improving competition and business environment for better FDI spillovers. Accordingly, the government should revoke the entry barriers, reduce intervention in credit market, and abolish minimum wage law to promote competition directly in the market thus allowing the market to function efficiently. Other than that, business environment can be improved by easing business start-up cost, reducing red-tape, improve property registration, easy access to credit and providing tax incentive. Finding from the third objective shows combatting corruption is necessary to reduce the pollution brought by FDI. Combat corruption through offering a higher salary to civil servants is needed to be considered by policy maker. In addition, government should fully utilize the social media platform as another powerful tool to fight corruption.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

KESAN MODERASI INSTITUSI DALAM HUBUNGAN ANTARA PELABURAN ASIANG LANGSUNG, PERTUMBUHAN EKONOMI DAN PENCEMARAN

Oleh

TUN YIN LI

Januari 2019

Pengerusi : Wan Azman Saini Wan Ngah, PhD
Fakulti : Ekonomi dan Pengurusan

Kajian menunjukan bahawa pelaburan asing langsung (FDI) membawa kesan positif tetapi bukan semua negara penerima FDI dapat menikmati kesan positif tersebut. Sesetengah penyelidik menyatakan bahawa keadaan ini adalah disebabkan oleh keadaan penerima FDI tersebut seperti modal insan, pasaran kewangan, kebebasan perdagangan, kebebasan ekonomi, institusi formal dan lain-lain. Tesis in bertujuan mengkaji secara peranan institutsi dalam menggalakkan aktiviti ekonomi. Hal ini disebabkan bahawa institusi adalah penting dalam penentuan kos urus niaga dan pengeluaran, peruntukan sumber, rangkaian perniagaan , dan penentuan keputusan. Tiga dimensi institusi yang dirangkumi di dalam tesis ini adalah persaingan, persekitaran perniagaan, dan rasuah.

Objektif pertama adalah untuk meneliti peranan moderasi yang dimainkan oleh persaingan ke atas kesan pelaburan asing langsung (FDI) terhadap pertumbuhan ekonomi. Dengan mengkaji secara empirikal, analisis ini menggunakan sampel sebanyak 117 buah negara dan meliputi tahun 2000-2014. Mengaplikasikan penaksir kaedah umum momen (GMM), keputusan kajian menunjukan bahawa interaksi antara persaingan dan FDI (digunakan untuk mengukur kesan moderasi bagi persaingan) adalah positif dan signifikan pada tahap 1%. Keputusan yang diperoleh menunjukkan bahawa kesan FDI terhadap pertumbuhan ekonomi akan meningkat dengan penambahan tahap persaingan. Objektif seterusnya adalah untuk mengkaji peranan persekitaran perniagaan ke atas kesan FDI terhadap pertumbuhan ekonomi. Dengan menggunakan kaedah penaksir *two-stage least square* yang merangkumi 103 buah negara serta purata data dari tahun 1976 hingga 2015, menunjukkan keputusan bahawa pembaharuan persekitaran perniagaan adalah moderator yang penting bagi kesan FDI terhadap pertumbuhan ekonomi. Selain itu, keputusan ini masih kekal setelah beberapa ujian sensitiviti dijalankan. Akhir sekali, tesis ini memperkenalkan peranan rasuah dalam hubungan yang melibatkan FDI dan percemaran. Dengan mengkaji kesan bersyarat FDI ke atas pencemaran melalui tahap rasuah, kaedah regrasi ambang statik

digunakan dan melibatkan 70 buah negara membangun serta merangkumi tahun 2003-2013. Keputusan analisis menunjukan kesan FDI terhadap pencemaran adalah bergantung kepada kadar rasuah sesebuah negara. Penemuan ini juga menunjukan bahawa kesan positif FDI terhadap pencemaran hanya wujud apabila kadar rasuah adalah tinggi. Keputusan ini menyokong pendapat bahawa persekitaran rasuah yang tinggi akan menarik industri yang lebih tercemar.

Tesis ini menghasilkan keputusan secara empirikal bahawa menambah baik persaingan dan persekitaran perniagaan adalah penting dalam penerimaan faedah daripada FDI. Dengan itu, kerajaan harus membatalkan halangan kemasukan, mengurangkan campur tangan dalam pasaran kredit, dan menghapuskan upah minima supaya dapat menggalakkan persaingan dalam pasaran serta mencapai kecekapan. Selain itu, persekitaran perniagaan boleh ditambah baik melalui pengurangan kos permulaan perniagaan, pengurangan birokrasi, penambah baik pendaftaran harta tanah, permudahan mendapat kredit, dan memberi cukai insentif. Hasil kajian daripada objektif ketiga adalah menunjukan bahawa pencemaran dari FDI dapat dikurangkan dengan pencegahan rasuah. Untuk mencegah rasuah, kerajaan dinasihati supaya menaikan gaji kakitangan kerajaan. Selain itu, kerajaan seharusnya cekap menggunakan media sosial sebagai cara yang paling berkesan untuk mencegah rasuah pada masa kini.

ACKNOWLEDGEMENT

I would like to express my utmost sincere appreciation to my supervisor, Associate Professor Dr. Wan Azman Saini Wan Ngah, for his unlimited encouragement and guidance at various stages of this study. Without him, this thesis would not have been possible. My sincere appreciation also goes to my supervisory committee members, Associate Professor Dr. Law Siong Hook, Associate Professor Dr. Saifuzzaman Ibrahim and Dr. Mohd Naseem Niaz Ahmad for their advice and encouragement throughout this Ph.D. journey.

I would like to extend my utmost heartfelt appreciation to my beloved parents and family members for their understanding, patient, support and unconditional love along the journey. My deepest thanks also go to my lovely partner, Gary Ke, who turns to be my husband in the middle of my Ph.D. journey. I am truly grateful to have him be in my life.

I am also feeling thankful to my friends who have given me support along the journey. These include Dr. Slesman, Dr. Said, Dr. Kelly Wong, Dr. Tee Chee Lip, Dr. Lee Weng Chang, Dr. Ng Chee Hung, Dr, Law Chee Hong, Dr. Tan Jiunn Woei, Leonard Lam, Pauline Poh, Athirah, Syafiqa, Hidayah, Kauthar, Fara, and Shida. Special thanks to Chong Siew Huey, Imaan ,and Fatihah for their patient in listening to all my pains.

Last but not least, I would like to thank Kementerian Pendidikan Tinggi Malaysia for providing the scholarship for my study. My gratitude also goes to Mr. Wee Chu Kok and Dr. Chin Mun Yi who provide a job opportunity to me and it truly helpful in relieving my financial stress.

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

Wan Azman Saini Wan Ngah, PhD
Associate Professor
Faculty of Economics and Management
Universiti Putra Malaysia
(Chairman)

Law Siong Hook, PhD
Associate Professor
Faculty of Economics and Management
Universiti Putra Malaysia
(Member)

Saifuzzaman Ibrahim, PhD
Associate Professor
Faculty of Economics and Management
Universiti Putra Malaysia
(Member)

Mohd Naseem Niaz Ahmad, PhD
Senior Lecturer
Faculty of Economics and Management
Universiti Putra Malaysia
(Member)

_____

ROBIAH BINTI YUNUS, PhD
Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

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Signature: _____
Name of Chairman of Supervisory Committee: Assoc. Prof. Dr. Wan Azman Saini Wan Ngah

Signature: _____
Name of Member of Supervisory Committee: Assoc. Prof. Dr. Law Siong Hook

Signature: _____
Name of Member of Supervisory Committee: Assoc. Prof. Dr. Saifuzzaman Ibrahim

Signature: _____
Name of Member of Supervisory Committee: Dr. Mohd Naseem Niaz Ahmad

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LIST OF ABBREVIATIONS

BE	Business Environment
DCED	Donor Committee for Enterprise Development
DOLS	Dynamic Ordinary Least Square
ECM	Error Correction Modelling
FDI	Foreign Direct Investment
FE	Fixed Effect
FMOLS	Fully Modify Ordinary Least Square
GDP	Gross Domestic Production
GHG	Green House Gas
GMM	Generalized-Method-of-Moment
HDI	Human Development Index
IBEF	India Brand Equity Foundation
IPPC	International Plant Protection Convention
IT	Information and Technology
JRC	The European Joint Research Centre
LM	Breusch and Pagan Lagrangian Multiplier
MNC	Multinational Corporation
OECD	Organization for Economic Co-operation and Development
OLI	Ownership-Location-Internalizations
OLS	Ordinary Least Square
PHH	Pollution Heaven Hypothesis
RE	Random Effect
R&D	Research and development
SOE	State Owned Enterprise

SSA	Sub-Saharan Africa
SUR	Seemingly Unrelated Regression
UNCTAD	United Nations Conference on Trade and Development
USAID	United State Agency for International Development
VAR	Vector Autoregression
2SLS	Two- stage Least Square
3SLS	Three-stage Least Square

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Achieving an increase in output growth is always the ultimate economic goal for most of the countries' policies. However, the increase in output growth is not uniform across the countries where some countries produce more than the others. The traditional growth theories explain those countries that grow faster is better at accumulating productive factors of physical and human capitals. Figure 1 shows that the real gross domestic production (GDP) growth rate among the developed and developing countries. It is evident that the world real GDP growth experienced a drastic decline in the year 2008 due to the sub-prime crisis. Other than that, it is worth to pay attention to the real GDP growth trend between advanced and emerging as well as developing economies. The advanced economies have gradually trended downward since the year 2000.

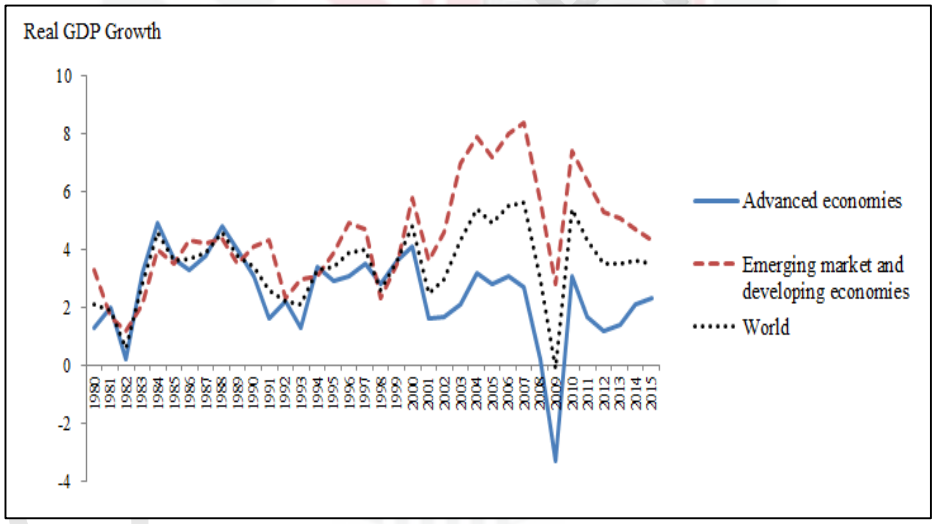

Figure 1: Real GDP Growth, 1980-2015
(Source: International Monetary Fund database)

IMF (2018) explains this declining trend with two reasons. First, ageing workforces and slower productivity growth in advanced economies are the leading causes of this long-term decline. Furthermore, these causes correspond to falling economic dynamism and rising market concentration. Second, the decent policy framework such as trade openness adopted in emerging and developing economies allows these economies to be stronger and strive. These reasons highlight that the rising market concentration in advanced economies is acting as a driving force for firms to expand market abroad. As the markets become more saturated, foreign market expansion is now necessary for a firm's survival. At the same time, emerging and developing economies are embracing

open trade, thus allowing the penetration of foreign direct investment (FDI) into their market to become more effortless.

FDI by multinational corporation (MNCs) is generally known to be an important component of economic development strategy and productive capacity building for many countries (especially the developing ones). FDI is viewed as a way for local firms to improve efficiency because it allows them to learn from, adopt from and imitate MNCs. MNCs has been linked to superior technologies, patents, trade secrets, brand names, management techniques and marketing strategies (Dunning, 1993). They are also known for their huge investment in research and development (R&D) activity. Additionally, they hire a large number of professional and technical employees (Markusen, 1995; Fosfuri, Motta and Ronde, 2001; Alfaro and Rodriguez, 2004) and make huge investment in training of their workforce (Fosfuri et al., 2001). Once MNCs have established a subsidiary in host countries, some of the positive externalities from FDI may be transmitted to local firms because knowledge cannot be completely internalized. Consequently, this is expected to enhance the productivity and expansion of domestic activity. In short, in addition to its role as important source of external financing and employment, FDI is viewed as an important channel for host countries to access new technologies that are available at the world's frontier.

There are at least five channels through which new technology associated with FDI may be transmitted to local firms (Crespo and Fontoura, 2007). The first channel is through imitation and demonstration. This channel highlights that MNCs act as a demonstrator and local firms can learn and imitate the product or processes from MNCs. The second channel is export promotion in which local firms may explore the global market by following the MNCs footsteps. MNCs are known for their extensive global network. The third channel is competition in the local market. This channel predicts that competition will force MNCs to transfer some of their technologies to local affiliates in order to strengthen their comparative advantages. Competition may also force local firms to get involved actively in research and development activity in order to stay competitive. The fourth channel is backward and forward linkages established between MNCs with local firms. The backward spillover effects takes place through direct knowledge transfer to local suppliers to ensure higher quality input. Meanwhile, forward linkages occur when domestic firms in downstream industries benefit from high quality and less costly intermediate inputs supplied by MNCs (Javorcik, 2004a). The fifth channel is labour mobility. MNCs are known for their huge investment in human capital by providing extensive training for their workers. Some of these workers may eventually leave MNCs and join local firms with all the knowledge that they have acquired from MNCs. This is expected to improve the productivity of local firms.

In view of these potential positive externalities from MNCs, many countries have progressively promoted pro-FDI policies. **Table 1** shows some policy changes in the past 10 years which reveal that the numbers of investment policy changes geared towards liberalization far outweighed the number of restrictive policies. On average, 50 countries change their policy (both liberalization and restrictive) over the past 10 years. Additionally, an average of 80 changes in national investment policy were made during the 2002-2016 period and 76% of these policy changes were directed towards creating

investment friendly environment (UNCTAD, 2017). These changes provide incentives to foreign investors and create an environment in which profits are guaranteed without unnecessary risk. The types of incentive offered to MNCs include fiscal incentives (i.e. tax and tariff exemption and low corporate tax rates), financial incentives (i.e. loan and land subsidies) and others incentives (i.e. special economic zones, infrastructure subsidies, R&D subsidies and cutting of red tape).

Table 1: Changes in national investment policies from 2007 to 2016

Item	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
No. of countries that introduced changes	49	40	46	54	51	57	60	41	49	58
No. of regulatory changes	**79**	**68**	**89**	**116**	**87**	**92**	**88**	**74**	**99**	**124**
Liberalization	68	51	61	77	63	65	64	52	74	84
Restriction	19	15	24	33	21	21	21	12	14	22
Neutral	2	2	4	6	3	6	3	10	11	18

(Source: World Investment Report 2017, UNCTAD)

As a result of these policy changes, global FDI flows have increased significantly over the past few decades. According to the data provided by UNCTAD, global FDI inflows rose from $594 billion in 2002 to $1.7 trillion in 2016 which represents an approximate 276% increase during the period. The highest volume of $1.9 trillion was recorded in 2007. In fact, the growth rate of global FDI far exceeded the growth rates of world GDP and export. According to UNCTAD (2016), increase in global FDI inflows are sevenfold compared to the world GDP and export which increased by less than quadruple during the 1990-2015 periods. **Figure 2** shows the trend of global FDI inflows during the 2002-2016 period. Generally, the figure shows that most FDI is concentrated in developed countries. However, it is also obvious that developing countries are increasingly becoming popular for FDI destinations in recent years. For the first time in 2012, developing countries was able to absorb more FDI inflows than developed countries and the highest proportion was recorded in 2014 when 54.7 percent of global FDI flows to developing countries. Although some have argued that slowdown of the FDI inflows to the developed countries was due to the economy slowdown in developed countries, the trend suggests that developing countries become more attractive as destinations for MNCs investments.

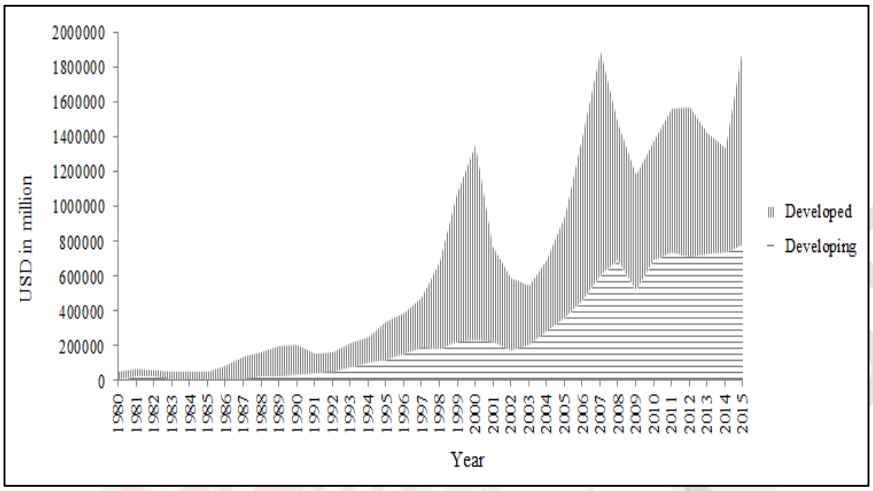

Figure 2: FDI inflows ratio in developing and developed countries
(Source: UNCTAD database)

The improvement in FDI activity across the globe is the direct result of positive changes in investment policy which reflects the important role of institutional quality in regulating the economy. This has been emphasized in North (1990)[1], among many others, who argue that protection of property rights, effective law enforcement, and efficient bureaucracies, together with a broad range of norms and civic mores, are important for better economic performance. Cross-country empirical analyses, in combination with micro-level studies, provide strong support for the overwhelming importance of institutions in predicting the level of development in countries around the world (Hall and Jones, 1999; Acemoglu, Johnson and Robinson, 2001). Recently, both international business and FDI literatures have begun to include institutional theory into their scholarly research (Kalotay and Sulstarova, 2010; Luo, Xue and Han, 2010; Luo and Tung, 2007; Wang, Hong, Kafouros and Wright, 2012; Peng, Wang and Jiang, 2008; Meyer, 2004; Azman-Saini, Baharumshah, Law, 2010b). These studies highlight the importance understanding the effect of domestic institutions on business activities because institutions are critical in determining transaction and production cost, resources allocation, business networking, as well as overall decision making. In fact, institutional variable seems to be better suited than other variables (such as financial development, geography, and trade) in explaining why some countries grow faster than the others. As argued in North (1990), institutions and the effectiveness of enforcement, together with the technology employed determine the cost of transacting. Effective institutions invent an economic environment that induces productivity improvement by reducing transaction and production costs which make potential gains from exchange achievable. It is obvious that weak institutions (where the rules are absent or

[1] Institution is defined as humanly designed constraints that structure political, economic and social interaction which is crucial in shaping transaction or production costs (North, 1990). The constraints mentioned are made up of formal and informal constraints.

suboptimal, or useful rules are poorly enforced) may lead to higher transaction costs which hinder efficiency as larger scale is unlikely to be attained and this may dampen productivity. This weakens the competitiveness of a nation in the global market and structural change may retards. Therefore, institution is important in shaping and inducing an economy to desirable economic behaviours as it affects investment decisions made by investors (both local and foreign).

In line with the researches on the role of institution this study is interested to provide a more nuance view beyond the existing acknowledged perception on institutional quality, FDI, economic growth and environmental quality. Instead of investigating formal and informal institutions, this thesis is interested to narrow down and precisely look into the role of formal institutions. Three dimensions of formal institutions analyzed in this thesis are competition, business environment and corruption and this study argues that these factors are important in moderating the impact of FDI on economic growth and environmental quality.

1.1.1 Competition and Economic Performance

One important aspect of institution which may has important influence on FDI activity is the competitive natures of market in which firms operate. Market competition is defined as the magnitude of the competition encountered by a firm in a certain industry which is determined by the number of rivalry (Porter, 1980). Market concentration ratio is normally used to indicate firms' market share in a particular industry. The higher the ratio means the industry output is controlled by dominant firms (Tirole, 1988). Furthermore, concentration ratio and market competition are closely related where higher competition is associated with lower concentration ratio and vice versa.

There are several reasons to believe why a competitive market is good for the economy. Firstly, competitions push down the market prices. As the prices are reduced, quantity demanded for the products increases and this will result in the expansion of the whole economy. Secondly, competitions help in promoting the product quality. Instead of reducing price because of competition, producers may choose to improve the quality of product as a strategy to retain the customers or attract new ones. Thirdly, consumers in competitive market have more product varieties and this leads to higher consumer surplus as compared to uncompetitive market. Consumers are allowed to match their income with the product which provides the right balance between quality and price. Fourthly, in order to fulfill customers expectation of lower price and better quality, entrepreneurs are forced to find a better way in doing business, either by adopting new ideas from others or self-innovation. These increase the innovation level in the economy and provide the consumer's works or life easier and more efficient. Lastly, competitions force the company to be stronger to succeed in local as well as global market.

One important factor which may influence market competition is the quality and amount of regulations imposed by the government. Naturally, countries with excessive regulations which limit free exchange in the market will have less freedom and less competitive market. Therefore, if the government is able reduce and abolish

unnecessary regulations which limit free exchange (domestic and international), we would expect that market will be more competitive and flourish. In this context, Frazer Institute has published the Economic Freedom Index which measures a country freedom based on five important areas, 1) Size of government, 2) legal system and property rights, 3) sound money, 4) freedom to trade internationally, and 5) regulation. The last area on regulatory freedom measures the level of freedom in three markets namely, credit, labour and goods. According to this index, it reflects the regulations which restrict the entry of the firm into the market. In details, this index mainly centred on regulatory restraints that limit the freedom of exchange in credit, labour, and product markets (Gwartney, Lawson and Hall, 2016). Therefore, this index has the ability in determining the number of firms in the market which give direct impact on the market concentration ratio as well as the market competition. Other than changing investment policies as stated in **Table 1**, regulatory reform on these markets (credit, labour, and product markets) is also viewed as an important aspect of institutional quality transformation required to attract FDI and strengthen competition. **Figure 3** shows the average index of regulation (117 countries) extracted from the Economic Freedom Index over the 2001-2014 period. The index reflects regulatory obstacles in doing business and higher index means less obstacles and more freedom. It is obvious that there exists an upward trend for developing countries. However, in the case of developed countries the index initially increases but remain stable since 2006. Another important observation is that developing countries are catching up developed countries in term of regulatory freedom as the gap between them is getting smaller. In short, there are more regulatory reforms happening in developing countries than in developed countries.

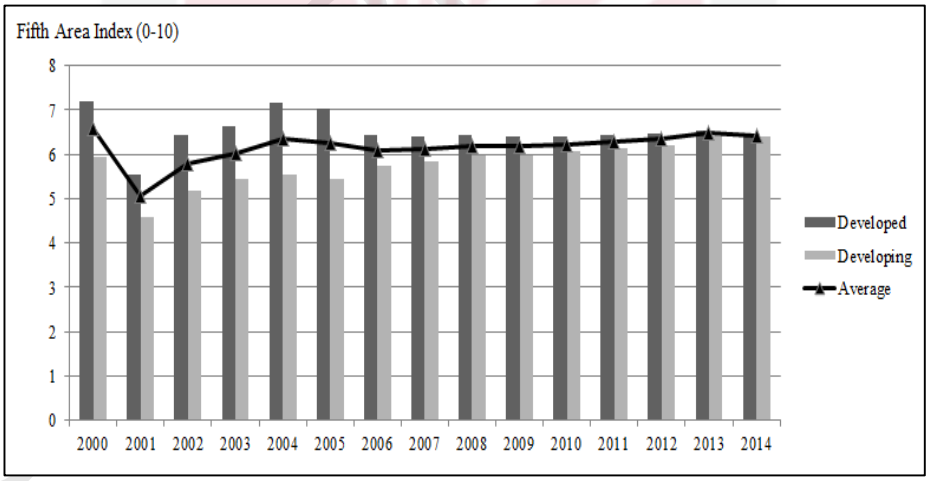

Figure 3: Regulatory freedom
(Source: Fraser Institute Organization)

As mentioned in the previous section, slower output growth in advanced economies is explained by the rising market concentration (Figure 2). Once the market concentration ratio is high and saturated, this encourages market-seeking FDIs from advanced to emerging or developing economies because expanding businesses abroad is one of the

ways for firms to remain strong. Therefore, a country with low market concentration ratio shows a greater market competition and this reflects a brighter prospect for FDI to launch market penetration in a competitive market. In addition, greater market competition comes along with lower entry cost. Hence, the entrance of FDI in the host's market will lower down certain industry entry cost. This provides greater opportunities for domestic entrepreneurs to get involved in the same industry.

1.1.2 Business Environment Reforms

The term "business environment" (BE, hereafter) is formally defined by Donor Committee for Enterprise Development (DCED) as a complex set of policy, legal, institutional, and regulatory conditions that govern business activities. Therefore, BE reforms refer to the changes in policy, legal, institutional and regulatory conditions which is geared towards creating conducive environment for business activities. It also reflects government efficiency in implementing and enforcing policies and laws to create investment climates that match investors' needs by reducing cost and times associated with business activity. Typically, business environment reforms are implemented to achieve one or several of the following three important outcomes: 1) More firms are encouraged to start-up or register as formal businesses, for example as a result of simplified business registration procedures or tax incentives, 2) Firms increase their investment as a result of improvement in legislative or regulatory frameworks, and 3) Firms directly increase their sales/turnover or net income, for example as a result of the removal of trade barriers or savings from improvement in the efficiency of licensing and inspections processes. **Figure 4** shows the global pattern on ease of doing business indicators and it is apparent that each region possesses a relatively wide spectrum of good and bad performers. For instance, in European and Central Asian region, Macedonia, Lithuania and Georgia have the highest scores at 78.76, 77.58, and 76.76, respectively. In contrast, Tajikistan, Uzbekistan and Ukraine have the lowest scores in this region, at 51.84, 57.88, and 61.72, respectively. Additionally, Sub-Saharan African region has the lowest average score and the largest gap between the highest and lowest scores. Meanwhile, the OECD high income group has the highest average score and the smallest gap between the highest and lowest scores. By and large, there are wide variations in doing business indicator in both within as well as across regions.

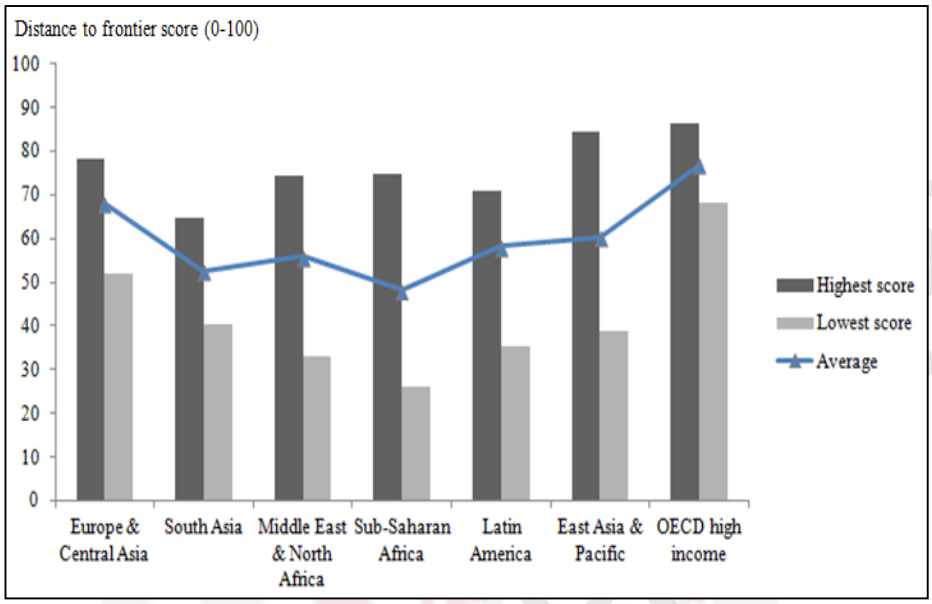

Figure 4: Ease of Doing Business indicator in 2015
(Source: *Doing Business* database)

The DCED highlights that BE shapes the performance of both formal and informal economies and International Labour Organization (ILO) shows that informal economies represent a greater portion of economic activity in developing economies compared to developed economies. As BE is closely linked to the cost of doing business, excessive regulatory barriers faced by the private enterprises are usually higher in developing than developed economies. Therefore, poor BE is usually complemented with excessive regulatory barriers causing businesses (especially women-owned businesses) remain to be informal. Inevitably, poor BE tends to breed larger activity of informal economies. Furthermore, greater informal economies will result in more informal employees to be uncovered by labour law and social protection. These informal economies may retard the efficient functioning of market economies and the implementation of government policies such as minimum wages because these economies are unsecured by law. Therefore, better BE is needed for a more prosperous economy. This can be achieved by reducing the constraints for doing businesses by formalizing as well as changing firm behavior, which enables them to increases in profit and output.

Reforms in BE are an essential element in FDI realm. This is because of reforms in BE able to reduce the business and production costs which allowing the firms to have more comparative advantages in the global market. Moreover, BE reforms show actual government efforts in supporting the business activities, and this is important in boosting the confidence among the investors or the potential foreign investors. Once the investors possess optimistic business perspectives, re-investment of the retained earnings is possible and at the same time, capital outflows reduced.

1.1.3 FDI and Pollution

As the developing countries are gaining a strong foothold in global FDI flows, there are growing large literatures which recognize the potential impact on the host countries. These reallocations of capital are said to be one of the reason which may contribute to the increasing emission of greenhouse gases in developing countries. Global emissions have been a great concern by many and their impacts (such as global warming or climate chances) are felt globally. Emissions of greenhouse gases (GHG) are claimed mainly contributed by human activities and these cause global warming (IPPC, 2014)[2]. In the process of reducing GHG, the Kyoto Protocol was ratified and target was set to reduce GHG below the 1990 level. The Kyoto Protocol, under the United Nation Framework Convention on Climate Change, is an agreement between industrialized countries to reduce in GHG emissions. The first and second commitment period (2008-2012 and 2013-2020) pursues a reduction of GHG by 5 percent and 18 percent respectively in reference to the 1990 level.

Despite the presence of the Kyoto Protocol and various environmental policies, the growth rate of GHG emissions had doubled since 1970 (IPCC, 2014). Among the type of GHG, Carbon dioxide (CO_2) occupies the largest portion and the greatest source of releasing CO_2 is from humanity usage of fossil fuel (i.e. gas, oil and coal). Additionally, it is claimed that the emerging countries are the main driver in releasing CO_2 (IPCC, 2014; Janssens-Maenhout, Crippa, Guizzardi, Muntean, Schaaf, Oliver, Peter and Schure, 2017). Current trend of global CO_2 emissions is shown in **Figure 5**. Notably, CO_2 emissions from developed countries have been stable but the one from developing countries have been increasing drastically. For instance, China alone contributes 59% of global CO_2 emission (see **Figure 6**). This is followed by the India and the Russian Federation. According to United Nation Food and Agricultural Organization, the sector which contributes the most is energy, transportation, commercial and residential, agriculture and industry. Obviously, it can be concluded that the greenhouse gases emission is mainly contributed by human activities.

[2] GHG includes Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Perfluorocarbons (PFCs), Hydrofluorocarbons (HFCs), Sulphur hexafluoride (SF_6), Sulphur dioxide (SO_2), Nitrogen oxides (NOX), Carbon monoxide (CO), Non-methane volatile organic compound (NMVOC).

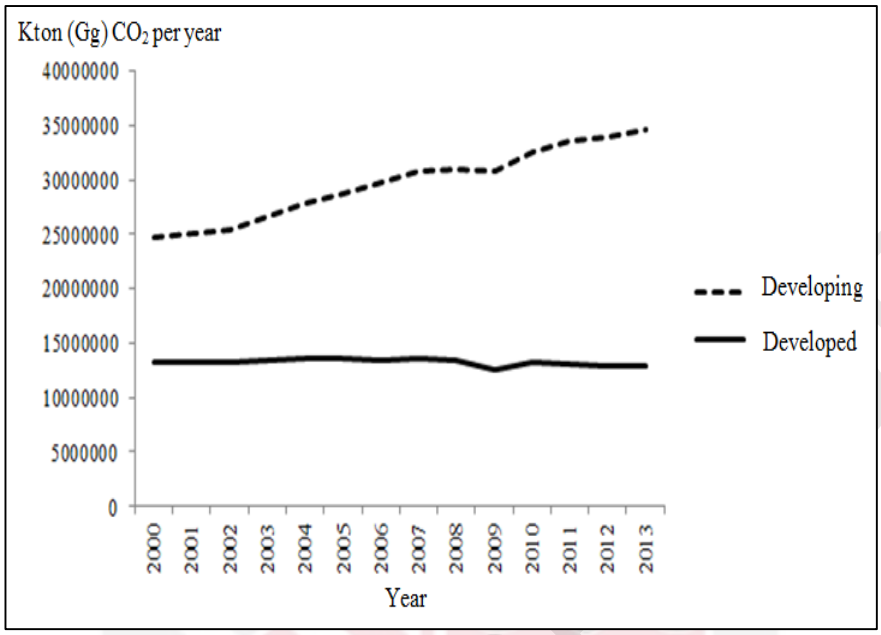

Figure 5: Global CO_2 emission of fossil fuel use and industrial process emissions
(Source: Emission Database for Global Atmospheric Research)

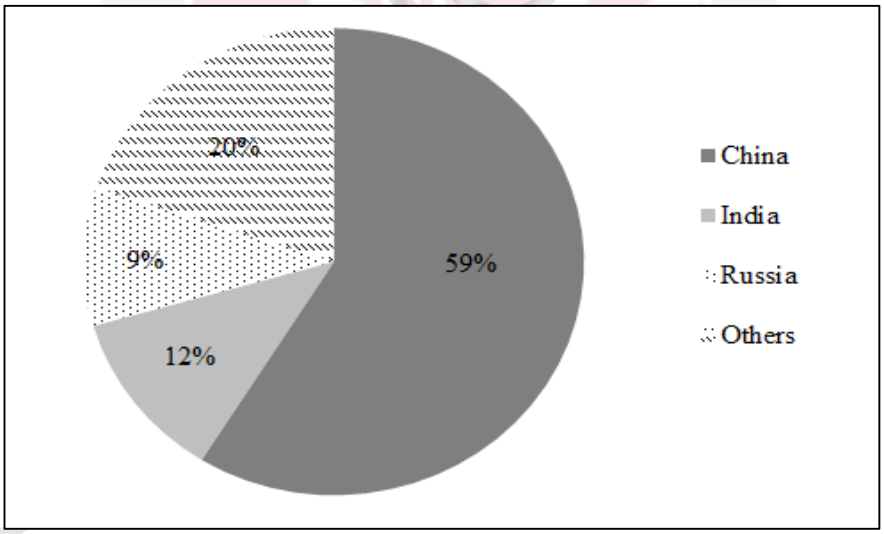

Figure 6: Top CO_2 (in million tons) emitters in 2014
(source: Carbon Dioxide Information analysis Centre)

The European Joint Research Centre (JRC) attributes this emission trend to the large move of industrial economic activity to emerging economies (JRC, 2013). This pollution issue is gaining much attention in many countries and some countries have included environmental protection in their investment laws enactment (UNCTAD,

2017). Investment laws are commonly known for the objectives of investment promotion/protection and economics/social/sustainable development. Incorporating environmental protection in investment laws indicates that pollution is a serious issue that need to be addressed.

Furthermore, relocation of industrial economic activity from developed to developing countries may be linked to one contentious issue - Pollution Haven Hypothesis (PHH) - which remains as one of the hotly debated issue. PHH posits that borderless economic activity induces relocation of polluting industries' production plant from developed to developing countries which provide lenient environmental standards. This relocation through FDI allows them to exploit some of the loopholes which enable them to reduce abatement cost. Although there are some potential negative impacts brought by FDI on host country environment, some developing countries view this impact as a trade-off for the FDI spillovers. This view predicts that the attractiveness of positive FDI spillovers is luring developing countries to offer regulatory concessions to foreign investors without gauging the actual impact on the environment.

However, in the eyes of the corrupted official, attractive positive FDI spillovers could be simply ignored. This shows that the level of corruption in the host country might play an essential role in the decision-making process of the reallocation of polluting industries. Corrupted host country enables any environmental rules and regulations to be simply absent for the existence of foreign polluting industries. Therefore, a country with high corruption level would have a comparative advantage in producing polluted goods because abatement cost saving is possible. Consequently, this bribery activity is said to be able to enhance the firm's production efficiency as long as the bribery cost is lower than the abatement cost and this would be the most attractive reason for polluting FDI in pursuing reallocation.

1.2 Statement of Research Problems

The past decade has witnessed a massive change in foreign investment policy as governments, particularly in developing and emerging nations, have removed many restrictions on financial flows in and out of their countries. One of the important components of foreign capitals which benefit from these changes is FDI. FDI by MNCs has been recognized as an important channel for technology transfer as MNCs spend huge amount of capital in R&D activity. They also employ a large number of technical workers and provide extensive training for them. Since knowledge cannot be completely internalised, it may spillover to local firms once MNCs established their presence in the host countries. This is expected to boost productivity of local firms. Additionally, FDI is a useful source of capital for host countries to finance current account deficits and they are less volatile compared to other types of capital such as portfolio investment which can be easily reversed. Once invested, MNCs is less likely to reverse its investment as FDI involves huge sunk costs. In the case of developing countries which lag behind in term of technological base, FDI is generally viewed as an important ingredient in development strategy. In fact, recent data suggest that developing countries and transition economies are becoming more popular destination among MNCs.

Although theoretical models predict that FDI brings tremendous benefits, evidence shows that the benefits are not uniformly enjoyed by all FDI recipients as only few countries are able to gain more than the others. In fact, some countries remain poor with low productivity despite of having more FDI. Generally, the literature suggests that the growth-effect of FDI is far from conclusive as empirical evidence reveal that FDI exerts positive impacts on growth only in some cases but in some other cases there is no or even negative impacts.[3] Several recent literature suggest that the failure of host countries to benefit from MNCs presence is due poor domestic condition which limit the absorption of new technology linked to FDI. Several important intervening factors have been suggested in the literature such as human capital, financial markets, trade openness, economic freedom, formal institution, among others. By taking into account these factors, they are able to show that the positive impact of FDI on the growth of local economies is tremendous.

The present study takes its cue from recent literature which emphasise on the importance of institutional quality for economic performance. It argues that the quality of institution plays an important role in moderating the impact of FDI on economic growth. In other words, it may be the case that the quality of institution in the host countries makes a difference in the way host countries benefit from MNCs presence. Several reasons lead to the understanding of good institutional quality should have a positive influence in promoting FDI and overall economic growth. Firstly, well-developed institutions reduce uncertainties by providing information to all economic agents where this information is crucial in determining transaction or production cost. Secondly, as investment involves a large amount of money, investors become very sensitive to stability and insecurity, which are highly correlated with institutional quality. This is because investors assume that incomplete information is risky. Lastly, good institutional quality provides better protection of intellectual property rights, and this attracts FDI of higher technological content where high technology always acts as a determinant of economic growth (Javorcik, 2004a). Arguably, countries that promote institutional development are not only able to attract more FDI inflows but also more able to adapt and internalise new technology fostered by MNCs. In addition, institutions triumph the other intervention factors (financial market developments, trade openness, etc.) because it is said to be fundamental in shaping and inducing the activities among the economic agents. Previous studies adopt few indicators such as the risk of expropriation, repudiation of contracts by the government, the rule of law, corruption, quality of bureaucracy, democracy, etc., to measure the institutional quality (Knack and Keefer, 1995; Law and Bany-Ariffin, 2008). These indicators are believed to be the pillars in shaping the competition and business environment conditions. Better competition and business environment reflect an improvement in all of these indicators.

Specifically, this study hypothesise that competition in host countries is critical for FDI to have a positive impact on growth. Competitive market forces the firms to be more

[3]See surveys by Almfraji and Almsafir (2014), Herzer *et al.* (2008) and Görg and Greenaway (2004). These surveys summarized the empirical results on FDI – growth nexus where they highlighted that the relationship can be either positive, negative or no relationship.

allocative efficient which in turn promote overall production capacity (Blomström and Kokko, 1999). Additionally, competitive market will stimulate both foreign and domestic firms to raise their effort in R&D activity to increase their efficiency which enable them to reduce production costs and enhance productivity. Moreover, competition is expected to foster the transfer of technology to local firms (via backward and forward linkages) as MNCs attempt to maintain or improve their advantages against the rivalry. Moreover, market competition between foreign and domestic firms may narrow the technology gap due to the learning efforts or imitation by domestic firms. The sample countries selected for analysis on competition encompasses both developed and developing. As shown in Figure 3, developed and developing countries are getting similar in term of regulatory freedom, and it is arguable that efforts in R&D intensity are similar for both countries as this is a response to secure efficiency. Therefore, FDI spillovers on growth will increase.

Apart from competition, business environment may also play an important role in the realization on positive FDI spillovers but this hypothesis has not been tested thus far. Arguably, a better business environment provides better fundamental insights on the uncertainties, time-length, and security to start up a business in foreign country. This information is useful for investors to plan and gauge the risk as well as benefit while operating in foreign country. Moreover, a better business environment provides improved security on property rights protection. MNCs which are highly technological are very sensitive to protection of intellectual property rights. Additionally, a better business environment contributes higher transparency in production and transaction costs such as cost related to cross borders activity. Therefore, less-than-optimal economic decision-making is avoidable with these costs transparency. A country which fails to provide a proper business environment is rendering itself to have higher risk, business cost, and obsolescent technologies. The above reasons provide a strong reason to believe that business environment is important factor in moderating the growth-effect of FDI. FDI inflows are usually long-term investments which involve a large number of capitals. Evaluation on risk, business cost and protection of intellectual property rights are essential in determining a locational choice of FDI. Therefore, a country which makes more efforts in improving its business environment can attract more FDI and thus more spillovers.

The past decade has also seen increasing trends of environmental degradation – for example, greenhouse gas emissions, deforestation, loss of biodiversity. Such patterns of environmental destruction have been driven by increased economic activity, of which FDI has been blamed as one of the contributors. This observation become so obvious for developing countries in recent years as various reports show that pollution trend is increasing and at the same time they receive more FDI. However, several studies suggest that the findings on the impact of FDI on environmental degradation are inconclusive. Since government corruption is generally widespread among developing rather than developed countries, this study argues that corruption level in the host countries may explain the ambiguous link between FDI and environmental degradation. A country which is more corrupt is likely to have more pollution induced by FDI. Corruption can either be a "helping hand" or "grabbing hand". A "helping hand" says that bribery can enhance efficiency in commercial activities. Conversely, a "grabbing hand" views corruption as additional cost incurred by the firms. Both "helping and

grabbing hands" are favourable for foreign polluted industries that intend to engage in pollution. From polluted industries perspective, "helping hand" effect from corruption provides greater freedom for MNCs to ignore regulations on environmental quality. Similarly, polluted industries are unaffected by "grabbing hand" as long as the bribery costs are lower than the abatement cost. Even though the countries possess stringent environmental policy, pervasiveness of bribery activity will cripple the effectiveness of the policy and enable the polluted industries to achieve their rent seeking activities. Therefore, we believe that corruption in the host country may alter the nature of link between FDI and pollution. Analysis on this PHH issue involves developing countries only as PHH is focused on the reallocation of polluting industries from developed to developing countries.

In sum, the moderation effect of competition, business environment and corruption are being studied because it untangles the inconclusive findings in FDI-growth link as well as FDI-pollution link. Both types of linkages can be intensifying with the existence of these moderators.

1.3 Research Objectives

The general objective of this study is to examine the impacts of FDI on economic growth and pollution with a special emphasis on the role of institution. The specific objectives of this study are:

1. To examine the effects of competition in enhancing FDI-growth link.
2. To evaluate the effects of business environment reform in moderating the growth-effect of FDI.
3. To investigate the effects of corruption in moderating the impact of FDI on pollution.

1.4 Significance of the Study

This thesis contributes to the literature in several important aspects. It seeks to build upon the wealth of knowledge regarding formal institutions. This thesis complements the existing literature by providing a more in-depth study on the role of formal institutions in moderating the impact of FDI on the host economy. Being one of the important elements of institutional quality, competitions are analysed as an intervening factor in linking FDI and growth. Most of the previous studies on competition have analysed its direct impact either on FDI or output. With the advancement of information and communication technology, foreign market penetration is easier than before which resulted in stronger competition. In view of this, this study shed a new light on the indirect role of competition in the growth process. Apart from that, analysis of competition is relatively scarce in the macro level. This is because competition is hard to quantify at the macro level. A better proxy for competition is adopted in this thesis, and it is assumed to be better in reflecting the actual market competition situation among other proxies used by previous researchers. The sub-components involve in the competition proxy directly reflects the government's efforts in competitiveness creation. In other words, any strategies implemented will directly reflect in these sub-components.

In the case of business environment reform, this hypothesis has yet to be tested. Many other indicators have been used as intervening factor in FDI-growth link but not BE reform indicator. Most of the existing literature has mainly focussed on the effect of BE indicator on entrepreneurship rate, informal sectors, income per capita and economic growth. Besides that, the existing literature compares countries performance in BE using one year data point only in ranking analysis. Instead of using one year data point, this study uses changes in the indicator by exploiting observations across years. As a consequence, actual reforms being done by the government across the sample period can easily be revealed. These are the important information which shows how much the effectiveness of the government efforts in promoting economic growth as well as mediating FDI.

The third objective focuses on the role of corruption in FDI-pollution link by utilising an innovative approach. Specifically, the threshold regression employed in this study is able to accommodate different kind of interaction between FDI, pollution and corruption. By adopting threshold regression, the role of corruption can shed some lights on the mixed results in previous PHH studies. Importantly, the role of corruption is essential in determining the effectiveness of the policies. The existence of corruption will cause the outcomes of the environmental policies to deviate away from expectation. Additionally, rampant corruption among officials causes the issue of pollution to remain unresolved. Therefore, this analysis is essential to prove the role of corruption in attracting foreign polluting industries. It shows that penalising the polluted firms is not a long-term solution, but penalising the corrupted officials might be more efficient in curtailing pollution.

1.5 Organization of the Thesis

The remaining of this thesis is organized as follows. Chapter 2 reviews some of the related literature. This chapter is divided into two part namely theoretical and empirical literature. Chapter 3 discusses models specification, data and methodologies used to test each of the objectives. Chapter 4 presents and discusses the findings. Chapter 5 concludes and provides some policy recommendations. It also highlights some of the limitations encountered in this research and provides suggestions for future research.

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