FACTORS AFFECTING FOREIGN DIRECT INVESTMENT DECISION 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 institutes 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 21506 words.

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LIST OF ABBREVIATIONS

ADF	Augmented-Dickey Fuller
AIC	Akaike Information Criterion
ARCH	Autoregressive Conditional Heteroscedasticity
ARDL	Autoregressive Distributive Lag
ASEAN	Association of Southeast Asian Nations
BoP	Balance of Payments
CFDI	China FDI Inflows
ECM	Error Correction Model
Eviews	Electronic Views
FD	Financial Development
FDI	Foreign Direct Investment
FE	Fixed Effects
GDP	Gross Domestic Product
GDPG	Economic Growth
GNP	Gross National Product
GRACH	Generalized Autoregressive Conditional Heteroscedasticity
GRO	Annual Growth Rate
GUI	Graphical User Interface

INF	Inflation Rate
INF	Infrastructure Development
LM	Lagrange Multiplier
MFDI	FDI inflows in Malaysia
MNCs	Multinational Companies
MNE	Multinational Enterprise
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Square
OPE	Trade Openness
OREER	Official Real Exchange Rate
RE	Random Effects
RER	Real Exchange Rate
RESET	Regression Equation Specification Error Test
SAARC	South Asian Association for Regional Cooperation
TAX	Corporate Tax Rate
TL	Quality of Infrastructure
TO	Trade Openness
UNC	Macroeconomic Uncertainty
VIF	Variance Inflation Factor

LIST OF APPENDICES

PREFACE

This research paper is submitted as a part of the requirement to fulfill for the Bachelor of Finance (Hons) course. The title chosen for this research project is "Factors affecting foreign direct investment decisions in Malaysia". It revolves around the determinants of the foreign direct investment inflows in Malaysia.

Foreign Direct Investment (FDI) is one of the key drivers in speeding up the development and economic growth in Malaysia. Sound macroeconomic management, presence of a well functioning financial system and sustained economic growth has made Malaysia an attractive country for FDI. Moreover, FDI plays a crucial role in Malaysia economy as it generates economic growth by increasing capital formation through the expansion of production capacity.

It is reported that the charm of Malaysia in attracting FDI had declined eventually from 1992 until 2001. It was then increased from 2002 to 2006 but dropped significantly from 2007 to 2009. Surprisingly, FDI inflow in Malaysia increased dramatically in 2010. The high volatility of FDI inflows to Malaysia has drawn attention to the further study of the determinants of FDI inflow in Malaysia.

ABSTRACT

Foreign Direct Investment (FDI) plays a crucial role in speeding up the development and economic growth of a country. In particular, developing countries rely heavily on FDI to promote their economy as they face capital shortage for their development process. FDI not only brings in capitals and technology, but also skills into developing countries. And these ended up helping the countries to grow faster by satisfying the country's needs.

The strong growth performances experienced by Malaysia economy greatly depends on the FDI. FDI generates economic growth by increasing capital formation through the expansion of production capacity, promotion of export growth and creation of employment in Malaysia. FDI inflows of Malaysia started fluctuating from 1996 to 2010 and this high volatility of Malaysia FDI inflows drew the researchers' attention to examine the factors affecting FDI inflows in Malaysia by using the annual data from year 1982-2010. Multiple linear regressions model is applied to study the relationship between explanatory variables (market size, economic growth, exchange rate, quality of infrastructure, trade openness, inflation rate and China FDI inflow) and explained variable (Malaysia FDI inflow).

Empirical results show that market size, economic growth, trade openness, inflation rate and China FDI inflow significantly and positively affect Malaysia FDI inflows. Other than that, exchange rates also significantly affect Malaysia FDI inflows; when Ringgit Malaysia depreciates against other currencies, FDI inflows of Malaysia decrease. Last but not least, quality of infrastructure failed to establish a significant relationship with Malaysia FDI inflows.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

Chapter 1 covers the brief introduction on the topic researchers chose to do in this study, starting from the big picture narrowing down to the field for which researchers focused on. First off, some studies are done on Foreign Direct Investment (FDI), defining and explaining how it works. The effects FDI brought on to a country will also be discussed in this section. Follow on, the topic are narrowed down on to the chosen country – Malaysia. In this section, problem statements regarding the FDI in Malaysia and the involved independent variables will be introduced. Research objectives are then written down with more in depth as researchers go on further into the topic. Research questions and hypothesis on the study will also be inscribed accordingly. Under the sub topic significance of study, the importance and contributions of the research will be discussed. Before the chapter ends, a layout on each chapter will also be briefly outlined. Altogether, there will be 5 chapters including: Chapter 1: Research Overview, Chapter 2: Literature Review, Chapter 3: Methodology, Chapter 4: Data Analysis, and Chapter 5: Discussion, Conclusion and Implications. Last but not least, Chapter 1 is concluded by providing a summary and linkage to the next chapter covering the literature review.

1.1 Research Background

The Economy Watch (2010) defines Foreign Direct Investment (FDI) as a type of investment involving the injection of foreign funds into an enterprise that operates in a different country of origin from the investor. More specifically, FDI refers to the investment of foreign asset into domestic goods and services and this does not include the foreign investments in stock markets. FDI can be carried out through joint ventures, Greenfield investments and cross-border acquisitions. Joint venture is a shared ownership with the local investors in a foreign business. This strategy will turns out good if the MNE finds the right local partner as it can reduce political and country risks, which in turn, increase the understanding on the local market. However, if the wrong partner is chosen instead, political risk and agency costs may occur. Meanwhile, a Greenfield investment is to establish a production or service facility "starting from ground up". It usually requires extended periods of physical construction and organizational development. Cross-border acquisition, on the other hand, is to directly acquire a company in the targeted country. This requires a short period of time to gain presence and it is also a cost-effective way of gaining competitive advantages such as brand names valued in the targeted market (Moffett, Stonehill, & Eitheman, 2009).

According to Awan, Khan, and Zaman (2011), FDI is an essential component to the efficient functioning of International Economic system as it speeds up the development and economic growth of a country. However, the FDI benefits in which host countries can expect to receive depend on the co-operation of their government. The authors also pointed out that FDI mobilizes the capital from rich countries to capital scarce countries. As a result, both countries can gain from this capital movement. Shortage of capital for the development process has always been a key problem in developing countries (Aqeel & Nishat, 2004). This is mainly because domestically generated resources are insufficient to satisfy the growing needs of investments in education, infrastructure and exploitation of natural resources, thus, resulting in their inability to generate internal savings that meet their investment needs (Vadlamannati, Tamazian, & Irala, 2009). FDI inflows act as the lifeblood to developing countries as it brings capital to their countries. Other than that, it made possible the transfer of technology and managerial skills, increase in employment and enhancement in the productivity of home country (Awan, Khan, & Zaman, 2011). Besides, FDI also benefits investors in developed countries by enabling them to take ownership advantage in the host country and gain profits. As a result, there is mutual benefit in the international movement of capital among countries.

Despite the advantages of FDI, it had also led to a few negative effects. First and foremost is the repatriation of investment income. When foreign investors invest in the host country, they are compensated in the form of dividends. It will then be brought back to their country, thus, causing an outflow of fund for the host country. The next problem is the high import content. The large inflow of FDI into the country has brought about an increase in the imports of intermediate goods, consequently, growth in the import bill. “Crowding-out” effects also make up as another problem of FDI. As foreign investors invest in the host country, it increases industry concentration and market power of a few large firms. This in turns, create barriers for other small firms to enter (Wong & Jomo, 2005). In conclusion, FDI brings both advantages and disadvantages to the nation’s economy.

Moffett, Stonehill, and Eitheman (2009) also explained that the motives of Multinational Enterprise (MNE) investing abroad can be summarized into 5 categories comprising of market seekers, raw material seekers, production efficiency seekers, knowledge seekers and political seekers. Market seekers produce in foreign countries and can either export to other markets or used to satisfy the local demands. On the other hand, raw material seekers extract raw materials that they can find in other countries. They then either use them for export or further processed and sell it in the country in which the raw materials are found. Production efficiency seekers have similar concept with the raw material seekers. They prefer to produce in countries where one or more factors of production are underpriced in relation to their productivity. Following are the knowledge seekers who operate in foreign countries to gain access to technology or managerial expertise. With better technology or managerial expertise, one can increase productivity and reduce the cost. Hence, achieving the primary objective of MNE investing abroad – reduction of cost. Last but not least, political safety seekers acquire or establish new operations in countries with low economy and political risks.

1.1.1 Foreign Direct Investment in Malaysia

Foreign direct investment is the key driver underlying the strong growth performances experienced by the Malaysian economy. Sound macroeconomic management, presence of a well functioning financial system and sustained economic growth has made Malaysia an attractive country for FDI. Other than that, the government policy reforms like introduction of the Investment Incentives Act in 1968, establishment of free trade zones in the early 1970, and the provision of export incentives alongside the acceleration of open policy in the 1980s has attracted a large amount of FDI inflow in the late 1980s (Ang, 2008). The sharp increase in FDI of Malaysia was due to the coincidence of the foreign investment regime which was further liberalized as part of the structural adjustment reforms implemented in response to the macroeconomic crisis in the mid-1980. In addition, the move by firms from Japan, South Korea, United States and Taiwan in relocating their production bases to low-cost countries due to the rising wages in the domestic countries also plays a part in the increment of FDI in Malaysia (Athukorala & Waglé, 2011).

In the second half of 1980s and 1990s, the total FDI inflow into ASEAN countries increased dramatically from an annual level of US$3 billion to US$30 billion. Singapore remained by far the largest recipient of FDI in the region, whereas Malaysia accounted for 25% of the total inflows into ASEAN countries (Athukorala & Waglé, 2011). According to Karimi, Yusop, and Law (2010), based on the result of TOPSIS method which is used in ranking ASEAN countries in term of attraction and capacity for FDI in 2005, Malaysia was at the second place whereas the first ranking belongs to Singapore. This shows that Malaysia is the most attractive country for FDI among the ASEAN countries right after Singapore.

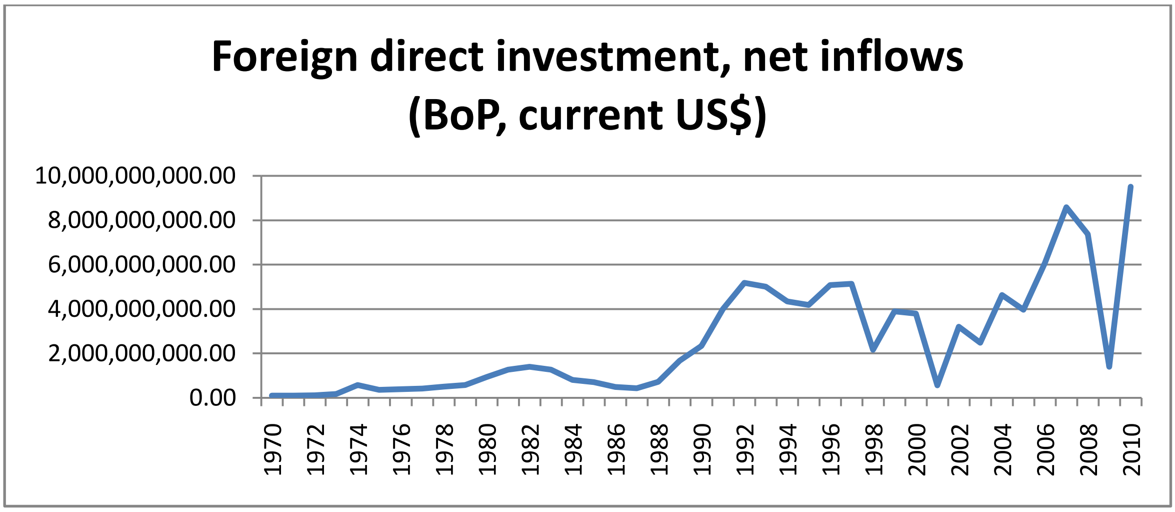
FDI plays several crucial roles in Malaysia economy; the most crucial one is to generate economic growth by increasing capital formation through the expansion of production capacity. The second role is to promote export growth. Investing firms which have its own product reputation and brand image in the international market reduces the need for domestic firms to spend resources and time to penetrate and acquire foreign markets. The facilitation of the new technology transfer to the host country and reduction in unemployment through the expansion of the economy and job creations resume as the third role of FDI. In addition, FDI also acts as an agent of transformation in the Malaysian economy. This is proven with the dominance of the influx of FDI into the manufacturing sector in its transformation from agricultural economy to industrialized economy (Abdul Rahim, 2006). Wong and Jomo (2005) point out that FDI can bring in foreign exchange to be used in the payment of necessary capital and intermediate goods imports, consequently, solving the foreign exchange problems.

1.2 Problem Statement

As observed from Figure 1, researchers found that Malaysia's FDI net inflows (BoP, current US$) were decreasing from 1992 reaching to a minimum point in 2001 with a total amount of FDI net inflows (BoP, current US$) of US$ 553,947,368.42 only. This is the lowest amount attained since 1980s. The average FDI net inflows (BoP, current US$) that was decreasing since 1992 was able to increase later from 2002 to 2006. However, the FDI net inflows (BoP, current US$) dropped significantly from US$ 8,590,185,403.74 in 2007 to US$ 1,387,393,683.06 in 2009. Surprisingly, things turned the other way round in 2010 as the FDI inflow in Malaysia increased dramatically and reached a net amount of US$ 9,509,265,455.11. It is by far the highest amount achieved among the recent years. According to Athukorala and Waglé (2011), Malaysia's impressive FDI inflow was severely disrupted by the financial crisis from 1997 to 1998 as they see the magnitude of FDI in Malaysia dipped during the period. The high volatility of FDI inflows in Malaysia has drawn attention to the further study of the determinants of FDI inflow in Malaysia.

It is reported that the charm of Malaysia in attracting FDI had declined. As explained by Karimi, Yusop, and Law (2010), even though Malaysia was the second most attractive and highest capacity for foreign direct investment among the ASEAN countries in 2005, the recent inward FDI performance of Malaysia shows that the country was underperforming. The FDI of countries around Malaysia like Thailand and Vietnam have surpassed Malaysia.

Figure 1: Total FDI inflows in Malaysia (BoP, current US$): 1970 - 2010



Source: World Bank (2011): World Development Indictors (Edition: April 2011). ESDS International, University of Manchester.

The decrease of FDI in Malaysia could affect the economic growth of Malaysia conversely. This is because previous studies showed that the strong economic growth of Malaysia depends largely on the FDI. It injects capital and brings in both managerial skills and technology to Malaysia with the aim of satisfying the growing needs of domestic investment (Ang, 2008; Vadlamannati, Tamazian, & Irala, 2009; Abdul Rahim, 2006; Athukorala & Waglé, 2011).

For better understanding of the paper, some necessary knowledge about the independent variables is discussed briefly. First off is the independent variable - economic growth. Slow economic growth is where the increment amount of goods and services produced by the economy is low; this implies that the market size is not growing rapidly and the purchasing power of the residents in the country increase sluggishly. The retarded economic growth in host country discourages investors to invest in the host country itself as it does not offer any beneficial opportunities for investors. Foreign investors aiming at making profits prefer growing economies to large economies (Demirhan & Masca, 2008). There is no reason for the investors to invest in a sluggishly growing economy as the rates of return for the investors is low and the duration to get back their principal is longer in comparison to investing in a rapidly growing economy. This is because slow growing economy affects the product sales, and thus, the growth of profit. Therefore, given that the percentage of return receives year after year comes short, investors will not be satisfied and will no longer be motivated to make any further investment anymore. In particular, this will be in controversial with the ultimate objective of market-seeking firm, which is to expand the business to a larger market in order to earn more profit. In short, economic growth is an important independent variable to be included in this study.

The next independent variable is the market size. Jordaan (as cited in Demirhan and Masca, 2008) mentioned that FDI will move to large expanding markets with greater purchasing power in which firms can potentially get profit from investment. The main objective multinational enterprises expand their business abroad is so that they can produce abroad as locals and serve the local and regional markets without any imposition of import tax. Small market size implies that the purchasing power and the demand of residents are low. There are not many opportunities for foreign investors to expand business into small market as small market size provides less efficient utilization of resources and exploitation of economies scale. Firms always take advantage of economies of scale so that they can produce in a larger quantity at a reduced cost. Small market size prohibits the firm from enjoying such advantage because with the given market size and demand of product, there is no reason for the firm to produce more than what the market demand. As the quantity of products produced is small, the fixed cost per unit increase. This is because fixed cost like rental and salary of employee are invariant to the number of product produced. Thus, the lower the number of production, the higher the average cost of product. This process is better known as the "diseconomies of scale". With the higher product cost, firms are unable to earn more profit or increase their competency by setting a lower selling price. This creates more opportunities for producers who are capable of producing at a lower cost and sell it at a lower price to enter the industry. The level of competition both from and for the foreign investors has increased. Hence, if the foreign firms are unable to compete with the other firms, the possibility of the firms coming down to bankruptcy is high. For this reason, the risk that foreign investors have to bear with the choice of investing in small market size is further increased. Thus, it is an obvious fact that FDI is not in favour to be invested in small market size country. From the explanation above, researchers can see clearly that market size is an important factor that affects the decision of FDI.

The third independent variable is China FDI inflow which is less studied as the factor of FDI in Malaysian case. China could be a threat to other countries nearby like Malaysia, Thailand, Vietnam and Indonesia. According to Chantasasawat, Fung, Iizaka, and Siu (2004), several governments have publicly noted that the emergence of China has diverted direct investment away from their economies. And policymakers throughout the region are convinced that the rise of China has contributed to the foreign and domestic investors leaving their countries and investing in China instead. China is a large country with an outstanding capability to attract more FDI into its country than any others countries. With the high population and market size of billions of people and the availability of large lands for foreign investors to build their business, no wonder there is so many foreign investors interested in the country. In other countries where there is limited land, the price of land might be higher due to the short of supply. High population in China creates high labour force, thus, reducing the cost of labour. Foreign investors are attracted by these benefits and lots of the manufacturers choose to build their factory in China to take advantage of the cheap production costs and increased profits. With China's large market size and high demand, foreign investors will be able to enjoy the benefits of economies of scale as they produce and invest in China. Consequently, as large amount of FDI goes into China, the neighbouring countries will only be able to shares out the remaining amount of FDI. This leaves negative effects on the countries that heavily rely on FDI. As a result, it is crucial to take account of China FDI inflow in the determination of FDI inflow in Malaysia.

Other than China FDI inflows, exchange rate is also an important factor that affects FDI. Exchange rate is of the main concern when foreign firms make decisions on the choice of investment because it has large impact on the capital invested. Foreign investors do not like to invest in country with high currency value. This is because high currency value reduces the capital of the investments. For instance, the exchange rate of Malaysia and United States is RM3.5 / US$ 1 and RM 2.5 / US$ 1 respectively. When US firms choose to invest in Malaysia with the amount of US$ 10, 000,000, the firm can acquire RM 35, 000,000 of capital in Malaysian Ringgit if the exchange rate is RM 3.5 / US$ 1. However, if the Malaysian Ringgit appreciate to RM 2.5 / US$ 1, the capital that can be used in Malaysia to make investment is substantially reduce to RM 25,000,000. From the above situation, researchers can see that the appreciation in the currency value of the host country (Malaysia) reduce the capital that the investors can use to make investment in host country. Smaller amount of fund have to be distributed among the purchase of raw materials, hire of labour and construction of building. As a result, high currency value is not preferable by investors. Foreign investors like depreciated currency value because it would lead to higher relative wealth position of foreign investors, and hence, lower relative cost of capital (Ang, 2007). Due to the effect of the exchange rate, it is vital to include exchange rate in our study of factors affecting FDI in Malaysia.

The fifth factor which is the inflation rate represents the stability of economy. The higher the inflation rate, the lower the economic stability. The low inflation rates have been effective in attracting FDI to developing country (Demirhan & Masca, 2008). The low economic stability increases the risk of the investors in face of losses. During high inflation period, the general prices of goods and services rise. This erodes the purchasing power of public as they need more money to buy a product in comparison to the time period before inflation. Eventually, the quantity of goods and services demanded will decrease. The drop in the quantity demanded will also lead to the decrease in sales. Moreover, the cost of raw materials needed for production increase as well and firms will not be able to exploit the advantage of low production costs. For instance, previously RM 10,000 can purchase 1000 units of woods to produce chairs. However, with the same amount of money during inflation period, the producer will only be able to purchase 800 units of wood. As the average cost of production rise, the selling prices of the product increase, leading the public to the inability to meet up with the expenses. And in the end, it will negatively affect the profit of the business and indirectly affects the return of the investors. As a result, due to the impact inflation rate have on the profitability of business, it is important to be considered by investors before making any investment in that country.

Other than that, infrastructure quality is also another determinant of FDI. Infrastructures such as road, ports, railways and telecommunication system are the basic needs of firms in support of daily business routine. Poor infrastructures that reduce productivity and potential of investments are major constraint for low-income countries. Cost of transport and delivery time will be increased due to the poor infrastructure. OECD points out that although a lot of interest arose among foreign investors on the country of China emerged after 1979, large FDI inflow did not occur in the initial period due to the poor infrastructure (as cited in Ali and Guo, 2005). As market-seeking firms invest and produce in foreign countries, it will have to deliver it to different regions of the countries after production so as to serve the local consumers' needs. Poor road and railway condition would increase the possibility of transport break down, delay in delivery time and damage of products on the way to its destination. Multinational enterprise that set up subsidiary in host country takes telecommunication seriously because of its role as a bridge that connects both the parent and subsidiary company. Poor telecommunication services such as problematic internet connection restraint parent company from doing distance monitoring and supervising the activities of their subsidiary. Nowadays, company use video conferencing to monitor their subsidiary and conduct meeting with other company in order to save time and cost. For all these reasons, researchers are convinced that infrastructure quality is significant in attracting FDI.

Last but not least is the trade openness of the host country. Trade openness indicates the degree host country response to trade, and it involves both import and export activities. Country which dislikes import and export would impose a high tariff on both imported and exported goods. This would discourage foreign investors to make investment in host country, in particular, export-oriented firms.

According to Aqeel and Nishat (2005), horizontal FDI is motivated by lower trade cost, hence, high tariff barriers induce firm to engage in horizontal FDI to replace exports with production abroad by foreign affiliates. Export-oriented firms import materials that cannot be found in host country to be further processed and exported to other countries for sale. So if high tariff is imposed on imported goods, the cost of producing the product would increase and the volume of import will decrease. This will harm both the productivity and the profitability of the firm. Vertical FDI can be characterized by individual affiliates specializing in different stages of production output and semi products, which in turns, are exported to other affiliates for further processing (Aqeel & Nishat, 2005). By using this fragmenting production process, it enables company to take on different cost advantages at different countries. For instance, ABC Company faces the problem of high assembling cost and less profitable sales in country A but yet do not want to give up on their business. Fortunately, the cost of labour in country B is very low. Company A can opt to reduce their cost significantly with the assembly of products done in country B and then export back to country A for sale. Therefore, by acquiring the material at a lower cost in country A and assembling the final product in country B, the cost of the product is reduced in comparison to it is finished in either of the country. This fragmentation process gives ABC Company an opportunity to invest abroad and reduce the cost of production. However, given that the trade openness in country B is low with the imposition of high tariff on import and export product, the cost after the taxes will be much higher than before the fragmentation process. The imposed taxes in country B have given up the chance to attract foreign direct investment into country B.

In conclusion, the seven factors which are made up of economic growth, market size, China FDI inflow, exchange rate, inflation rate, infrastructure quality and trade openness are important in the decision making of FDI. Therefore, researchers have included them in this study to verify whether there is relationship between these factors and FDI in Malaysia.

1.3 Research Objectives

1.3.1 General Objective

The general objective is to examine the relationship between FDI inflows and the independent variables in Malaysia from 1982-2010.

1.3.2 Specific Objectives

i. To examine the relationship between economic growth and FDI inflows in Malaysia from 1982-2010.
ii. To examine the relationship between market size and FDI inflows in Malaysia from 1982-2010.
iii. To examine the relationship between China FDI inflows and Malaysia FDI inflows 1982-2010.
iv. To examine the relationship between exchange rate and FDI inflows in Malaysia from 1982-2010.
v. To examine the relationship between inflation rate and FDI inflows in Malaysia from 1982-2010.
vi. To examine the relationship between quality of infrastructure and FDI inflows in Malaysia from 1982-2010.
vii. To examine the relationship between trade openness and FDI inflows in Malaysia from 1982-2010.

1.4 Research Questions

i. Is there any significant relationship between FDI inflows and at least one of the independent variables in Malaysia from year 1982-2010?
ii. Is there any significant relationship between economic growth and FDI inflows in Malaysia from year 1982-2010?

iii. Is there any significant relationship between market size and FDI inflows in Malaysia from year 1982-2010?

iv. Is there any significant relationship between China FDI inflows and Malaysia FDI inflows from year 1982-2010?

v. Is there any significant relationship between exchange rate and FDI inflows in Malaysia from year 1982-2010?

vi. Is there any significant relationship between inflation rate and FDI inflows in Malaysia from year 1982-2010?

vii. Is there any significant relationship between quality of infrastructure and FDI inflows in Malaysia from year 1982-2010?

viii. Is there any significant relationship between trade openness and FDI inflows in Malaysia from year 1982-2010?

1.5 Hypotheses of the Study

H_0: There is no relationship between all independent variables and FDI inflow in Malaysia.

H_1: At least one independent variable has relationship with FDI inflow in Malaysia

H_0: There is no relationship between economic growth and FDI inflow in Malaysia.

H_1: There is relationship between economic growth and FDI inflow in Malaysia.

H_0: There is no relationship between market size and FDI inflow in Malaysia.

H_1: There is relationship between market size and FDI inflow in Malaysia.

H_0: There is no relationship between China FDI inflows and FDI inflow in Malaysia.

H_1: There is relationship between China FDI and FDI inflow in Malaysia.

H_0: There is no relationship between exchange rate and FDI inflow in Malaysia.

H_1: There is relationship between exchange rate and FDI inflow in Malaysia.

H_0: There is no relationship between inflation rate and FDI inflow in Malaysia.

H_1: There is relationship between inflation rate and FDI inflow in Malaysia.

H_0: There is no relationship between quality of infrastructures and FDI inflow in Malaysia.

H_1: There is relationship between quality of infrastructures and FDI inflow in Malaysia.

H_0: There is no relationship between trade openness and FDI inflow in Malaysia.

H_1: There is relationship between trade openness and FDI inflow in Malaysia.

1.6 Significance of the Study

Determinant of FDI is a popular topic among the researchers. Even though, there have been many previous studies done on the determinants of FDI in Malaysia, in this case, researchers have added a relatively new variables - FDI inflow of China - into the model in order to find out whether the amount of FDI inflow to China affects the FDI inflow of Malaysia. There have not been many researches that included China FDI inflows as an independent variable in the examination of the determinants of FDI inflow in Malaysia. Other than that, researchers form a new conceptual model which differs from previous studies. Researchers modify the theoretical framework by picking out the factors they are interested in examining and also adding in a new variable, China FDI inflows.

This study will contributes to policymakers like Bank Negara Malaysia and the Federal Government as it gives them a picture of what variables are significantly affecting FDI inflows in Malaysia. Researchers have included some important economic factors like economic growth, market size, exchange rate, inflation rate, quality of infrastructures and trade openness. The most important factors are of course the FDI inflows of China. Bank Negara Malaysia and Federal Government play an important role in affecting Malaysia's economic environment through the monetary policy and fiscal policy. Monetary policy is used by Bank Negara Malaysia to stimulate economic by controlling both the money supply and demand. On the other hand, fiscal policy is where the government uses the expenditure and revenue (taxes) to influence the economy. This study results can serve as a guideline or reference to Bank Negara Malaysia and the Federal Government in formulating monetary and fiscal policy to meet up with the preference of direct investors who consider investing in Malaysia. Besides, these can prevent policymakers from focusing on the unnecessary areas wasting resources in an effort to attract more FDI. With the huge amount of FDI, it will be able to stimulate Malaysia's growth, increase employment rate, living standards and technology transfer and also shorten the period to achieve Vision 2020.

China is a large country with low labour cost, large market size, and high productivity level. For all these reasons, China easily out wins other countries in attracting a much higher FDI into its own country. Most of the manufacturing firms choose to invest in China to exploit the cost advantage. If in this study, researchers found out that FDI inflow of China has significant negative relationship with the amounts of FDI inflows in Malaysia, then the Federal Government of Malaysia should avoid direct competition with China. In contrast, if it is found that there is a significant positive relationship between the both, Malaysia should maintain a good relationship with China. They may consider improving the trading transaction with China or may be even come together with China in constructing policy which benefits both Malaysia's and China's economy.

Other than the contribution to Bank Negara Malaysia and the Federal Government, this study also provides guidelines or serves as a reference to potential direct investors who wish to invest in Malaysia. Before direct investors decide on investing in Malaysia, they will perform a series of examination on Malaysia's situation to determine whether or not it is profitable for them to invest in. This study will guide them through the determinants which have significant effect on the FDI inflows of Malaysia. It will also prevent potential direct investors from investing in countries with high risks and negative return.

In short, by conducting this study, researchers are able to understand more about the determinants of FDI in Malaysia and provide a more robust result to Bank Negara Malaysia and potential direct investors on the impact of economic growth, market size, China FDI inflows, exchange rate, inflation rate, infrastructure quality and trade openness have on Malaysia's FDI in flow.

1.7 Chapter Layout

1.7.1 Chapter 1

Chapter 1 discusses about the topic that researchers are interested to study, introduce the topic and write out the problem statement. Other than that, researchers will also be going through on the objective of conducting this study, what researchers are going to investigate and also the contributions and the importance of the study.

1.7.2 Chapter 2

Chapter 2 is the literature review part. Researchers will be summarizing on what they understand as they read through the past researchers' work. This increases researchers' understanding on the topic that researchers are going to do. Besides, researchers will also review on any relevant theoretical models and come out with the conceptual framework for the research.

1.7.3 Chapter 3

Chapter 3 is the methodology part in which there will be a description on how the research is carried out in term of design, data collection methods, sampling design, operational definitions of constructs, measurement scales, and methods of data analysis. It mainly discusses the preparation work before moving on to the data analysis part which constitutes the next chapter.

1.7.4 Chapter 4

Chapter 4 presents pattern of result using the data and methods previously described in chapter 3. Then, researchers will analyse the results to answer the research questions and hypothesis written down in Chapter 1.

1.7.5 Chapter 5

Chapter 5 is the last chapter of the research in which there will be discussion, conclusion and implications. It summarizes the whole study and converse the major finding, what can be recommended to policy makers and practitioners from the result obtained in the research. Other than that, it also point out the limitations of the study and provide recommendation so that next researcher can further the study if he / she is interested.

1.8 Conclusion

This research paper introduce FDI in details with its definition, types of FDI, motives of FDI, advantages and disadvantages of FDI and also how FDI works. Moreover, this study discuss on the seven determinants of FDI that researchers are interested in, including economic growth, market size, China FDI inflows, exchange rate, inflation rate, infrastructure quality and trade openness. Researchers also explained on this research's objectives - to understand the determinants of FDI inflow in Malaysia in order to improve the future performance of FDI inflow. In terms of the contribution, researchers hope this research will provide policymakers with a better understanding of the factors affecting FDI so that an appropriate policy can be developed. Other than that, researchers also explain on the chapter layout of this study. After clearing up on what need to do in this research, researchers proceed to the next chapter which is the literature review. This research paper will also study on the past researchers' work on the relationship between FDI inflows and the seven determinants and summaries it under the next chapter.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

Past research studies relating to the determinants of FDI inflows in this research paper are summarized in this chapter. This provides a better understanding of the nature of FDI, economic growth, market size, China FDI inflows, exchange rate, inflation rate, quality of infrastructure and trade openness. Other than that, the relationships between the dependent variable and independent variables are studied as well. With the help of the previous studied models, researchers are able to formulate a new proposed framework for this study.

2.1 Review of the Literature

2.1.1 Foreign Direct Investments

According to Moffett, Stonehill, and Eitheman (2009), foreign direct investment (FDI) is investment undertaken by an entity resident of one economy in an enterprise resident in another economy, with the objectives of obtaining and sustaining a lasting interest (profits) in the enterprise and also to exercise a significant degree of influence in its management. Management and voting rights are granted to the investors if the investors' ownership level is greater than or equal to 10% of the ordinary shares. Shares ownership less than 10% is termed portfolio investment and is not categorized as FDI (Economy Watch, 2010). FDI can be classified into inward FDI and outward FDI, depending on the direction of the flow of the money. Inward FDI occurs when foreign capital is invested in local resources whereas outward FDI refers to local resources invested in foreign country, also named as "direct investment abroad".

According to Vadlamannati, Tamazian, and Irala (2009), the determinants of FDI are divided into macroeconomic factors, institutional factors, political factors and socioeconomic factors. Macroeconomic factors include labor and potential macroeconomic risk like inflation rate and unemployment rate. Institutional factors are track record of government, corruption and civil liberties whereas political factors include political regime and political instability. Lastly, socioeconomic factor uses literacy, infant death and infant mortality rate as indicators. Infrastructure quality can be considered as a factor that affects foreign direct investment as well. According to OECD (as cited in Ali & Guo, 2005), although there was emerging interest among foreign investors in China after 1979, large FDI inflows did not happen in the initial period due to poor infrastructure.

2.1.2 Economic Growth

The relationship between Foreign Direct Investment (FDI) and economic growth has been a topical issue for several decades. Many researchers have conducted studies to investigate the positive causal relationship between FDI and economic growth, either in the short run, or in the long run, or both. On top of recognizing the importance of FDI to growth, economic growth itself has also been identified frequently as an important determinant of FDI inflow into the host countries (Benacek, Gronicki, Holland, & Sass, 2000).

According to Hansen and Rand (2006), rapid growth of an economy might attract more FDI by multi-national companies (MNCs) as they locate new profit opportunities. Dunning (1995) argued that MNCs with certain ownership advantages will invest in another country with locational advantages, and both advantages can be captured effectively by “internalizing” production through FDI. This market hypothesis has been tested in many empirical papers (Chakraborty & Basu, 2002; Moosa, 2002). High GDP growth rate represents soundness and stability of economic policies, and the effectiveness of the government institutions which are mainly looked for in international transactions. Thus, it will cause the levels of aggregate demand for investments (both domestic and foreign) to rise (Zhang, 2001).

Fan, Morck, Xu, and Yeung (2007) encouraged by past growth performance, also note that foreign investors overflow China in anticipation of improved institutions. With the aid of panel data for 80 developed and developing countries, Choe (2003) conducted a Granger causality test for GDP and FDI. It is found that the causality between economic growth and FDI runs in either direction but with a tendency towards growth causing FDI; there is little evidence that FDI causes host country's growth. Thus, a significant and positive relation is once again proven between GDP growth rate and FDI inflows in a country.

While most studies found the importance of economic growth on FDI, there are also other studies which failed to validate the hypothesis. For instance Kahai (2011), on the other hand, could not established a significant relationship between economic growth (measured as the annual real GDP growth rate) and FDI using the data from 1998 and 2000 for fifty-five developing countries. Although all these studies provide ample evidence of the relationship between economic growth and FDI in both developed and developing countries, few studies have been done in the case of Malaysia. Therefore, economic growth is included as one of the independent variables in this research paper.

2.1.3 Market Size

Market size has been proved to be one of the most important determinants of FDI by numerous past empirical studies (Lim, 2008; Luiz & Charalambous, 2009; Ang, 2008; Athukorala & Waglé, 2011).Market size of a country represents the potential demand for the country's output and also its economic conditions. It is an important element that will determine the foreign direct investors' investment in a particular country (Asiedu, 2002). For those countries which have large markets, the stock of FDI is expected to be larger than those of the small markets'. Market size is normally measured by real GDP or GDP per capita GNP. At times, private and public consumption are also used as alternatives.

Majority of studies use GDP and GDP per capita as a proxy for market size and it is found that there is a positive relationship between market size and FDI inflow to the country (Artige & Nicolini, 2005). According to Sharma & Bandara (2010), investors are easily attracted to large expanding market. Although there still remains other factors that might affect foreign investors' decision making, the first things to make them have the intention to invest in a country is none other than the size of market (Awan, Khan, & Zaman, 2011). This is because market that is small and unable to expand rapidly does not possess any inherent attractiveness. Charkrabarti (2001) (as cited in Moosa & Cardak, 2006) stated that a larger market size of a country indicates that the country will be more efficient in utilizing their resources and exploitation of economic of scale. Hence, small market size country will lose its competitiveness in comparison to such countries in attracting more investors (Medvedev, 2012).

As mentioned above, it is necessary to consider market size as an important factor in determining FDI inflows in a country (Asiedu, 2002). However, at the same time, it is not the only factor influencing FDI. Medvedev (2012) argued that the barrier of trade in a country will affect the FDI inflow to the country even when the market size is large. On the other hand, Nurudeen, Wafure, and Auta (2011) and Bevan and Estrin (2004) found that GDP have significant but negative effect on the FDI. Despite the increasing country size, foreign investors are less willing to invest in a particular country which they have less perceivability on the economy (Nurudeen, Wafure, & Auta, 2011).

Also, some studies found that GDP is not suitable to be used as a proxy for market size. According to Demirhan and Masca (2008), the empirical results showed GDP insignificant to FDI because absolute GDP reflects the size of population rather than the income. It is also suggested that GDP growth rate and growth per capita GDP will be a more suitable proxy of market size. However, this argument has been less supported by other researchers.

Many researchers have proved through empirical studies for market size that using GDP or GDP per capita showed significant and positive correlation with FDI inflow to both developing and developed countries (Quer & Claver, 2007; Rodriguez & Pallas, 2008; Vadlamannati, Tamazian & Irala, 2009; Trevino & Mixon Jr, 2004). Therefore, in this study, researchers will be using GDP or GDP per capita as a proxy to market size and proved on the significant positive relationship it has with the FDI in Malaysia.

2.1.4 Inflation Rate

Inflation rate is taken as a proxy for the level of macroeconomic stability of a country. Usually, high rate of inflation, so called the unbridled inflation, in a country will reduce the return on investment and act as an indicator of macroeconomic instability. It is considered as a sign of economic tension and unwillingness of the government to balance its budget and failure of the central back to conduct appropriate monetary policy (Azam, 2010). A low inflation rate is taken as a sign of internal economic stability in the host country, reflecting a lesser degree of uncertainty which encourage foreign direct investment (Asiedu, 2002). In short, there is a negative relationship between inflation rate and foreign direct investment. Demirhan and Masca (2008) did a research on the determining factors of foreign direct investment inflow in 38 developing countries over the period of 2000-2004 by estimating a cross-sectional econometric model. According to the econometric results of this past research, it is found that inflation rate has a negative sign and is statistically significant to foreign direct investment. It means that low inflation rates have been effective in attracting foreign direct investment into developing countries. Besides that, other researchers like Azam (2010) and Shamsuddin (1994) also found that there is a significant negative relationship between inflation rate and foreign direct investment.

On the other hands, some researchers think that there might be a positive relationship between inflation rate and foreign direct investment. Srinivasan (2011) states that higher inflation indicates higher price levels and increased in the production activities of the host country and attraction of investments from foreign firms, which then leads to an increased expected level of profitability. In this research paper, Srinivasan (2011) used fixed effects and random effects models to explore the determinants of foreign direct investment in the selected South Asian Association for Regional Cooperation (SAARC) countries for the period of 1970-2007. This paper showed that inflation rate is one of the most significant factors in determining foreign direct investment in SAARC countries. However, there is some past research papers that indicated inflation rate is insignificant to foreign direct investment (Vijayakumar, Sridharan & Rao, 2010; Nurudeen & Wafure, 2010). Nurudeen, Wafure, and Auta (2011) examined the major determinants of foreign direct investment in Nigeria by analyzing the annual data over the period 1970 – 2008. Using the ordinary least squares and error correction techniques, the regression results showed that inflation rate is insignificant but have positive influence on the foreign direct investment inflows.

In a nutshell, based on the past researches, inflation rate may have both significant or insignificant and negative or positive influence on foreign direct investment.

2.1.5 China FDI Inflow

China FDI inflow is the main variable that we will be examining in this paper. There has been a few past research papers determining the influence of China FDI inflow on the foreign direct investment. Most of the past research papers showed that there will be a significant relationship between China FDI inflow and foreign direct investment either in a positive or negative relation (Salike, 2010; Chantasasawat, Fung, Iizaka, & Siu, 2004; Eichengreen & Tong, 2007).

According to past researchers, two types of effects will most probably be incurred in the event. The first one is known as the investment-diversion effect. In choosing between China and other Asian countries, multinational enterprises may consider a host of factors including wage rates, political risks and infrastructure that would make a particular destination desirable as the site for low-cost production. As proven, China's labour cost which is low may lure multinational enterprises away from sites in other developing countries like Thailand during the consideration of an alternative location for low-cost export platforms. Investing in China will then reduce the FDI in other countries. Therefore, it will be in a negative sign and so called the investment-diversion effect.

Second effect is the investment creation effect. The production and resources linkages between China and other countries takes place in the form of further fragmentation and specialization of production process. This linkage takes advantage of the respective competitiveness of different economies in the distinct stages of production. When components and parts are traded between China and another economy, an increase in China's foreign direct investment will be positively related to an increase in the other economy's foreign direct investment. Another complementary argument is that as China's economy grows, its market increases and its appetite for minerals and resources rise too. This will lead to the investment by other multinational enterprises in some other countries to extract minerals and resources in order to export it to China in need of the whole spectrum of raw materials. In this case, there will be a positive sign of China FDI inflow or the so called investment creation effect.

Athukorala and Waglé (2011) have examined patterns and determinants of foreign direct investment in Malaysia from a comparative Southeast Asian perspective. In that research paper, foreign direct investment flows into China is taken as an additional explanatory variable to test whether foreign direct investment in ASEAN is crowded out by foreign direct investment into China, which has become more attractive for foreign direct investment among the developing countries in recent years. The result of this paper showed that there is no evidence that foreign direct investment in Southeast Asian countries is crowded out by the increasing flow of foreign direct investment into China. On the contrary, Malaysia (or Southeast Asian countries) benefits from a complementary foreign direct investment relationship with China as it becomes a favored location for high-end tasks within the global production networks.

Eichengreen and Tong (2006) employ a gravity model to examine the impact China have on the exports and foreign direct investment receipts of other countries. It was asked whether there are grounds for “fear of China”. This research showed that China’s emergence has very different effects on different groups of countries. They found that there is a complementarity between inflows of foreign direct investment in China and those into other Asian countries, but substitutability for those in Organisation for Economic Co-operation and Development (OECD) countries. Wang, Wei and Liu (2007) used data from a longer interval of 1980 to 2003 in assessing the China’s effect on individual economies. They found that there is a significant foreign direct investment creation effect on India and Philippines but a significant foreign direct investment diversion effect on Indonesia, Korea, Malaysia and Taiwan.

As a result, theoretically, the net effect of investment creation and investment diversion for China cannot be determined prior and must be examined empirically.

2.1.6 Exchange Rate

The effect of exchange rate volatility on FDI movement is also a fairly well studied topic. Froot and Stein (1991), Klein and Rosengren (1994), Guo and Trivedi (2002) and Kiyota and Urata (2004) found that depreciation of exchange rate in the host country will in turns increase FDI of the host country. Conversely, when the host country's exchange rate appreciates, the FDI in that particular country will decrease. Nurudeen, Wafure and Auta (2011) had used the Ordinary Least Squares and Error Correction Techniques to study the relationship between FDI and exchange rate depreciation. Their finding was found to be in line with the research by Hara and Razafimahefa (2005) in which the exchange rate depreciation significantly and positively affects FDI inflows. This means that when a country's exchange rate depreciates, it will attract the foreign investors to invest in the country as it has a lower dollar price in its domestic industries. Besides, investors are more likely to invest in the market when the targeted market has a weak currency. They will postpone their investment to the period when the currency depreciates because they believe that they will earn a higher profit in their investment at a later date. This shows that there is a significant time lag between exchange rate volatility and FDI movement (Barrell & Pain, 1996).

However, Aqeel and Nishat (2004) had found a controversial result. They applied Cointegration and Error Correction Techniques in their study to identify the variables in explaining the relationship between exchange rate and FDI. With the average annual exchange rate of the host country as the indicator, it is found that there is a significant and positive relationship between the both. Hence, it is indicated that when the currency appreciates, FDI increases too. This is simply because investors have high expectation on the economy and the returns. Study by Campa (1993) in US also found that an appreciation of exchange rate in the host country will in fact increase the FDI in the host country. This is because investors believe that an appreciation of exchange rate in the host country will most likely increase the future profitability in terms of the home currency.

In explaining the case of South Asian Association for Regional Cooperation (SAARC) countries, Srinivasan (2011) found that the real exchange rate are insignificant and in fact has a negative relationship with the FDI. It seems that real exchange rate do not play a significant role in attracting FDI in SAARC countries.

2.1.7 Trade Openness

The competition for inward FDI in many developing countries are increased due to the ongoing process of integration of the world economy and liberalization of the economies, the controls and restrictions over the entry and operations of foreign firm which are now being replaced by selective policies aiming at FDI inflows (Aqeel & Nishat, 2005). The liberalization of the economies always refers to the openness of the economy or trade and it is one of the common variables in explaining the FDI inflows for a country. Normally, it is measured by the share of exports and imports in GDP. According to Moosa and Cardak (2006), Demirhan and Masca (2008), and Sawkut, Boopen, Taruna, and Vinesh (2009), trade openness is significant and has a positive effect on FDI inflows. A country’s willingness to accept foreign investment is important to the FDI of the country. In the research of Chantasasawat, Iizaka and Siu (2010), the result is found to be the same with the previous study which show positive significance. The study also interestingly stated that the openness of a country includes the degree of both tariff and nontariff measures. The reductions in different types of trade barriers will in turns increase FDI in a country. Awan, Khan, and Zaman (2011) also studied the relationship between the degree of trade openness and FDI by using Augmented-Dickey Fuller (ADF) test and Co-integration and Error Correction Model (ECM) in their research. They took the sum of exports and imports each year as the indicator of trade openness. The result showed that the degree of trade openness is highly significant with a positive sign in both ADF test and ECM. This means that the foreign investors would prefer making investment in countries with a higher degree of trade openness. A few studies applied the Fixed Effects (FE) model and the Random Effects (RE) model to examine the effect of trade openness on FDI. In Srinivasan (2011) case, it is found that the openness of trade is positive and statistically significant to the FDI inflows. Thus, it is an obvious fact that investors will more likely make investment in those countries which have opened up to the outside world.

However, Kolstad and Villanger (2008) (as cited in Awan, Khan, & Zaman, 2011) found that trade openness is insignificant in explaining the inflows of FDI. Busse and Hefeker (2007) confirm this and add that trade openness negatively affects FDI inflows. According to Goodspeed, Martinez-Vazquez, and Zhang (2006), the effect of trade openness on FDI is inconclusive because thus far different studies show different results. Sometimes, trade openness is significant and has a positive relationship with FDI inflows but at times it is insignificant with the other conditions of the empirical model.

In the Organization for Economic Co-operation and Development (OECD) countries, trade openness and FDI inflows have displayed a positive relationship. On the other hand, small effects have been reported on non-OECD countries and resource-rich fuel exporting countries' FDI inflows (Seim, 2009). Last but not least, the author found trade openness and FDI inflows have negative relationship in the transition countries.

2.1.8 Quality of Infrastructure

Amongst huge literature on FDI, few scholars have actually acknowledged the significant contribution of infrastructure in stimulating FDI inflows. The few proponents featured are Wheeler and Mody (1992), Asiedu (2002), Quazi (2007), Kahai (2011), and Rehman, Ilyas, Alam, and Akram (2011). These authors have argued that good infrastructure is a necessary condition for foreign investors to operate successfully. Poor infrastructure or unavailable public inputs increase costs for firms. Thus to the extent that the public input is non-excludable and non-congestible, it will lower the costs of doing business for multinational and indigenous firms alike.

In their influential paper, Wheeler and Mody (1992) employed a translog specification and uses a panel of 42 countries for the period 1982-1988 to analyze the determinants of FDI. They interestingly reported that infrastructure quality (quality of transport, communications, energy infrastructure and degree of industrialization) exhibit a high degree of statistical significance and thus have large, positive impacts (1.57 to 2.54) on investment. In addition, Asiedu (2002) who analyzed 34 countries in Africa over the period 1980-2000 using the number of telephones per 1000 population (as a measure of infrastructure development) and at the same time controlling for the classical FDI determinants supported it and concluded that countries that improved their infrastructure were "rewarded" with more investments.

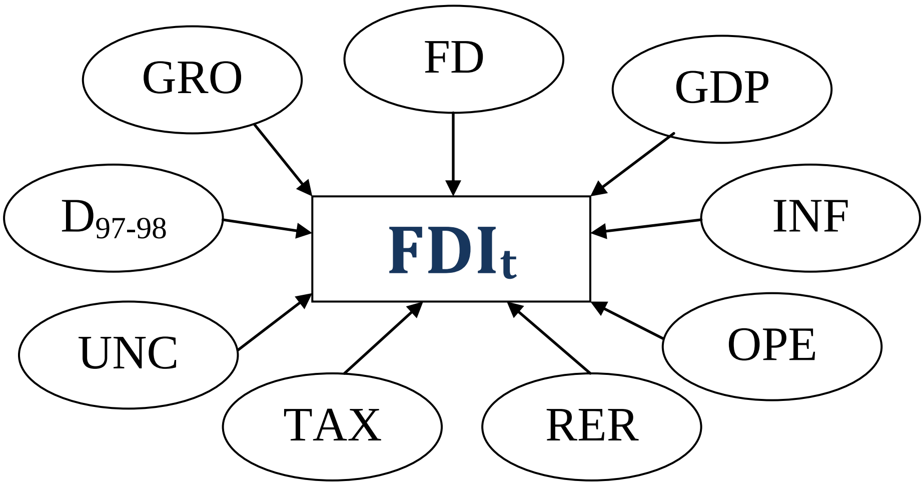
Meanwhile, Rehman, Ilyas, Alam, and Akram (2011) also constructed an indicator for infrastructure that encompassed number of telephones available per 1,000 people as measures. By using time series data from 1975 to 2008 and applying autoregressive distributive lag (ARDL) approach to cointegration, it is concluded that there are significant positive impact in both the short and long run of infrastructure on FDI inflows in Pakistan. In short run, one percent increase in infrastructure results in uplifting FDI of 1.03% and in long run, one percent rise in infrastructure enhances FDI inflows by 1.31%.This further proves that infrastructure has a significant attractiveness for FDI inflows in developing economies (Asiedu, 2002; Kahai, 2011; Mengistu & Adhikary, 2011).

While most studies found the importance of infrastructure for FDI, there are also other studies which failed to validate the hypothesis. For instance Quazi (2007), on the other hand, could not established positive and significant relationship between infrastructure (measured as the number of telephones per 1,000 people) and FDI using panel data from 1995-2000 for a sample of seven East Asian countries. The authors however admitted that ‘it is plausible that their proxy variables - the natural log of the number of telephones available per 1,000 people and the adult literacy rates, respectively, perhaps inadequately capture their true effects on FDI. Moreover, Addison et. Al. (2006) as cited in Rehman, Ilyas, Alam, and Akram (2011) acknowledge such promotional impact only for developed nations but, on the other hand, such situation does not exist for developing countries.

A review of literature suggests that while the role of infrastructure in attracting FDI has received increasing interest from academic scholars lately, yet these studies focused on the general level of infrastructure and moreover have largely ignored developing country cases, particularly Malaysia economies. Thus, the current study attempts to fill in this gap and thus supplements the growing literature on FDI.

2.2 Review of Relevant Theoretical Models

Figure 2.1: Theoretical Model



Source: Ang, J.B. (2008).Determinants of foreign direct investment in Malaysia. *Journal of Policy Modeling, 30,* 185-189.

$FDI_t = \beta_0 + \beta_1 FD_t + \beta_2 GDP_t + \beta_3 GRO_t + \beta_4 INF_t + \beta_5 OPE_t + \beta_6 RER_t + \beta_7 TAX_t + \beta_8 UNC_t + \beta_9 D_{97\text{-}98}$

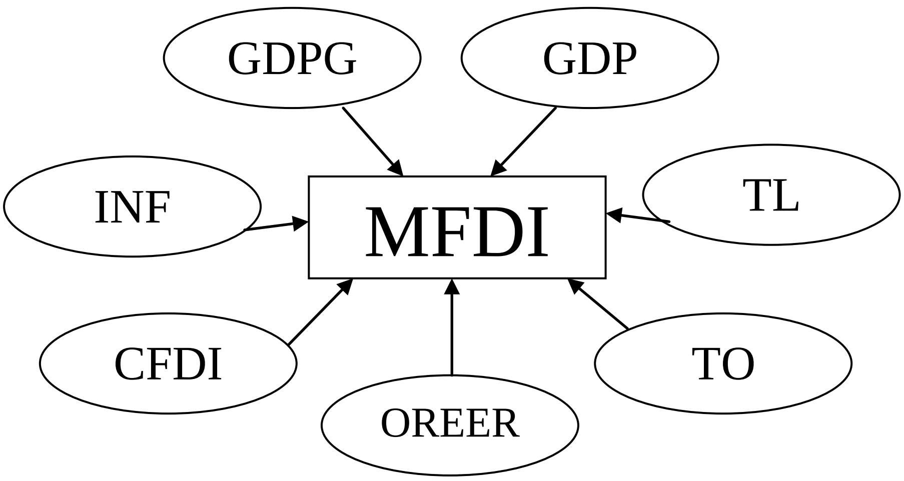
The chart above (Figure 2.1) showed the theoretical model by Ang (2008). This study explore the effect of financial development, market size, economic growth, infrastructure development, trade openness, real exchange rate, and statutory corporate tax rate in Malaysia towards foreign direct investment inflows in Malaysia. The study examines the determinants of FDI for Malaysia to enlighten analytical and policy debates.

As seen from the model of Ang (2008), the independent variables involved are financial development, gross domestic product, annual growth of gross domestic product, infrastructure development, trade openness, real exchange rate, and statutory corporate tax rate in Malaysia. On the other hand, the dependent variable is foreign direct investment inflows in Malaysia.

According to Ang (2008), those factors are the key forces that stimulate FDI inflows in Malaysia. Financial development (FD_t) is measured by private credit to GDP while gross domestic product (GDP_t) is used as an indicator to determine market size of country. GRO_t, which is the annual growth rate of GDP, measured the economic growth of country. Meanwhile, infrastructure development (INF_t) is proxy by total government spending on transport and communication whereas trade openness (OPE_t) is defined as the sum of exports and imports over GDP. RER_t is the real exchange rate and TAX_t is the statutory corporate tax rate in Malaysia. UNC_t represents the macroeconomic uncertainty related to output fluctuations. Last but not least, Ang (2008) include $D_{97\text{-}98}$ which refers to dummy variable accounting for the Asian financial crisis in 1997-1998.

2.3 Proposed Theoretical Framework

Figure 2.2: Researcher's Model



Adapted from: Ang, J.B. (2008).Determinants of foreign direct investment in Malaysia. Journal of Policy Modeling, 30, 185-189.

Based on the model from Ang (2008), we remodeled the model into (Figure 2.2):

$$MFDI_t = \beta_0 + \beta_1 GDP_t + \beta_2 GDPG_t + \beta_3 OREER_t + \beta_4 TL_t + \beta_5 TO_t + \beta_6 INF_t + \beta_7 CFDI_t$$

As seen from the model above, the independent variables we used as determinant of FDI inflows in Malaysia are market size, economic growth, infrastructure, trade openness, real exchange rate, China FDI, and inflation rate in a country. The dependent variable is the FDI inflows in Malaysia (MFDI).

The independent variable GDP, which were initially symbolized as GDP in the theoretical model, is the indicator for market size. According to Chakraborty and Basu (2002), larger market size will induce more foreign investment into the country. Hence, GDP are expected to have positive relationship with the foreign direct investment inflows in Malaysia (Artige & Nicolini, 2005).

Independent variable GDPG is the indicator for economic growth which is commonly proxy by annual growth domestic product growth rate. Based on Globerman and Shapiro (2003), higher gross domestic product growth rate indicates that the country is doing well in development. Ang (2008) proved that growth domestic product growth rate is important and has positive impact on FDI inflows. Thus, higher gross domestic product growth rate tends to attract more foreign investor to invest in that particular country.

The independent variable OREER refers to the indicator for official real exchange rate. Hara and Razafimahefa (2005) stated that when the exchange rate of a country depreciates, it will attract more FDI inflows. Theoretically, it is true because foreigners tend to invest in lower capital countries as they wish to generate higher income when the exchange rate of the country they invest in appreciate in the possible future.

Independent variable TL is the indicator for quality of infrastructure. Wheeler and Mody (1992), Loree and Guisinger (1995), Morisset (2000), and Asiedu (2002) stated that infrastructure is one of the key indicators in determining the FDI inflows of a country. Good infrastructure such as increased number of telephone line in the country allows firms to operate or promote their businesses more easily. This in turns, increase the opportunity of foreign investor investing in the country.

Independent variable TO represents the indicator for trade openness. Theoretically, open economies will generally generate greater market opportunity. According to Moosa and Cardak (2006) and Demirhan and Masca (2008), trade openness is crucial to a country's foreign direct investment. This is because most of the investors prefer investing in the country which has less trade barriers.

Independent variable INF is the indicator for inflation rate of the country. In theory, the higher the inflation rate, the more expensive the cost of domestic product become. This will then decrease the foreigners investing in the country due to their need to take out more cost of capital to buy resources or hire worker in that country. Demirhan and Masca (2008) also found that inflation rate has a significant but negative relationship with foreign direct investment.

Last but not least, independent variable CFDI is the indicator for China FDI inflows. This variable is used to determine whether China's increased in its FDI inflows will affect Malaysia FDI inflows. Based on Wang, Wei and Liu (2007), China FDI is significant and will affect other countries' FDI. This is because China imposed lower labour cost compare to other countries, so foreign investors will most probably shift their interest and invest in China due to the need of lower capital to operate the firms. It is predicted that an increase in China FDI will lead to a decrease in Malaysia FDI.

2.4 Hypotheses Development

After forming a conceptual framework based on the past researcher's reviews, researchers have also formed hypotheses on the model and also each variable to examine whether the theory formulated is valid or not. Below are the hypotheses:

H_0: There is no relationship between all independent variables and FDI inflow in Malaysia.

H_1: There is relationship between all independent variables and FDI inflow in Malaysia.

H_0: $\beta_1 = 0$ (There is no relationship between market size and FDI inflow in Malaysia.)

H_1: $\beta_1 \neq 0$ (There is relationship between market size and FDI inflow in Malaysia.)

H_0: $\beta_2 = 0$ (There is no relationship between economic growth and FDI inflow in Malaysia.)

H_1: $\beta_2 \neq 0$ (There is relationship between economic growth and FDI inflow in Malaysia.)

H_0: $\beta_3 = 0$ (There is no relationship between quality of infrastructures and FDI inflow in Malaysia.)

H_1: $\beta_3 \neq 0$ (There is relationship between quality of infrastructures and FDI inflow in Malaysia.)

H_0: $\beta_4 = 0$ (There is no relationship between trade openness and FDI inflow in Malaysia.)

H_1: $\beta_4 \neq 0$ (There is relationship between trade openness and FDI inflow in Malaysia.)

H_0: $\beta_5 = 0$ (There is no relationship between exchange rate and FDI inflow in Malaysia.)

H_1: $\beta_5 \neq 0$ (There is relationship between exchange rate and FDI inflow in Malaysia.)

H_0: $\beta_6 = 0$ (There is no relationship between China FDI inflows and FDI inflow in Malaysia.)

H_1: $\beta_6 \neq 0$ (There is relationship between China FDI inflows and FDI inflow in Malaysia.)

H_0: $\beta_7 = 0$ (There is no relationship between inflation rate and FDI inflow in Malaysia.)

H_1: $\beta_7 \neq 0$ (There is relationship between inflation rate and FDI inflow in Malaysia.)

2.5 Conclusion

This research has used 7 independent variables constituting of market size, economic growth, quality of infrastructure, trade openness, exchange rate, China FDI inflow, and inflation rate. As supported by previous studies, researchers assume that those variables are significant in determining the foreign direct investment inflows in Malaysia. Therefore, researchers will be collecting those indicators' observations from reliable database and plan carefully for the research methodology so as to obtain a proper analysis to prove what they assumed is correct and accurate.

CHAPTER 3: METHODOLOGY

3.0 Introduction

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. At each operational step of the research process, researchers are required to choose from a multiplicity of methods, procedures and models of research methodology to achieve the objectives. So in this chapter, researchers will list out the various steps that are generally adopted in researching the determinants of foreign direct investment along with the logic behind them. What data have been collected and what particular method has been adopted, why a particular technique of analyzing data has been used and a host of similar other questions will be answered as researchers get deeper in the research methodology concerning the research study.

The choices and decisions made in this part of the research take into consideration the literature review as done in the previous chapter. Literature review tells if others have used procedures and methods similar to the ones that researcher are proposing, which procedures and methods have worked well for them, and what problems they have faced with them. Thus, it allows researcher to better position in selecting a methodology that is capable of providing a valid answer to our research questions.

Last but not least, the research design, data collection methods, data processing, and methods of data analysis will be discussed in the following sub topics.

3.1 Research Design

Researchers use research design as the fundamental directions to carry out the study. In this study, researchers opted to use quantitative research. Quantitative research involves a collection of numerical data to answer a specific research question. In this case, the research is to examine the relationship between the independent variables which are China FDI inflow (CFDI) as measured by China FDI (Athukorala & Waglé, 2011; Wang, Wei ,& Liu, 2007 and Salike, 2010), quality of infrastructure (TL) as measured by telephone line per 100 people (Asiedu, 2002; Mengistu & Adhikary ,2011), exchange rate (OREER) as measured by official real effective exchange rate (Hara & Razafimahefa, 2005), trade openness (TO) as measured by ratio of exports plus imports to GDP (Demirhan & Masca, 2008; Nurudeen, Wafure & Auta, 2011), inflation rate (INF) as measured by inflation, consumer price (Demirhan & Masca, 2008), market size (GDP) as measured by real GDP per US$(Sharma & Bandara, 2010 ; Awan, Khan , & Zaman, 2010), and economic growth (GDPG) as measured by annual gross domestic product growth rate (Kahai, 2011 & Ang, 2008) and the dependent variable which is foreign direct investment inflows in Malaysia.

Besides that, researchers collect data on predetermined instruments to yield statistical data. It is a more structured data collection technique. Quantitative research not only provides the summary of the information on the characteristic, but it is also useful in tracking the trend. There are three type of research design: exploratory research, descriptive research, and causal research (McDaniel & Gates, 2010). According to McDaniel and Gates (2010), exploratory research is useful when the research question is unclear to guide the progress of the hypotheses. This research is also used to develop a better understanding on a problem or opportunity. Descriptive research explains more on some situation by providing a measure of the event or activity and it is accomplished by using descriptive statistic. Meanwhile, causal research is the most complex compare to the other two. This is because such research design is used to test whether one event or activity causes another (McDaniel & Gates, 2010). In this research paper, exploratory research is used for there are some unclear research questions. As researchers have included some new indicators like China FDI inflow and infrastructure that have not been used by past researchers on the country of Malaysia, it was unsure whether or not there will be a significant influence by the new indicators on Malaysia's foreign direct investment inflows.

3.2 Data Collection Methods

In order to study the effects the variables have on the FDI inflows in Malaysia, researchers had obtained data on the indicators of market size, economic growth, inflation rate, exchange rate, trade openness, quality of infrastructure and China FDI inflow from the World Bank database. For the study, data researchers used the annual times series data from the year 1982 to 2010 which consists of 29 observations. The GDP per US$ is used as the proxy for market size while the annual GDP growth rate is used as the proxy for economic growth. Besides, the indicator for inflation is inflation, consumer price while the real effective exchange rate is the indicator for exchange rate. Meanwhile, researchers employed the ratio of exports plus imports to GDP as the proxy for trade openness. Quality of infrastructure, on the other hand, has the indicator of telephone line per 100 people. Last but not least, the FDI inflows in China are used for the China FDI.

In the research project, quantitative research is done since all the data obtained are quantitative data. Quantitative research as defined by Cohen (1980) (as cited in Sukamolson, 2005) is the social research that uses empirical methods and empirical statements which are expressed in numerical terms. Besides, Sukamolson (2005) defined quantitative research as explaining phenomena by collecting quantitative data that are analyzed using mathematically based methods. Since the data researchers obtained from World Bank are in numerical terms, it qualifies as the quantitative data as indicated in the statement made by Sukamolson (2005).

Time series data is a collection of observations on the values that a variable takes over a period such as daily, monthly, quarterly, and annually (Gujarati & Porter, 2009). Researchers used time series data in the study since the data is collected at a regular time intervals which is from 1982 to 2010. All the data researchers used are secondary data as the data have already been collected by someone else for other purposes. The reasons researchers use secondary data is because working with secondary data is more economic. Since the data had previously been collected by someone else for other research purposes, there is no need for current researchers to spend time in collecting the data by themselves. This in turns save time so that researchers can focus more on the analysis. Besides, it also saves cost as the data needed can be easily found and obtained from online sites such as World Bank both at a price or for free.

3.3 Data Processing

In order to make sure accurate data are selected for the analysis, researchers constantly check through, update and edit the data. Firstly, referral on several past researches confirms that the indicators researchers choose to use is fully supported and proved by past researchers. While collecting the data, researchers double confirm the data and indicators used are in line with what was used by past researchers previously. As some of the data obtained from World Bank contained omitted observations (e.g. FDI china only has 29 observations while GDP has 34 observations), researchers had to make some adjustment on it so as to make sure all observations are in the same observations' years. Even when the researchers key in the data into E-views, the figures are checked on a few times to make sure that there is no error. This step further improves the accuracy of the data before the conduction of the analysis.

3.4 Data Analysis

In this research, Electronic Views (Eviews) is used to run and test the regression analysis.

3.4.1 Eviews

Eviews is one of the most popular econometric packages around. It can be used for general statistical analysis and econometric analyses, such as cross-section and panel data analysis, time series estimation and forecasting. It combines both spreadsheet and relational database technology with the traditional tasks found in statistical software. It also can use Windows GUI to combine with a programming language which displays limited object orientation (Renfro, 2004).

Eviews relies heavily on a proprietary and undocumented file format for data storage. However, for input and output, it supports numerous formats, including databank format, Eel formats, PSPP or SPSS, DAP or SAS, Stata, Rats, and TSP. Furthermore, it can access OECD databases. According to Startz (2009), Eviews can estimate a regression and show the information on each estimated coefficient from the Eviews output. In addition to regression coefficients, Eviews also can provide a great deal of summary information about each estimated equation.

In the research paper, Eviews is used to run the estimated multiple regressions model and also to do the diagnostic checking for determining whether multicollinearity, autocorrelation and heteroscedasticity problems exist or not. Besides that, researchers also run the model specification test and normality test using Eviews.

3.4.2 Multiple Linear Regressions

Unlike simple linear regression model, multiple linear regressions model is linear regression models that contain one dependent variable (Y) and two or more independent variables (X_i) (Gujarati & Porter, 2009). The independent variables act as explanatory variables in predicting the result of dependent variable. An equation of multiple linear regressions models is as below:

$$Y = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots..\beta_k X_{ki} + \mu_i$$

One of the reasons researchers opted to use multiple linear regressions model instead of simple linear regression model is most probably because the outcomes of their estimation does not only involve one independent variable influencing it. In real life, there are multiple factors influencing the outcomes. Thus, multiple linear regressions model is used to ensure that the estimated result does not divert from the actual results. In order to obtain a rather accurate estimation, 7 variables have been included into the estimated models by researchers. The fewer variables are omitted from the estimation, the more accurate results will it be. As follow is the estimated economic model researchers formed:

$$FDI_t = \beta_0 + \beta_1 GDP_t + \beta_2 GDPG_t + \beta_3 OREER_t + \beta_4 TL_t + \beta_5 TO_t + \beta_6 INF_t + \beta_7 CFDI_t$$

Where FDI refers to foreign direct investment inflows in Malaysia, β is the coefficients used to explain the degree it will affect FDI. GDP is market size, GDPG is economic growth, OREER is real effective exchange rate, TL is infrastructure, TO is trade openness, INF is inflation rate and CFDI is China FDI inflows.

One of the characteristics of multiple linear regressions function is that the parameters (β_k) in the model should be linear and there is no relationship among the independent variables. The main reasons researchers need to avoid any two independent variables with relationship with each other is because if the two independent variables are highly correlated (multicollinearity), researchers may be getting biased information from the model.

In multiple linear regressions models, the β_1 and β_2 are partial regression coefficients (with two predictor variables). Partial regression coefficients indicate how the independent variables (X_i) take effect on dependent variable (Y), withholding other variables constant. On the other hand, in examining whether the multiple linear regressions model is fitted with the data, adjusted R^2 is preferred instead of R^2. This is because R^2 never decrease as the number of independent variables included in the model increases.

3.4.3 F- test Statistic

F- test is a measure on the overall significance of the estimated regression. It is any statistical test in which the test statistic has an F-distribution under the null hypothesis. F- test is used when multiples parameters are involved in the model. It is most commonly used in comparing statistical models that have been fit to a data set to identify the model that best fits the population from which the data were sampled.

Statistics F-test helps to analyze data by using the F-test statistic to determine a P-value that indicates how likely one could have gotten the results by chance. Therefore, if there is a less than either 1%, 5%, or 10% chance of getting the observed differences by chance, researchers will reject the null hypothesis and find it statistically significant for the whole model. This also means that if the P-value of F-test is lower than 0.01, 0.05, or 0.1, they will reject the null hypothesis and conclude that it is significant for the whole model to explain the dependent variable.

3.4.4 T- test Statistic

T-test is probably the most commonly used Statistical Data Analysis procedure for hypothesis testing of the means of the variables associated with two independent samples or groups (Lucey, 2002). T-test requires interval or ratio data and assumes the sample populations have normal distribution while the variances are equal. This test assess whether the observed differences between two sample means occurred by chance.

According to Lucey (2002), statistics T-test helps to analyze the data by using the t-test statistic to determine a P-value that indicates how likely one could have gotten the results by chance. Therefore, if there is a less than either 1%, 5%, or 10% chance of getting the observed differences by chance, researchers will reject the null hypothesis and find a statistically significant difference between the two groups. This also means that if the P-value of T-test is lower than 0.01, 0.05, or 0.1, they will reject the null hypothesis and conclude that there is significance between the independent variable and dependent variable.

In short, statistics T- test is used to test the significance of each independent variable to dependent variable.

3.4.5 Diagnostic Checking

As mentioned above, there might be an existence of econometric problems in the model. Hence, researchers need to conduct several hypotheses testing to check and detect whether the model is free from multicollinearity, autocorrelation and heteroscedasticity problems. Furthermore, researchers will also need to test for model specification and carry out normality test as well.

3.4.5.1 Model Specification and Normality test

Model specification refers to the determination of which independent variables should be included in or excluded from a regression equation (Gujarati & Porter, 2009). Indeed, it can be observed that regression analysis involve three distinct stages: the specification of a model, the estimation of the parameters of the model, and the interpretation of these parameters. Model specification is the first and most critical of these stages. Researchers' estimates on the parameters of a model and their interpretation of them depend on the correct specification of the model. Therefore, problems can arise whenever researchers wrongly specify a model. Model specification error occurs when there involve any omission of relevant variable or inclusion of unnecessary or irrelevant variable or due to the wrong functional form (Gujarati & Porter, 2009). When legitimate variables are omitted from a model, the Ordinary Least Square estimators of the variable retained in the model will be biased and inconsistent. That is the variances and standard errors of these coefficients will be incorrectly estimated and vitiate the actual hypothesis-testing. On the contrary, the consequences of including irrelevant variables in the model are less serious. Estimators of the coefficients of the relevant as well as irrelevant variables will remain unbiased and consistent while the error variance remains correctly estimated. The only problem is that the estimated variances tend to be larger than necessary, thereby leading to a less precise estimation of the parameters. Or in other words, the confidence intervals tend to be larger than necessary. Test can be used to detect on the model specification error is Ramsey's RESET test.

Right behind the model specification test is another test which also cannot be ignored. The normality test is used to check whether the error term of the model is normally distributed or not. If the error term of the model is not normally distributed, the estimated model will be biased and the hypothesis testing result will be affected as well. If researchers are dealing with a small or finite sample size which is less than 100 observations, the normality assumption assumes a critical role. It not only helps us in deriving the exact probability distributions of Ordinary Least Square estimators but also enable us to use the T-test, F-test and other statistical tests for regression models (Gujarati & Porter, 2009).

Therefore, before proceeding to diagnostic checking and other statistical tests, researchers have to make sure that their model is well specified and its error term is normally distributed. In this research paper, Ramsey's RESET test will be used to check on the model specification while Jarque-Bera normality test will be used to see through the normality of the error term.

3.4.5.2 Multicollinearity

Researchers have utilized the term independent variable to refer to variable being used in the forecast or clarification of the value of dependent variable. This does not mean the independent variables are independent in a statistical sense. However, there is high probable that most of the independent variables are correlated.

At the outset, researchers have planned to run some test on the multicollinearity problem in order to assess whether the independent variables in the model are highly related among each other or not. Researchers will be applying covariance analysis to find out whether there is correlation between the independent variables.

Multicollinearity can lead to a numbers of problems with regression. In some cases, multicollinearity will cause the regression coefficients to have a sign opposite that of the actual relationship. Therefore, when there is a high degree of multicollinearity, researchers cannot rely on the individual coefficients to interpret the results. This is because it is certain that the problem had affect the statistical significant of the individual regression coefficients and the ability to use them to explain the relationships. It is agreed by Larget (2007) that when multicollinearity is present, important variables can appear to be non-significant and the standard errors can be large than it is supposed to be.

To assess multicollinearity, the correlation among the independent variables should be known. The results are shown both as an individual R-squared and a Variance Inflation Factor (VIF). When the R-squared and VIF values are high for any of the variables, the model is affected by multicollinearity (Motulsky, 2002).

3.4.5.3 Autocorrelation

According to Gujarati and Porter (2009), autocorrelation may be defined as correlation between members of the observations ordered in time and place. As in time series data, there might be the correlation between disturbance terms. Another possible reason that autocorrelation will occurred is because researchers omitted some important variables from the model or used the wrong functional form. If autocorrelation occurs in the stated model, researchers might get bias results.

Therefore, researchers need to check for autocorrelation problem as it might occur in the studied model if the error is correlated. In detecting the autocorrelation problem, researchers have selected Breusch-Godfrey Serial Correlation LM Test to run the test. Since research sample size is small which has 29 observations, researchers also include informal way (graphical method) to detect autocorrelation problem. This is because the sample is small and graphical method will provide a more accurate answer compare to hypothesis testing, so the final conclusion will be drawn base on graphical result.

3.4.5.4 Heteroscedasticity

Follow on, researchers run the heteroscedasticity test to test for the constant variance of error terms. Researchers use ARCH test to identify the heteroscedasticity problem in this model. As stated by Gujarati and Porter (2009), model with heteroscedasticity problem have error terms that do not have a constant variance. There may be larger variance when values of some independent variables tend to be larger or smaller. Hence, the model with heteroscedasticity problem will no longer have minimum variances or be efficient. This will lead to the incorrect conclusion.

As stated in the theory, if heteroscedasticity occurs, it will not be easy to correct them. If the sample size is large, White's Heteroscedasticity-consistent Variances and Standard Errors can be used to correct the standard errors of OLS estimators and conduct statistical inference based on these standard errors (Gujarati & Porter, 2009). Since research sample size is small which has 29 observations, researchers also include informal way (graphical method) to detect heteroscedasticity problem. This is because the sample is small and graphical method will provide a more accurate answer compare to hypothesis testing, so the final conclusion will be drawn base on graphical result.

3.5 Conclusion

After identifying both the data and methodology that researcher opted to use, the analysis on the data will be done in Chapter 4 using the Ordinary Least Square (OLS) estimator.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

This chapter revolved the analysis of data that had been collected for the study. Using multiple linear regression method, researchers analyse the data to identify which independent variables significantly affect the dependent variable, FDI inflows to Malaysia (MFDI). On top of that, relationship between the independent variables and the dependent variable are also figured out. Throughout this chapter, data analysis would be carried out so as to fulfil both the objectives and hypothesis which was mentioned in Chapter 1.

4.1 Empirical Result of Multiple Linear Regressions Model

With the annual data from the year 1982 to 2010, researchers run the model using E-views and the following results are obtained:

$\widehat{MFDIt}$= 2.00E+09- 0.010788GDP_t+ 1.53E+08$GDPG_t$-2.32E+09$OREER_t$

se = (2.09E+09) (0.021409) (86462339) (9.89E+08)

p-value = (0.3497) (0.6196) (0.0917)* (0.0289)*

+8122953TL_t+3.78E+09 TO_t+ 14902615 INF_t+ 0.044008$CFDI_t$

se = (1.93E+08) (2.94E+09) (1.26E+08) (0.021564)

p-value = (0.9668) (0.2124) (0.9070) (0.0540)*

n = 29 R^2= 0.832961 $\overline{R}^2$ = 0.777282 Prob(F-statistic) = 0.000001*

*significant at 0.10 significance level

Following the attainment of the empirical results of multiple linear regressions, researchers carried out diagnostic checking tests to ensure the error terms of the multiple linear regressions are normally distributed, the model is correctly specified and free from multicollinearity, heteroscedasticity and autocorrelation problems.

4.1.1 Diagnostic Checking of Multiple Linear Regression Model

Table 4.1.1 Summary of Diagnostic Checking of Multiple Linear Regressions

<table>
<tr><td></td><td colspan="4">Hypothesis Testing</td><td>p-value</td></tr>
<tr><td>1.</td><td colspan="4">Jarque-Bera normality test</td><td>0.790615</td></tr>
<tr><td>2.</td><td colspan="4">Ramsey’s RESET test</td><td>0.0275</td></tr>
<tr><td rowspan="5">3.</td><td colspan="5">Multicollinearity test</td></tr>
<tr><td colspan="5">3.1 Correlation and Variance Inflation Factor (VIF)</td></tr>
<tr><td></td><td colspan="2">Independent Variables</td><td>Correlation</td><td>Variance Inflation Factor, VIF</td></tr>
<tr><td>a.</td><td>CFDI</td><td>GDP</td><td>0.971965</td><td>18.08840342</td></tr>
<tr><td>b.</td><td>TL</td><td>TO</td><td>0.953759</td><td>11.06883186</td></tr>
<tr><td></td><td colspan="5"></td></tr>
<tr><td></td><td colspan="4">Hypothesis Testing</td><td>p-value</td></tr>
<tr><td>4.</td><td colspan="4">Autoregressive Conditional Heteroscedasticity (ARCH) test</td><td>0.2025</td></tr>
<tr><td>5.</td><td colspan="4">Breusch-Godfrey LM test</td><td>0.0048</td></tr>
</table>

Source: Developed for the research

To find out whether the error terms of the model are normally distributed, Jarque-Bera normality test was used. Given the p-value of 0.790615 is more than α, 0.10, researchers conclude that the error terms of this multiple linear regressions model are normally distributed.

Next, Ramsey's RESET test was performed to determine whether the model is correctly specified. The researchers easily verify that the p-value (0.0275) was less than the significance level of 0.10, indicating that the multiple linear regressions model is mis-specified. Researchers, however, did come to a conclusion that Ramsey's RESET test does not apply in this study as the sample size was too small with only 29 observations. A test such as RESET will only provide an accurate conclusion on the model specification if the sample size is reasonably large.

Follow on, researchers proceed with multicollinearity testing. Base on the precedent studies, the official real exchange rate, OREER is expected to have relationship with the trade openness, TO. Adding on to the high R-squared value, only one independent variable was found to be significant. Hence, this further increases the researchers' suspicion that the model has multicollinearity problem. Researchers then carried out correlation test and variance inflation factor (VIF) to see which variables are highly correlated. The correlation table shows that official real exchange rate and trade openness has a low correlation of 0.828626 and a variance inflation factor of3.191024765 which put them in a no serious multicollinearity problem range of 1 and 5. However, the pair-wide correlations of gross domestic product (GDP) and China foreign direct investment inflows (CFDI); and telephone lines (per 100 people) (TL) and trade openness (TO) shows high correlations that is 0.971965 and 0.953759 respectively. The variance inflation factor, VIF calculated also indicated these 2 pairs have high value of variance inflation factor which are 18.08840342 and 11.06883186 respectively. Since the values are more than 10, the pairs of gross domestic product (GDP) and China foreign direct investment inflows (CFDI); and telephone lines (per 100 people) (TL) and trade openness (TO) are concluded as having serious multicollinearity problem.

Despite Jarque-Bera normality test proved that the error terms are normally distributed, it does not free the model from heteroscedasticity and autocorrelation problems. In order to detect heteroscedasticity and autocorrelation problems, hypothesis checking has to be carried out. Autoregressive Conditional Heteroscedasticity (ARCH) test is chosen to detect heteroscedasticity problem while Breusch-Godfrey LM test is used to detect autocorrelation problem. Researchers use a maximum of 6 lag lengths to detect heteroscedasticity and autocorrelation problems as the sample size is small. If researchers were to include too many lag length inside, the degree of freedom would decrease and incurred inappropriate hypothesis testing result. Among the 6 lag length, researchers chose p-value from the lag length with the lowest Akaike Information Criterion (AIC) to make decision. Owing to the small sample size, graphical method is deemed to be more appropriate than hypothesis testing in detecting both the problems. Somehow, we do both hypothesis testing and graphical method to compare and detect the problems.

Autoregressive Conditional Heteroscedasticity (ARCH) test indicates that the model is free from heteroscedasticity problem as the p-value is 0.2025, greater than the critical value of 0.10. From this, researchers conclude that the model does not have heteroscedasticity problem. But somehow, the model does appear to have autocorrelation problem. The p-value of the model which is 0.0048 is smaller than the significance level of 0.10. Using the hypothesis testing method, researchers conclude that the model has autocorrelation problem but not heteroscedasticity problem.

However, the residual graph shows that the model has both heteroscedasticity and autocorrelation problem. The high volatility of error terms point out the existence of heteroscedasticity problem. In addition, the decreasing trend of the error terms indicates the autocorrelation problem.

In conclusion, the error terms of multiple linear regressions model are normally distributed, but the model specification is incorrect and has multicollinearity, heteroscedasticity and autocorrelation problems. Researchers conclude that the estimated coefficient values are biased and inefficient for the problems encountered. The standard errors, t-statistics values, F-statistic value and p-value of individual independent variables and whole estimates are inaccurate.

4.2 Problem Solving

4.2.1 Problem Solving of Model Specification

Subsequently, researchers tried to solve the model specification problem by changing the form of dependent variable data. Log is added onto the dependent variable and a Log-Lin model is formed as described in the following:

$$lnMFDI_t = \beta_8 + \beta_9 GDP_t + \beta_{10} GDPG_t + \beta_{11} OREER_t + \beta_{12} TL_t + \beta_{13} TO_t + \beta_{14} INF_t + \beta_{15} CFDI_t$$

The empirical results of the Log-Lin model are

$\ln \widehat{MFDIt}$ = 19.37893 + 2.91E-12GDP_t + 0.054179$GDPG_t$

se = (0.814918) (8.36E-12) (0.033766)

p- value = (0.0000)* (0.7315) (0.1235)

- 0.803537$OREER_t$ - 0.056388TL_t + 2.654155TO_t

se = (0.386136) (0.075309) (1.148582)

p- value = (0.0499)* (0.4623) (0.0311) *

+ 0.066051INF_t + 4.89E-12 $CFDI_t$

se = (0.049206) (8.42E-12)

p- value = (0.1938) (0.5675)

n = 29 R^2 = 0.813519 $\overline{R}^2$ = 0.751359 Prob(F-statistic) = 0.000002*

* significant at 0.10 significance level

4.2.1.1 Diagnostic Checking of Semi-Logarithmic: Log-Lin Model

Table 4.2.1.1: Summary of Diagnostic Checking of Semi-logarithmic: Log-Lin Model

	Hypothesis Testing	**p-value**
1.	Jarque-Bera normality test	0.301500
2.	Ramsey's RESET test	0.5140

Source: Developed for the research

The Jarque-Bera normality test shows that the model's error terms are normally distributed for the p-value (0.301500) is more than α, 0.10. Other than that, Ramsey's RESET test indicates that the model specification is correct with its p-value (0.5140) more than the significance level of 0.10. In short, researchers were able to solve the model specification problem by adding on log to the dependent variables.

4.2.1.2 Problem Solving of Multicollinearity

Although the model specification problem is solved, multicollinearity problem remains because researchers only changed the form of the dependent variable data and not the form of independent variables data. Multicollinearity problem may also be easily solved by adding log to the independent variables. However, it is not possible due to the negative figures in the independent variable gross domestic product growth. Instead, researchers chose to split the single model into two models. Given gross domestic product (GDP) and China foreign direct investment inflows (CFDI); and telephone line (per 100 people)(TL) and trade openness (TO) have serious multicollinearity relationships, we opted for trial and error method to pick out one of the variables from the pair variables and form four new models.

Model 1: $lnMFDI_t = \beta_{16} + \beta_{17}GDPG_t + \beta_{18}OREER_t + \beta_{19}TO_t + \beta_{20}INF_t + \beta_{21}CFDI_t$

Model 2: $lnMFDI_t = \beta_{22} + \beta_{23}GDPG_t + \beta_{24}OREER_t + \beta_{25}TL_t + \beta_{26}INF_t + \beta_{27}CFDI_t$

Model 3: $lnMFDI_t = \beta_{28} + \beta_{29}GDP_t + \beta_{30}GDPG_t + \beta_{31}OREER_t + \beta_{32}TO_t + \beta_{33}INF_t$

Model 4: $lnMFDI_t = \beta_{34} + \beta_{35}GDP_t + \beta_{36}GDPG_t + \beta_{37}OREER_t + \beta_{38}TL_t + \beta_{39}INF_t$

Follow on, researchers choose the best model out of the four models formed by first comparing the significance of the whole model, then their adjusted R^2, and lastly, the number of independent variables significant in the model.

Table 4.2.2: Summary of Comparisons among 4 Models

	Model 1	Model 2	Model 3	Model 4
p-value of independent variables				
• GDP			0.0009*	0.0028*
• GDPG	0.0177*	0.0005*	0.0268*	0.0009*
• OREER	0.0571*	0.5819	0.0726*	0.7482
• TL				0.0330*
• TO	0.0005*	0.0085*	0.0013*	
• INF	0.0986*	0.0404*	0.1152	0.0539*
• CFDI	0.0004*	0.0008*		
Adjusted R^2	0.766708	0.707391	0.749916	0.676651
Prob(F-statistic)	0.000000*	0.000002*	0.000000*	0.000005*

*significant at 0.10 significance level

Source: Developed for the research

From the result, all models are found to be significant in explaining Malaysia FDI inflows. Thus, researchers chose the best model based on the highest adjusted R^2. Model 1 out of all the other four models proved to be more accurate in explaining the data. On top of that, all independent variables are found significant in the model. Now that the multicollinearity problems have been solved, researchers proceed onto diagnostic checking of model 1.

4.3 Empirical result of Model 1

Model 1: $\ln MFDI_t = \beta_{16} + \beta_{17}GDPG_t + \beta_{18}OREER_t + \beta_{19}TO_t + \beta_{20}INF_t + \beta_{21}CFDI_t$

Model 1 is chosen which includes economic growth, official real exchange rate, trade openness, inflation rate and China FDI inflows as independent variables Malaysia FDI inflows as dependent variable.

$\ln \widehat{MFDIt}$ = 19.62773 + 0.068305$GDPG_t$ - 0.693089$OREER_t$ + 1.860519TO_t +

se = (0.705766) (0.026728) (0.346083) (0.461854)

p-value = (0.0000)* (0.0177)* (0.0571)* (0.0005)*

0.077766INF_t + 7.66E-12 $CFDI_t$

se = (0.045178) (1.84E-12)

p-value = (0.0986)* (0.0004)*

n = 29 R^2 = 0.808367 $\bar{R}^2$ = 0.766708 Prob(F-statistic) = 0.000000*

* significant at 0.10 significance level

4.3.1 Diagnostic checking of Model 1

Table 4.3: Summary of Diagnostic Checking of Model 1

	Hypothesis Testing	**p-value**
1.	Jarque-Bera normality test	0.274259
2.	Ramsey's RESET test	0.7028
3.	Autoregressive Conditional Heteroscedasticity (ARCH) test	0.6510
4.	Breusch-Godfrey LM test	0.0210

Source: Developed for the research

Jarque-Bera normality test shows that the error terms of Model 1 are normally distributed as the p-value (0.274259) is greater than the significance level of 0.10. Ramsey's RESET test also indicates that the model is correctly specified since the p-value of 0.7028 is greater than the significance level of 0.10. The model is cleared from multicollinearity problems after it is split. Moreover, ARCH test shows that the model no longer has heteroscedasticity problem as the p-value of 0.6510 is greater than the 0.10 significant level. However, the Breusch-Godfrey LM test indicates that the model has autocorrelation problem to which the error terms follow autoregressive order of 5, AR (5) and the p-value (0.0210) is smaller than the 0.10 significant level. To conclude, ARCH and Breusch-Godfrey LM hypothesis testing proved the model has autocorrelation problem but not heteroscedasticity problem. Quite the reverse, the residual graph provides a contrary result. From the graph, it is obvious that the volatility of the error terms is high and is showing descending trend. Thus, researchers conclude that the model has heteroscedasticity and autocorrelation problems.

In short, the error terms of Model 1 are normally distributed and the model is correctly specified. Furthermore, it has no multicollinearity problem only heteroscedasticity and autocorrelation problems.

4.3.2 Heteroscedasticity Problem Solving of Model 1

Based on the residual graph of model 1, researchers identified the model with heteroscedasticity problem but were not aware of the severity of the problem as Breusch-Godfrey LM hypothesis testing indicated that the model has no heteroscedasticity problem. There was no empirical result allowing researchers to know the degree of heteroscedasticity problem in the model. In face of this problem, the estimated coefficient values are assumed to have become inefficient. So in order to obtain a better result, researchers used White's Heteroscedasticity-consistent Variances and Standard Errors to minimize the heteroscedasticity problem. By using this method, not only the standard error of the dependent variables, t-statistic as well as p-value of the independent variables will also be largely improved.

$ln\ \widehat{MFDIt}$ = 19.62773 + 0.068305GDPG$_t$ - 0.693089OREER$_t$

se = (0.522269) (0.035372) (0.304931)

p-value = (0.0000)* (0.0659)* (0.0327)*

+ 1.860519TO$_t$ + 0.077766INF$_t$ + 7.66E-12 CFDI$_t$

se = (0.483130) (0.035864) (1.69E-12)

p-value = (0.0008)* (0.0407)* (0.0001)*

n = 29 R^2 = 0.808367 $\bar{R}^2$ = 0.766708 Prob(F-statistic) = 0.000000*

*significant at 0.10 significance level

4.3.3 Autocorrelation Problem Solving of Model 1

Researchers were unable to solve the autocorrelation problem in model 1 due to the limited knowledge. The autocorrelation problem in model 1 is considered serious in which the error terms follow autoregressive order 5, AR (5). In conclusion, model 1 still has heteroscedasticity and autocorrelation problems.

4.4 Empirical result of Model 5

$$\text{Model 5: } \ln MFDI_t = \beta_{40} + \beta_{41}GDP_t + \beta_{42}TL_t$$

The above is model 5, another model formed using the independent variables picked out from the original multiple linear regressions model in order to solve multicollinearity problem.

$\ln \widehat{MFDI}t$ = 20.37068 + 6.67E-12GDP_t + 0.049327TL_t

se = (0.351983) (2.87E-12) (0.031772)

p-value = (0.0000)* (0.0283)* (0.1326)

n = 29 R^2 = 0.447374 $\bar{R}^2$ = 0.404864 Prob(F-statistic) = 0.000448*

*significant at 0.10 significance level

4.4.1 Diagnostic Checking of Model 5

Table 4.4: Summary of Diagnostic Checking of Model 5

	Hypothesis Testing	p-value
1.	Jarque-Bera normality test	0.110847
2.	Ramsey's RESET test	0.0175

3.	Autoregressive Conditional Heteroscedasticity (ARCH) test	0.6080
4.	Breusch-Godfrey LM test	0.0292

Source: Developed for the research

Based on Jarque-Bera normality test, the error terms of Model 5 are found to be normally distributed because the p-value of 0.110847 is greater than the 0.10 significant level. On the contrary, Ramsey's RESET test shows that the model is mis-specified as the p-value (0.0175) is smaller than the significance level of 0.10.Follow on, in detecting the heteroscedasticity problem, the ARCH hypothesis testing shows that model 5 has no heteroscedasticity problem. The p-value 0.6080 is larger than the 0.10 significant level. Meanwhile, Breusch-Godfrey LM test indicates that the model has autocorrelation problem for the p-value 0.0292 is less than the significance level of 0.10. However, the residual graph shows that the error terms have high volatility and overall shows that there is trend in the series of error terms. Researchers then conclude that model 5 has both heteroscedasticity and autocorrelation problems.

In short, model 5 is incorrectly specified and has autocorrelation and heteroscedasticity problems. These serious problems are found to be partially due to the omission of important variables in model 5.

4.4.2 Problem Solving of Model 5

Despite the severeness of the heteroscedasticity problem in model 5, researchers tried to minimize it using White's Heteroscedasticity-consistent Variances and Standard Errors. It is impossible to solve heteroscedasticity problem in this case. Given that graphical method is an informal way to detect the heteroscedasticity problem, it cannot provide empirical result about how severe the heteroscedasticity problem is.

Hence, researchers can only use White's Heteroscedasticity-consistent Variances and Standard Errors to minimize the problem. Below is the result after the adjustment using White's Heteroscedasticity-consistent Variances and Standard Errors method:

$$ln\ \widehat{MFDIt} = 20.37068 + 6.67E\text{-}12GDP_t + 0.049327TL_t$$

se = (0.328888) (2.75E-12) (0.031196)

p-value = (0.0000)* (0.0225)* (0.1259)

n = 29 $R^2 = 0.447374$ $\overline{R}^2 = 0.404864$ Prob(F-statistic) = 0.000448*

*significant at 0.10 significance level

In spite of the improved result, the model still faces heteroscedasticity problem. Restraint by the researchers' limited knowledge, model mis-specification, heteroscedasticity and autocorrelation problems remains unsolved for the sample size is too small and important independent variables were omitted.

4.5 Interpretation of Multiple Linear Regression Results of Model 1 and 5

Model 1 and 5 is undeniable a better version of the original model as there is no multicollinearity problem and the heteroscedasticity problem is minimized. Therefore, it can be concluded that the result of model 1 and 5 is more reliable than the result of the original model.

4.5.1 Interpretation of Model 1 Result

$\ln \widehat{MFDIt}$ = 19.62773 + 0.068305$GDPG_t$- 0.693089$OREER_t$ +
se = (0.522269) (0.035372) (0.304931)
p-value = (0.0000)* (0.0659)* (0.0327)*
1.860519TO_t + 0.077766INF_t + 7.66E-12 CFDI
se = (0.483130) (0.035864) (1.69E-12)
p-value = (0.0008)* (0.0407)* (0.0001)*
n = 29 R^2 = 0.808367 $\bar{R}^2$ = 0.766708 Prob(F-statistic) = 0.000000*
*significant at 0.10 significance level

Based on the E-view result, independent variables like gross domestic product growth (GDPG), official real exchange rate (OREER) trade openness (TO) inflation rate (INF) and China FDI inflows (CFDI) are found to be significant as their p-values is less than the 0.10 significant level. Overall, the model is significant as the p-value in whole which is 0.000000 is less than the 0.10 significance level. The adjusted R^2which is quite high, indicates that 76.6708% of the variation in Malaysia's Foreign Direct Investment inflows, MFDI can be explained by the total variation in gross domestic product growth (GDP), official real exchange rate (OREER), trade openness (TO), inflation rate (INF), and China FDI inflows (CFDI) taking into account the sample size and the number of independent variables. Table 4.5.1 shows the interpretation of the significant independent variables estimated coefficient values.

Table 4.5.1: Interpretation of the Significant βs of Model 1.

βs	Interpretation
$\hat{\beta}_{16}$= 19.62773	The value of 19.62773 is the intercept of the line, indicating the average level of Malaysia FDI inflows is 1962.773% when the level of gross domestic product growth (GDPG) official real exchange rate(OREER), trade openness(TO) inflation rate(INF) and China FDI inflows(CFDI) are zero.

	However, this intercept value is not meaningful and can be ignored.
$\hat{\beta}_{17}$ = 0.068305	If gross domestic product growth (GDPG) is predicted to increase by 1%, Malaysia FDI inflows (MFDI) will increase by 6.8305%, holding the value other variables constant.
$\hat{\beta}_{18}$ = - 0.693089	If official real exchange rate (OREER) are predicted to increase by RM1 per US$ (Malaysia Ringgit depreciate), Malaysia FDI inflows (MFDI) will decrease by 69.3089%, holding the value other variables constant.
$\hat{\beta}_{19}$ = 1.860519	If trade openness (TO) are predicted to increase by 1 unit, Malaysia FDI inflows (MFDI) will increase by 186.0519%, holding the value other variables constant.
$\hat{\beta}_{20}$ = 0.077766	If inflation rate (INF) are predicted to increase by 1 %, Malaysia FDI inflows (MFDI) will increase by 7.7766%, holding the value other variables constant.
$\hat{\beta}_{21}$ = 7.66E-12	If China FDI inflows (CFDI) are predicted to increase by US$ 1, Malaysia FDI inflows (MFDI) will increase by 7.66E-10 %, holding the value other variables constant.

Source: Developed for the research

4.5.2 Interpretation of Model 5 Result

$ln\ \widehat{MFDIt}$ = 20.37068 + 6.67E-12GDP$_t$ + 0.049327TL$_t$

se = (0.328888) (2.75E-12) (0.031196)

p-value = (0.0000)* (0.0225)* (0.1259)

n = 29 R^2 = 0.447374 $\bar{R}^2$ = 0.404864 Prob(F-statistic) = 0.000448*

*significant at 0.10 significance level

The E-view result shows that the independent variables telephone line (per 100 people) (TL) is significant because its p-value (0.1259) is more than the 0.10 significance level. Another independent variable, gross domestic product (GDP) is significant as its p-values, 0.0225 is less than the level of significance of 0.10. Overall, the model is significant as the overall p-value which is 0.000448 is less than the 0.10 significance level. The adjusted R^2which is low, means that 40.4864% of the variation in Malaysia's Foreign Direct Investment inflows (MFDI) can be explained by the total variation in gross domestic product (GDP) and telephone line (per 100 people) (TL) taking into account the sample size and the number of independent variables. Table 4.5.2 shows the interpretation of the significant independent variables estimated coefficient values.

Table 4.5.2: Interpretation of the Significant βs of Model 5.

βs	Interpretation
$\hat{\beta}_{40}$ = 20.37068	The value of 20.37068 is the intercept of the line. It indicates the average level of Malaysia FDI inflows (MFDI) is 2037.068% when the level of gross domestic product (GDP) and telephone line (per 100 people) (TL) are zero. However, this intercept value is not meaningful and can be ignored.
$\hat{\beta}_{41}$= 6.67E-12	If gross domestic product (GDP) is predicted to increase by US$1, Malaysia FDI inflows (MFDI) will increase by 6.67E-10%, holding the value other variables constant.

Source: Developed for the research

4.6 Conclusion

Researchers split the original multiple regression model into two models constituting Model 1 and Model 5 in order to solve the multicollinearity problem. Model 1 has serious heteroscedasticity and autocorrelation problems whereas Model 5 has model mis-specification, heteroscedasticity and autocorrelation problem. Researchers reduce heteroscedasticity problem by using White's Heteroscedasticity-consistent Variances and Standard Errors in order to obtain a better result. However, they were unable to solve the autocorrelation problem in both Model 1 and 5 due to the small sample size and limited knowledge. In addition, researchers also couldn't solve the model mis-specification problems in

Model 5 as the model omitted some important independent variables. Due to all these limitations, researchers were unable to get the best result.

Researchers then chose to interpret the result of Model 1 and 5. It is found that telephone line (per 100 people) (TL) is insignificantly affecting Malaysia FDI inflows (MFDI) at 0.10 significant level. This means that this variable has no relationship with Malaysia FDI inflows (MFDI). On the other hands, it has also come to the researchers' realization that gross domestic product growth (GDPG), official real exchange rate (OREER), trade openness (TO), inflation rate (INF), China FDI inflow (CFDI) and gross domestic product (GDP) significantly affect Malaysia FDI inflows (MFDI) and have relationship with Malaysia FDI inflows (MFDI) at the significance level of 0.10. Official real exchange rate (OREER) has negative relationship with Malaysia FDI inflows (MFDI) while gross domestic product growth (GDPG), trade openness (TO), inflation rate (INF), China FDI inflows (CFDI) and gross domestic products (GDP) have positive relationship with Malaysia FDI inflows (MFDI).

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

In this tough economic time, foreign direct investment definitely plays an important role in Malaysia economic growth. As investigated, many factors are found to affect investors' decision on the country to invest in and how policy makers attract more FDI inflow to Malaysia. In the previous chapter, researchers run diagnostic checking tests, F-test, and T-test to examine the significance of the independent variables on the dependent variable - FDI of Malaysia. In this chapter, researchers will be comparing the major findings with the past research papers and also state the implications of this study to both policy makers and practitioners. Last but not least, this chapter will also comprise the limitations of study and recommendations for future researches.

5.1 Summary of Statistical Analyses

In chapter 4, researchers started out with the F-test to see whether the multiple linear regressions model is significant. After proving the model to be significant, diagnostic checking was performed, including Jarque-Bera normality test to see whether the error terms of the model are normally distributed; Ramsey's RESET test to check whether the model is correctly specified; Multicollinearity test to find out whether there is multicollinearity problem between the variables; Autoregressive Conditional Heteroscedasticity (ARCH) test to investigate whether heteroscedasticity problem exist or not; and lastly, Breusch-Godfrey LM test to find out whether autocorrelation problem do exist in this model.

Based on the statistical results, it is proven that the model specification of this multiple linear regressions model was incorrect. In order to solve this problem, researchers changed the form of the dependent variable data by adding on log, turning it into a semi-logarithmic or so called the Log-Lin model. Also, results show this model consist of heteroscedasticity, multicollinearity, and autocorrelation problems. In face with the multicollinearity problem, researchers split the original multiple linear regressions model into two new models, Model 1 and Model 5. As seen from the results, both of these models are significant but Model 1 has serious heteroscedasticity and autocorrelation problems, while Model 5 has model specification, heteroscedasticity and autocorrelation problems. Researchers used White's Heteroscedasticity-consistent Variances and Standard Errors to obtain better result by reducing the heteroscedasticity problem. However, autocorrelation problem in both Model 1 and Model 5 and model specification problem in Model 5 was still unable to be solved due to the limited knowledge.

In a nutshell, researchers have chosen Model 1 and Model 5 for interpretation. Results show that quality of infrastructure (telephone line per 100 people) is insignificant to Malaysia FDI inflows at 0.10 significance level, while other independent variables such as economic growth (gross domestic product growth), exchange rate (official real exchange rate), trade openness (trade openness), inflation rate (consumer prices), China FDI inflows (China FDI inflows) and market size (gross domestic product) are significant to Malaysia FDI inflows at 0.10 significance level. The details will be discussed as follows.

Table 5.1: Decision for the Hypotheses of the Study

	Hypotheses of the study	Decision
i.	H_0: There is no relationship between all independent variables and FDI inflow in Malaysia. H_1: At least one independent variable has relationship with FDI inflow in Malaysia.	Reject H_0

ii.	H_0: There is no relationship between economic growth and FDI inflow in Malaysia. H_1: There is relationship between economic growth and FDI inflow in Malaysia.	Reject H_0
iii.	H_0: There is no relationship between market size and FDI inflow in Malaysia. H_1: There is relationship between market size and FDI inflow in Malaysia.	Reject H_0
iv.	H_0: There is no relationship between China FDI inflows and FDI inflow in Malaysia. H_1: There is relationship between China FDI and FDI inflow in Malaysia.	Reject H_0
v.	H_0: There is no relationship between exchange rate and FDI inflow in Malaysia. H_1: There is relationship between exchange rate and FDI inflow in Malaysia.	Reject H_0
vi.	H_0: There is no relationship between inflation rate and FDI inflow in Malaysia. H_1: There is relationship between inflation rate and FDI inflow in Malaysia.	Reject H_0
vii.	H_0: There is no relationship between quality of infrastructures and FDI inflow in Malaysia. H_1: There is relationship between quality of infrastructures and FDI inflow in Malaysia.	Do not reject H_0
viii.	H_0: There is no relationship between trade openness and FDI inflow in Malaysia. H_1: There is relationship between trade openness and FDI inflow in Malaysia.	Reject H_0

Source: Developed for the research

5.2 Discussions of Major Findings

5.2.1 Market Size

Market size measured by gross domestic product plays an important role in this study because it indicates how well a country's population demand for the output. It is important for foreign investor to determine whether to invest or not from the view of market opportunity.

The hypothesis testing of market size in this research paper shows that gross domestic product is significant and positively affects Malaysia foreign direct investment inflows at the significance level of 0.10. This result is consistent with previous researchers like Quer and Claver (2007), Rodriguez and Pallas (2008), Vadlamannati, Tamazian and Irala (2009) and Trevino and Mixon Jr. (2004) which also uses gross domestic product as the indicator for market size.

This proves that Malaysia FDI inflows will increase given the level of gross domestic product increase. This is parallel to the study of Sharma & Bandara (2010) who stated that larger market size will attract investors with ease. Charkrabarti (2001) (as cited in Moosa & Cardak, 2006) also supported the findings as it explains large market size means the resources of the country will be utilized more efficiently and exploitation of economies of scale. Hence, it is the key for investors who aim for long term investment.

In contrast, Dermihan and Masca (2008) argued that gross domestic product is not suitable to be an indicator for market size. Both the researchers suggested that GDP per capita or GDP growth will be more appropriate as the indicator for market size. Since this argument is not backed by many research, gross domestic product is consider preferable as the indicator for market size in this study.

5.2.2 Economic Growth

In the research paper of Benacek, Gronicki, Holland, and Sass (2000), it is mentioned that economic growth itself has been identified frequently as an important determinant of FDI inflow into the host countries. In the researchers' case, it was similar as the test results in chapter 4 proved that economic growth was statistically positive significant to foreign direct investment inflows to Malaysia.

The result is consistent with the past researches done by Dunning (1995), Zhang (2001), Chakraboty and Basu (2002), Moosa (2002), and Hansen and Rand (2006). In their research papers, they argues that MNCs with certain ownership advantages will invest in another country with locational advantages, and both advantages can be captured effectively by "internalizing" production through FDI. Thus, high GDP growth rate which represents soundness and stability of economic policies and the effectiveness of the government institutions will definitely attract foreign direct investment as it allows them to locate new profit opportunities.

On the contrary, researchers also found the results to be against the study done by Kahai (2011). In Kahai's (2011) study, data from 1998 and 2000 for fifty-five developing countries were employed to examine both the traditional and non-traditional determinants of foreign direct investment flowing to developing countries. A significant relationship between economic growth (as measured by the annual real GDP growth rate) and FDI was failed to be established in that particular study.

5.2.3 Exchange Rate

Researchers found that the official real exchange rate significantly affects Malaysia FDI inflows and has a negative relationship with Malaysia FDI inflows at the 0.10 significance level. This result is in line with the study done by Aqeel and Nishat (2005). In that study, it is verified that foreign direct investment increase as exchange rate appreciates in the host country. Conversely, when the exchange rate of the country depreciates, the FDI of that particular country decreases as well. Furthermore, Campa (1993) backed up by stating it is because the investors believe that an appreciation of the exchange rate will likely increase the future profitability in terms of the home currency.

On the other hand, multiple researchers found the opposite results. In the study by Froot and Stein (1991), Klein and Rosengren (1994), Guo and Trivedi (2002) and Kiyota and Urata (2004), depreciation of exchange rate in the host country led to the increase in FDI inflows of the host country. This is because the high currency value reduces the capital of the investment.

This is inconsistent with the result of this study which displays that when exchange rate appreciates in the host country, FDI inflows of the host country will follow along and increase. The reason is because the investors have high expectation on the economy and the returns.

5.2.4 Quality of Infrastructure

In this research study, the independent variable - quality of infrastructure - stood out as it is found to be insignificant at the significance level of 0.10. This means that there is no significant relationship between quality of infrastructure and foreign direct investment inflows to Malaysia. Or in other words, quality of infrastructure is not a determinant of Malaysia FDI inflows.

Infrastructure covers many dimensions, ranging from physical assets such as roads, sea ports, railways, and telecommunications, to institutional development, such as accounting and legal services. As mentioned by

Asiedu (2002), a good measure of infrastructure development should take into account both the availability and reliability of infrastructure. However, in this case, the measure employed by researchers falls short since it captures only the availability aspect of infrastructure. This is because quantitative data on the reliability of infrastructure (such as the frequency of telephone or power outage) are not very readily available for most developing countries.

This view is further supported by Quazi (2007), who could not established positive and significant relationship between infrastructure (measured as the number of telephones per 1,000 people) and FDI in his study. The authors admitted that ‘it is plausible that their proxy variables - the natural log of the number of telephones available per 1,000 people and the adult literacy rates, respectively, perhaps inadequately capture their true effects on FDI. Moreover, Addison et al. (2006) as cited in Rehman, Ilyas, Alam, and Akram (2011) acknowledge such promotional impact only for developed nations but, on the other hand, such situation does not exist for developing countries.

5.2.5 Trade Openness

Based on the results in Chapter 4, trade openness is found to have a significant positive relationship with Malaysia FDI inflows at the 0.10 significance level. This result is on par with the study done by Moosa and Cardak (2006), Demirhan and Masca (2008), and Sawkut, Boopen, Taruna, and Vinesh (2009) whom verified trade openness is significant and have a positive effect on the inflows of FDI. A country’s willingness to accept foreign direct investment is important to the FDI of that particular country. Chantasasawat, Fung, Iizaka, and Siu (2010), Awan, Khan, and Zaman (2011) and Srinivasan (2011) further support the results with the statement that a country with a higher degree of trade openness will lead to an increase in the foreign direct investment. This shows that investors are more likely to make investment in those countries which have opened up to the outside world.

On the other hand, the result obtained from this paper differs from some researchers like Busse and Hefeker (2007) and Kolstad and Villanger (2008). In their studies, trade openness is insignificant and negatively affects FDI inflows. Study's result from Goodspeed, Martinez-Vazquez, and Zhang (2006) also concludes that the effect of trade openness on FDI is inconclusive.

5.2.6 Inflation rate

This research concluded that inflation rate is a significant determinant of Malaysia FDI inflows. Based on the result, there is a positive relationship between inflation rate and Malaysia FDI inflows as supported by past researchers like Srinivasan (2011) and Addison and Heshmati (2003). In the past research paper, Addison and Heshmati (2003) mentioned that higher inflation rate indicates higher price levels which may lead to the increased production activities of the host country. This then will attract more foreign firms to invest in the host country for the increased expected level of profitability. In addition, as stated by Srinivasan (2011), higher inflation may lead to an increase in product price, which in turns decrease the demand for host country's money. As currency of host country depreciates, it attracts larger FDI inflows into Malaysia since its capacity to invest is increased through the reduced cost of capital.

On the other hand, the results are found to be inconsistent with the some of the past researches done. Despite researchers like Shamsuddin (1994), Asiedu (2002), Demirhan and Masca (2008), and Azam (2010) have proven inflation rate to be statistically significant to the FDI inflows, it is also found that there is a negative relationship between inflation rate and foreign direct investment. Asiedu (2002) mentioned that a low inflation rate is taken as a sign of internal economic stability in the host country, reflecting a lesser degree of uncertainty which encourage foreign direct investment.

5.2.7 China FDI inflows

According to the statistical results, it shows that China FDI inflows significantly affect Malaysia FDI inflows. In fact, there is a positive relationship between China FDI inflows and Malaysia FDI inflows.

This result is different as compared to some past researches. For instance, Salike (2010) found that there is a high degree of crowding out effect by China FDI inflows on some other countries' FDI which mean that there is a negative relationship between level of China FDI inflows and level of FDI inflows to other countries. Other than that, Wang, Wei and Liu (2007) found that there are significant positive and negative effects of China FDI inflows based on different countries.

Despite all those, the results of this study are also strongly supported and is consistent with some past researchers such as Athukorala and Waglé (2011), Chantasasawat, Fung, Iizaka and Siu (2004), Eichengreen and Tong (2007), and Eichengreen and Tong (2006). These researches showed that an increase in the FDI inflows to China would raise the level of FDI inflows to the other countries. This is due to the production linkages between China and other countries such as Malaysia taking place in the form of further fragmentation and specialization of the production process. Therefore, when components and parts are traded between China and Malaysia, an increase in China's foreign direct investment will positively relates to an increase in the other countries' foreign direct investment. In addition, as China's economy grows, its market will increase and the need for minerals and resources will rise too. As a result, multinational enterprises from other countries choose to invest in Malaysia in order to extract minerals and resources, and then export it to China which is in need of the whole spectrum of raw materials.

5.3 Implications of the Study

Practically, this research paper provides an insight on decision making for the investors, policy makers, and practitioners such as Federal Government, Bank Negara Malaysia. It plays an important role in determining the ways to attract more foreign direct investment inflow to Malaysia.

Researchers found that gross domestic product growth, official real exchange rate, trade openness, inflation rate, China foreign direct investment inflow and gross domestic product significantly affect Malaysia FDI inflows. From the investors perspectives, increase or decrease in gross domestic product growth can predict the future development of the country. It also tells investors whether the country is worth to invest in for long term given that the country's development is trending well.

Moreover, research indicates the government on setting trade barrier in order to increase trade openness level in Malaysia to attract more trade into the country. According to Gao (2005), increase in trade openness level will probably lead to the shifting of advanced technology for infrastructure and communication from developed country to developing country. This will help in refining the infrastructure and communication technology of Malaysia, and hence, making import or export in the country more efficient. Country's economic growth will also increase due to the ability of outsourcing and expansion of products to other countries.

Besides that, gross domestic product also plays an important role in determining the foreign direct investment inflow to Malaysia. Gross domestic product determines the ability of a country's population in the demand of outputs. Investors such as foreign firms or companies will most likely take into consideration of this factor since sales is based on the country's demand. Thus, this portrays as an indication for the government to refine the economic policy, increasing the country's population income so as to increase the gross domestic product of the country.

Inflation rate which turns out to be positively significant to the FDI inflows in Malaysia did not came as a surprise as well. Srinivasan (2011) stated that higher inflation rate means higher price level of product. And this would attract investors who aim for higher profit with the thoughts of higher expected level of profit return. Therefore, Bank Negara Malaysia and the government need to plan appropriately for the fiscal or monetary policy so as to control the inflation rate that might attract investors' behavior.

The study also discovered that China foreign direct investment inflows are positively related to Malaysia FDI inflows. According to Chantasasawat, Fung, Iizaka, and Siu (2004), China's low cost of resources is the reason many foreigners invest and demand for it. And this drastically increasing demand of resources has led to China's needs for more mineral to fulfill the market need. Malaysia which is one of the developing countries with mineral resources then becomes the place for foreign investors to invest and bring mineral to China. This means governments of Malaysia need to discover more low cost resources so as improve the quality of infrastructure to attract potential investors. Besides, Malaysia also needs to keep good diplomatic relation with China as it is beneficial.

Lastly, the study showed official real exchange rate is significant but negatively related to Malaysia FDI inflows. When the exchange rate of Malaysia per US$ dollar increases, the amount of money foreigners need to use in exchange for a certain amount of Ringgit Malaysia is lesser. Therefore, investment in Malaysia will become more worthy as higher profit can be earn when the exchange rate becomes higher. It is important for Bank Negara Malaysia to set up an ideal official real exchange rate to attract more FDI inflow to Malaysia.

5.4 Limitations of the Study

The very first limitation of the study is the sample size of the research which is too small with only 29 years. Annual data from year 1982 – 2010 was obtained to run the model, however, the data is considered insufficient as the minimum requirement is 30 observations. The reason researchers weren't able to get 30 years data was because China FDI inflows weren't available before the year 1982. Secondly, hypothesis testing is inappropriate to be used in detecting heteroscedasticity and autocorrelation problems. This is because the sample size did not for the very least have 30 observations. For this reason, researchers use the informal way which is graphical method to detect the heteroscedasticity and autocorrelation problems. However, graphical method is a hard way to detect both the problems because sometimes those problems are not obvious and subjective. In addition, researchers will not be able to know the degree of heteroscedasticity and autocorrelation problems from the graph. As a result, graphical method is deemed an inappropriate method to detect the problems since it does not provide any concrete result on the severity of the heteroscedasticity and autocorrelation problems of the models.

Thirdly, the original model has multicollinearity problem so researchers weren't able to run the model as a whole and interpret its result. Instead, researchers split the model into 2 models and interpreted from there. Fourthly, even though multicollinearity problem was solved, researchers still couldn't get the best result due to heteroscedasticity and autocorrelation problems. Researchers were incapable of solving both the heteroscedasticity and autocorrelation problem as graphical method does not provide a concrete result of the heteroscedasticity and autocorrelation problems in the model. In addition, the problems were way too serious and not within the researchers' knowledge to solve it. The limitations are acknowledged for it does not detract from the significance of findings but merely provide platforms for future research.

5.5 Recommendations for Future Research

Since sample size is the main root of the problems, it is highly recommended that next researchers who are interested in further studying this paper should increase the sample size to more than 30 observations. Researchers may use monthly, quarterly or semiannual data instead of using annual data. This is because the bigger the sample size, the lower the probability of having multicollinearity, heteroscedasticity and autocorrelation problems. This will prevents the needs to split the model but run it as a whole instead. Other than that, formal method like hypothesis testing will be able to be applied on the detection of heteroscedasticity and autocorrelation problems. Hypothesis testing will provides researchers with better results in detecting the heteroscedasticity and autocorrelation problems. And it will be made clear to researchers the severity of the problems, allowing them to carry out the appropriate steps and solutions in solving the problems for the best result.

The usage of annual data has always been bound with a higher chance of having heteroscedasticity problem, so when using low frequency data like such, it is recommended to increase the sample size. This will reduce the data frequency, and hence, minimize the chances of getting heteroscedasticity problem. Besides, future researchers are also advise to use other indicators for the independent variable – quality of infrastructure - instead of the telephone line (per 100 people). This is because telephone line (per 100 people) is not a good indicator for quality of infrastructure. Last but not least, replacement of insignificant variable with other relevant variables or adding in new variables like statutory corporate tax rate and financial development will further improve the model. Or researchers may use other methods such as generalized autoregressive conditional heteroscedasticity (GRACH) method to run the data instead of multiple linear regression method.

5.6 Conclusion

In conclusion, this paper proved that market size, economic growth, exchange rate, trade openness, inflation rate and China FDI inflows are significant in determining FDI inflows of Malaysia. Conversely, quality of infrastructure is determined as an insignificant variable towards the Malaysia FDI inflows. All the results are consistent and supported by the past research papers.

The results of this study can be a guideline and provide insight to policymakers such as government and Bank Negara Malaysia in determining the ways to attract more foreign direct investment inflow to Malaysia as foreign direct investment inflows act as an important tool to enhance the economy of one's country. Besides, this paper also assists practitioners such as investors and businessmen more effectively in guiding and supporting the decision- making process either on expanding markets or investment path.

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Appendices

Appendix 1:

Empirical Result of Multiple Linear Regression Model

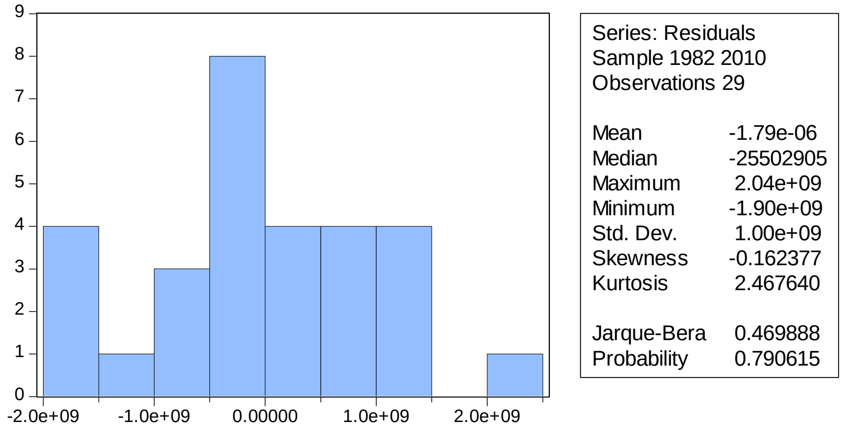
Dependent Variable: MFDI
Method: Least Squares
Date: 06/03/12 Time: 18:03
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	2.00E+09	2.09E+09	0.956468	0.3497
GDP	-0.010788	0.021409	-0.503912	0.6196
GDPG	1.53E+08	86462339	1.767404	0.0917
OREER	-2.32E+09	9.89E+08	-2.344776	0.0289
TL	8122953.	1.93E+08	0.042122	0.9668
TO	3.78E+09	2.94E+09	1.286072	0.2124
INF	14902615	1.26E+08	0.118276	0.9070
CFDI	0.044008	0.021564	2.040837	0.0540

R-squared	0.832961	Mean dependent var	3.46E+09
Adjusted R-squared	0.777282	S.D. dependent var	2.45E+09
S.E. of regression	1.16E+09	Akaike info criterion	44.80748
Sum squared resid	2.82E+19	Schwarz criterion	45.18466
Log likelihood	-641.7084	Hannan-Quinn criter.	44.92561
F-statistic	14.95993	Durbin-Watson stat	1.836526
Prob(F-statistic)	0.000001		

Appendix 2:

<u>Normality Test of Multiple Linear Regression Model (Jarque-Bera Normality Test)</u>



H_0 : Error terms are normally distributed
H_1: Error terms are not normally distributed
Critical value: α= 0.10
Test statistic: p-value = 0.790615
Decision rules: Reject H_0 if p-value less than α= 0.10, otherwise do not reject H_0.
Decision: Do not reject H_0, since p-value (0.790615) is more than α= 0.10
Conclusion: We have enough evidence to conclude that the error terms are normally distributed.

Appendix 3:

Model Specification Test of Multiple Linear Regression Model (Ramsey RESET Test)

Ramsey RESET Test:

F-statistic	5.651726	Prob. F(1,20)	0.0275
Log likelihood ratio	7.217479	Prob. Chi-Square(1)	0.0072

Test Equation:
Dependent Variable: MFDI
Method: Least Squares
Date: 06/03/12 Time: 18:08
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.82E+09	3.09E+09	-1.235359	0.2310
GDP	0.028093	0.025352	1.108120	0.2810
GDPG	25792707	94735647	0.272260	0.7882
OREER	1.57E+09	1.86E+09	0.842028	0.4097
TL	-38062711	1.76E+08	-0.216807	0.8306
TO	-3.03E+08	3.17E+09	-0.095667	0.9247
INF	1.17E+08	1.22E+08	0.959021	0.3490
CFDI	-0.054719	0.045883	-1.192562	0.2470
FITTED^2	1.83E-10	7.69E-11	2.377336	0.0275

R-squared	0.869764	Mean dependent var	3.46E+09
Adjusted R-squared	0.817670	S.D. dependent var	2.45E+09
S.E. of regression	1.05E+09	Akaike info criterion	44.62757
Sum squared resid	2.20E+19	Schwarz criterion	45.05190
Log likelihood	-638.0997	Hannan-Quinn criter.	44.76046
F-statistic	16.69597	Durbin-Watson stat	1.410178
Prob(F-statistic)	0.000000		

H_0: Model specification is correct.
H_1: Model specification is incorrect.
Critical Value: $\alpha = 0.10$
p-value = 0.0275
Decision rules: Reject H_0, if p-value less than $\alpha = 0.10$, otherwise do not reject H_0.
Decision: Reject H_0, since the p-value (0.0275) less than the significance level, 0.10.
Conclusion: We have enough evidence to conclude that the model specification is incorrect.

Appendix 4:

Multicollinearity Testing of Multiple Linear Regression Model

4.1 Correlation table

	CFDI	GDP	GDPG	INF	OREER	TL	TO
CFDI	1.000000	0.971965	-0.136784	-0.194607	0.547252	0.553830	0.557112
GDP	0.971965	1.000000	-0.102220	-0.196632	0.576916	0.640295	0.615826
GDPG	-0.136784	-0.102220	1.000000	0.026234	-0.392392	-0.145708	-0.046531
INF	-0.194607	-0.196632	0.026234	1.000000	-0.313685	-0.234635	-0.198727
OREER	0.547252	0.576916	-0.392392	-0.313685	1.000000	0.797065	0.828626
TL	0.553830	0.640295	-0.145708	-0.234635	0.797065	1.000000	0.953759
TO	0.557112	0.615826	-0.046531	-0.198727	0.828626	0.953759	1.000000

4.2 Variance inflation factor (VIF) table

Independent variables		Correlation, R	R^2	VIF
CFDI	GDP	0.971965	0.944715961	18.08840342
CFDI	GDPG	-0.136784	0.018709862	1.019066595
CFDI	INF	-0.194607	0.037871884	1.039362621
CFDI	OREER	0.547252	0.299484751	1.427520673
CFDI	TL	0.553830	0.306727668	1.442434602
CFDI	TO	0.557112	0.310373780	1.450060875
GDP	GDPG	-0.102220	0.010448928	1.010559261
GDP	INF	-0.196632	0.038664143	1.040219183
GDP	OREER	0.576916	0.332832071	1.498873007
GDP	TL	0.640295	0.409977687	1.694851157
GDP	TO	0.615826	0.379241662	1.610932852
GDPG	INF	0.026234	0.000688223	1.000688697
GDPG	OREER	-0.392392	0.153971481	1.181993251
GDPG	TL	-0.145708	0.021230821	1.021691346
GDPG	TO	-0.046531	0.002165134	1.002169832
INF	OREER	-0.313685	0.098398279	1.109137191
INF	TL	-0.234635	0.055053583	1.058261063
INF	TO	-0.198727	0.039492420	1.041116198
OREER	TL	0.797065	0.635312614	2.742074550
OREER	TO	0.828626	0.686621047	3.191024765
TL	TO	0.953759	0.909656230	11.06883186

Appendixes 5:

Heteroscedasticity Testing (Autoregressive Conditional Heteroscedasticity (ARCH) Test)

5.1 Lag length = 1

Heteroskedasticity Test: ARCH

F-statistic	0.023331	Prob. F(1,26)	0.8798
Obs*R-squared	0.025103	Prob. Chi-Square(1)	0.8741

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/04/12 Time: 18:06
Sample (adjusted): 1983 2010
Included observations: 28 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.03E+18	2.96E+17	3.496311	0.0017
RESID^2(-1)	-0.030139	0.197319	-0.152744	0.8798

R-squared	0.000897	Mean dependent var	1.01E+18
Adjusted R-squared	-0.037531	S.D. dependent var	1.21E+18
S.E. of regression	1.23E+18	Akaike info criterion	86.21031
Sum squared resid	3.92E+37	Schwarz criterion	86.30546
Log likelihood	-1204.944	Hannan-Quinn criter.	86.23940
F-statistic	0.023331	Durbin-Watson stat	2.005505
Prob(F-statistic)	0.879779		

5.2 Lag length = 2

Heteroskedasticity Test: ARCH

F-statistic	1.708250	Prob. F(2,24)	0.2025
Obs*R-squared	3.364598	Prob. Chi-Square(2)	0.1859

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/04/12 Time: 18:07
Sample (adjusted): 1984 2010
Included observations: 27 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.45E+18	3.53E+17	4.121318	0.0004
RESID^2(-1)	-0.096185	0.193300	-0.497595	0.6233
RESID^2(-2)	-0.380137	0.208202	-1.825812	0.0803

R-squared	0.124615	Mean dependent var	1.04E+18
Adjusted R-squared	0.051666	S.D. dependent var	1.21E+18
S.E. of regression	1.18E+18	Akaike info criterion	86.16852
Sum squared resid	3.35E+37	Schwarz criterion	86.31250
Log likelihood	-1160.275	Hannan-Quinn criter.	86.21133
F-statistic	1.708250	Durbin-Watson stat	1.960192
Prob(F-statistic)	0.202484		

5.3 Lag length = 3

Heteroskedasticity Test: ARCH

F-statistic	1.249600	Prob. F(3,22)	0.3159
Obs*R-squared	3.785374	Prob. Chi-Square(3)	0.2856

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/04/12 Time: 18:07
Sample (adjusted): 1985 2010
Included observations: 26 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.48E+18	4.79E+17	3.081805	0.0055
RESID^2(-1)	-0.108133	0.214061	-0.505154	0.6185
RESID^2(-2)	-0.404152	0.218537	-1.849356	0.0779
RESID^2(-3)	0.053557	0.228521	0.234364	0.8169

R-squared	0.145591	Mean dependent var	1.06E+18
Adjusted R-squared	0.029081	S.D. dependent var	1.23E+18
S.E. of regression	1.21E+18	Akaike info criterion	86.25941
Sum squared resid	3.24E+37	Schwarz criterion	86.45296
Log likelihood	-1117.372	Hannan-Quinn criter.	86.31514
F-statistic	1.249600	Durbin-Watson stat	2.015516
Prob(F-statistic)	0.315894		

5.4 Lag length = 4

Heteroskedasticity Test: ARCH

F-statistic	1.154309	Prob. F(4,20)	0.3603
Obs*R-squared	4.689029	Prob. Chi-Square(4)	0.3207

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/04/12 Time: 18:08
Sample (adjusted): 1986 2010
Included observations: 25 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.31E+18	5.95E+17	2.203757	0.0394
RESID^2(-1)	-0.135413	0.222285	-0.609188	0.5493
RESID^2(-2)	-0.356580	0.241090	-1.479034	0.1547
RESID^2(-3)	0.044416	0.240053	0.185026	0.8551
RESID^2(-4)	0.208781	0.234555	0.890112	0.3840

R-squared	0.187561	Mean dependent var	1.07E+18
Adjusted R-squared	0.025073	S.D. dependent var	1.26E+18
S.E. of regression	1.24E+18	Akaike info criterion	86.33848
Sum squared resid	3.08E+37	Schwarz criterion	86.58225
Log likelihood	-1074.231	Hannan-Quinn criter.	86.40609
F-statistic	1.154309	Durbin-Watson stat	1.945470
Prob(F-statistic)	0.360277		

5.5 Lag length = 5

Heteroskedasticity Test: ARCH

F-statistic	0.858482	Prob. F(5,18)	0.5273
Obs*R-squared	4.621205	Prob. Chi-Square(5)	0.4638

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/04/12 Time: 18:08
Sample (adjusted): 1987 2010
Included observations: 24 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.50E+18	6.91E+17	2.163414	0.0442
RESID^2(-1)	-0.140870	0.241419	-0.583511	0.5668
RESID^2(-2)	-0.376745	0.259611	-1.451189	0.1639
RESID^2(-3)	-0.005722	0.265627	-0.021543	0.9830
RESID^2(-4)	0.170954	0.250522	0.682391	0.5037
RESID^2(-5)	-0.050662	0.262107	-0.193287	0.8489

R-squared	0.192550	Mean dependent var	1.11E+18
Adjusted R-squared	-0.031741	S.D. dependent var	1.27E+18
S.E. of regression	1.29E+18	Akaike info criterion	86.45429
Sum squared resid	3.00E+37	Schwarz criterion	86.74881
Log likelihood	-1031.452	Hannan-Quinn criter.	86.53243
F-statistic	0.858482	Durbin-Watson stat	1.957515
Prob(F-statistic)	0.527290		

5.6 Lag length = 6

Heteroskedasticity Test: ARCH

F-statistic	0.746153	Prob. F(6,16)	0.6211
Obs*R-squared	5.028547	Prob. Chi-Square(6)	0.5402

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/04/12 Time: 18:08
Sample (adjusted): 1988 2010
Included observations: 23 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.50E+18	8.25E+17	1.814958	0.0883
RESID^2(-1)	-0.129595	0.258090	-0.502131	0.6224
RESID^2(-2)	-0.396028	0.270229	-1.465530	0.1622
RESID^2(-3)	-0.091170	0.291319	-0.312957	0.7584
RESID^2(-4)	0.190979	0.281756	0.677819	0.5076
RESID^2(-5)	-0.107001	0.278654	-0.383993	0.7060
RESID^2(-6)	0.196640	0.323161	0.608489	0.5514

R-squared	0.218632	Mean dependent var	1.14E+18
Adjusted R-squared	-0.074380	S.D. dependent var	1.29E+18
S.E. of regression	1.34E+18	Akaike info criterion	86.55678
Sum squared resid	2.86E+37	Schwarz criterion	86.90237
Log likelihood	-988.4030	Hannan-Quinn criter.	86.64369
F-statistic	0.746153	Durbin-Watson stat	1.835989
Prob(F-statistic)	0.621065		

5.7 Summary of Heteroscedasticity Testing, Autoregressive Conditional Heteroscedasticity (ARCH) test result

Lag Length	**AIC**	**p-value**
1	86.21031	0.8798
2	86.16852	0.2025
3	86.25941	0.3159
4	86.33848	0.3603
5	86.45429	0.5273
6	86.55678	0.6211

Lag length 2 has the lowest AIC

$H_{0:}$ There is no heteroscedasticity problem.
$H_{1:}$ There is heteroscedasticity problem.
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise, do not reject H_0.
P-value: 0.2025
Decision: Do not reject H_0 since the p-value, 0.2025 is greater than the critical value, 0.10.
Conclusion: There is not enough evidence to conclude that the model has heteroscedasticity problem in the estimated model at 10% significant level.

Appendix 6:

Autocorrelation Testing (Breusch-Godfrey LM Test)

6.1 Lag length = 1

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.045404	Prob. F(1,20)	0.8334
Obs*R-squared	0.065687	Prob. Chi-Square(1)	0.7977

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/04/12 Time: 17:49
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	29637137	2.14E+09	0.013847	0.9891
GDP	0.000767	0.022207	0.034556	0.9728
GDPG	395466.3	88516595	0.004468	0.9965
OREER	-13156507	1.01E+09	-0.012976	0.9898
TL	-1218482.	1.97E+08	-0.006171	0.9951
TO	-2485350.	3.01E+09	-0.000826	0.9993
INF	-4224690.	1.30E+08	-0.032378	0.9745
CFDI	-0.000533	0.022213	-0.024016	0.9811
RESID(-1)	0.052462	0.246204	0.213083	0.8334

R-squared	0.002265	Mean dependent var	-1.79E-06
Adjusted R-squared	-0.396829	S.D. dependent var	1.00E+09
S.E. of regression	1.19E+09	Akaike info criterion	44.87418
Sum squared resid	2.81E+19	Schwarz criterion	45.29851
Log likelihood	-641.6756	Hannan-Quinn criter.	45.00707
F-statistic	0.005676	Durbin-Watson stat	1.886033
Prob(F-statistic)	1.000000		

6.2 Lag length = 2

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.141749	Prob. F(2,19)	0.3402
Obs*R-squared	3.111398	Prob. Chi-Square(2)	0.2110

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/04/12 Time: 17:50
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.44E+08	2.10E+09	-0.211480	0.8348
GDP	0.006162	0.021851	0.282011	0.7810
GDPG	-13330719	86392656	-0.154304	0.8790
OREER	-2.06E+08	9.92E+08	-0.207341	0.8379
TL	-67079349	1.97E+08	-0.341143	0.7367
TO	1.10E+09	3.01E+09	0.363694	0.7201
INF	-10720089	1.27E+08	-0.084609	0.9335
CFDI	-0.006284	0.021898	-0.286982	0.7772
RESID(-1)	0.109489	0.241961	0.452507	0.6560
RESID(-2)	-0.381544	0.255198	-1.495088	0.1513

R-squared	0.107290	Mean dependent var	-1.79E-06
Adjusted R-squared	-0.315573	S.D. dependent var	1.00E+09
S.E. of regression	1.15E+09	Akaike info criterion	44.83192
Sum squared resid	2.52E+19	Schwarz criterion	45.30340
Log likelihood	-640.0628	Hannan-Quinn criter.	44.97958
F-statistic	0.253722	Durbin-Watson stat	2.139471
Prob(F-statistic)	0.979968		

6.3 Lag length = 3

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.565374	Prob. F(3,18)	0.0867
Obs*R-squared	8.685652	Prob. Chi-Square(3)	0.0338

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/04/12 Time: 17:51
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	3.70E+08	1.95E+09	0.190166	0.8513
GDP	-0.010203	0.021206	-0.481116	0.6362
GDPG	40176333	82229255	0.488589	0.6310
OREER	-3.17E+08	9.05E+08	-0.350287	0.7302
TL	55884566	1.87E+08	0.298351	0.7689
TO	9509198.	2.78E+09	0.003415	0.9973
INF	17600759	1.16E+08	0.151713	0.8811
CFDI	0.009888	0.021216	0.466047	0.6468
RESID(-1)	-0.098269	0.239229	-0.410776	0.6861
RESID(-2)	-0.229834	0.242079	-0.949418	0.3550
RESID(-3)	-0.606058	0.272701	-2.222430	0.0393

R-squared	0.299505	Mean dependent var	-1.79E-06
Adjusted R-squared	-0.089659	S.D. dependent var	1.00E+09
S.E. of regression	1.05E+09	Akaike info criterion	44.65841
Sum squared resid	1.97E+19	Schwarz criterion	45.17704
Log likelihood	-636.5469	Hannan-Quinn criter.	44.82083
F-statistic	0.769612	Durbin-Watson stat	1.873472
Prob(F-statistic)	0.655800		

6.4 Lag length = 4

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.069260	Prob. F(4,17)	0.1299
Obs*R-squared	9.496133	Prob. Chi-Square(4)	0.0498

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/04/12 Time: 17:51
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	9.51E+08	2.08E+09	0.456757	0.6536
GDP	-0.012994	0.021638	-0.600511	0.5561
GDPG	49720925	83682212	0.594164	0.5602
OREER	-5.62E+08	9.58E+08	-0.587197	0.5648
TL	1.02E+08	1.97E+08	0.517858	0.6112
TO	-1.83E+08	2.82E+09	-0.064887	0.9490
INF	4410228.	1.18E+08	0.037369	0.9706
CFDI	0.012072	0.021548	0.560247	0.5826
RESID(-1)	-0.227795	0.286230	-0.795844	0.4371
RESID(-2)	-0.273597	0.249570	-1.096277	0.2882
RESID(-3)	-0.642857	0.278416	-2.308981	0.0338
RESID(-4)	-0.273448	0.325341	-0.840496	0.4123

R-squared	0.327453	Mean dependent var	-1.79E-06
Adjusted R-squared	-0.107725	S.D. dependent var	1.00E+09
S.E. of regression	1.06E+09	Akaike info criterion	44.68666
Sum squared resid	1.90E+19	Schwarz criterion	45.25244
Log likelihood	-635.9565	Hannan-Quinn criter.	44.86385
F-statistic	0.752458	Durbin-Watson stat	1.962900
Prob(F-statistic)	0.679038		

6.5 Lag length = 5

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	5.255512	Prob. F(5,16)	0.0048
Obs*R-squared	18.02491	Prob. Chi-Square(5)	0.0029

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/04/12 Time: 17:52
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.39E+09	1.61E+09	0.862072	0.4014
GDP	0.009345	0.017890	0.522350	0.6086
GDPG	-42227512	69762269	-0.605306	0.5535
OREER	-1.36E+09	7.75E+08	-1.761726	0.0972
TL	95263671	1.52E+08	0.626604	0.5398
TO	9.44E+08	2.20E+09	0.428687	0.6739
INF	8913623.	91264692	0.097668	0.9234
CFDI	-0.014602	0.018299	-0.797970	0.4366
RESID(-1)	-0.195390	0.221512	-0.882072	0.3908
RESID(-2)	-0.865631	0.255791	-3.384134	0.0038
RESID(-3)	-0.737953	0.216962	-3.401302	0.0037
RESID(-4)	-0.273482	0.251563	-1.087132	0.2931
RESID(-5)	-0.991152	0.281087	-3.526138	0.0028

R-squared	0.621549	Mean dependent var	-1.79E-06
Adjusted R-squared	0.337710	S.D. dependent var	1.00E+09
S.E. of regression	8.16E+08	Akaike info criterion	44.18064
Sum squared resid	1.07E+19	Schwarz criterion	44.79356
Log likelihood	-627.6193	Hannan-Quinn criter.	44.37260
F-statistic	2.189797	Durbin-Watson stat	2.212220
Prob(F-statistic)	0.072132		

6.6 Lag length = 6

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	4.142572	Prob. F(6,15)	0.0119
Obs*R-squared	18.08555	Prob. Chi-Square(6)	0.0060

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/04/12 Time: 17:52
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.57E+09	1.77E+09	0.885265	0.3900
GDP	0.008702	0.018560	0.468885	0.6459
GDPG	-43213646	71931980	-0.600757	0.5570
OREER	-1.45E+09	8.54E+08	-1.700501	0.1097
TL	1.10E+08	1.65E+08	0.667966	0.5143
TO	9.18E+08	2.27E+09	0.404313	0.6917
INF	5331471.	94812440	0.056232	0.9559
CFDI	-0.014179	0.018903	-0.750087	0.4648
RESID(-1)	-0.236763	0.269422	-0.878782	0.3934
RESID(-2)	-0.886242	0.272951	-3.246888	0.0054
RESID(-3)	-0.810750	0.336925	-2.406323	0.0295
RESID(-4)	-0.323944	0.312543	-1.036478	0.3164
RESID(-5)	-1.008321	0.295548	-3.411703	0.0039
RESID(-6)	-0.097382	0.337323	-0.288692	0.7768

R-squared	0.623640	Mean dependent var	-1.79E-06
Adjusted R-squared	0.297461	S.D. dependent var	1.00E+09
S.E. of regression	8.41E+08	Akaike info criterion	44.24406
Sum squared resid	1.06E+19	Schwarz criterion	44.90414
Log likelihood	-627.5389	Hannan-Quinn criter.	44.45079
F-statistic	1.911956	Durbin-Watson stat	2.155713
Prob(F-statistic)	0.115101		

6.7 Summary of Autocorrelation Testing, Breusch-Godfrey LM test result

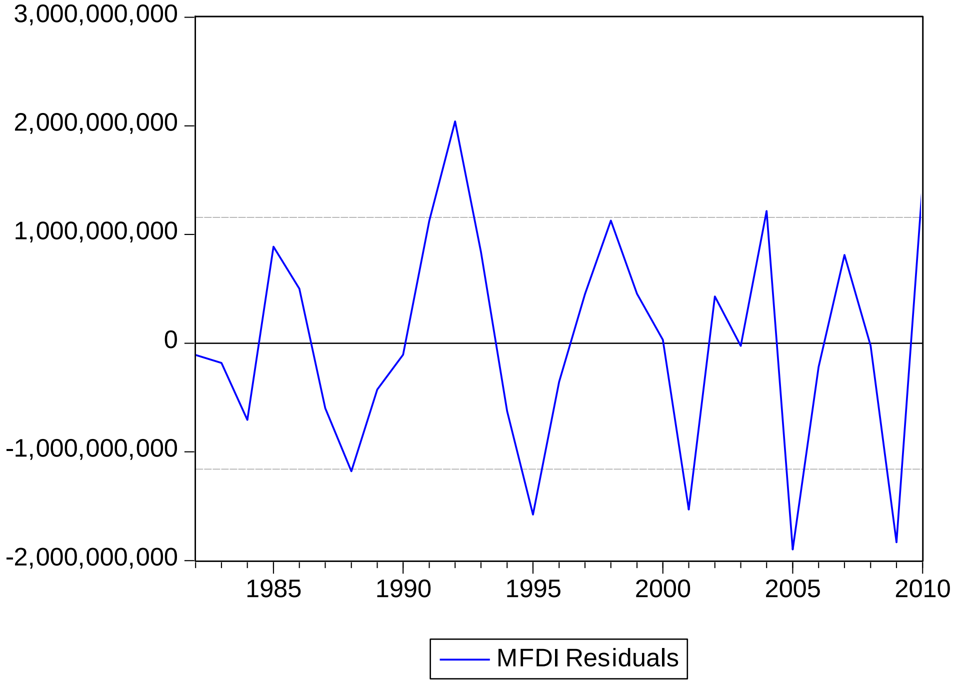
Lag Length	AIC	p-value
1	44.87418	0.8334
2	44.83192	0.3402
3	44.65841	0.0867
4	44.68666	0.1299
5	44.18064	0.0048
6	44.24406	0.0119

Lag length 5 has the minimum AIC

Ho: There is no autocorrelation.
H1: There is autocorrelation.
Critical value: α= 0.10
Decision rule: Reject Ho. If the p-value is less than the significant level, α= 0.10. Otherwise, do not reject Ho.
P-Value = 0.0048
Decision making: Reject Ho. Since the p-value 0.0048 is smaller than the significant level at 0.10.
Conclusion: There is sufficient evidence to conclude that there is autocorrelation problem in the estimated model at 10% significant level.

Appendix 7:

Residual Graph of the Multiple Linear Regression Model



Appendix 8:

Empirical Result of Semi-logarithmic: Log-Lin Model

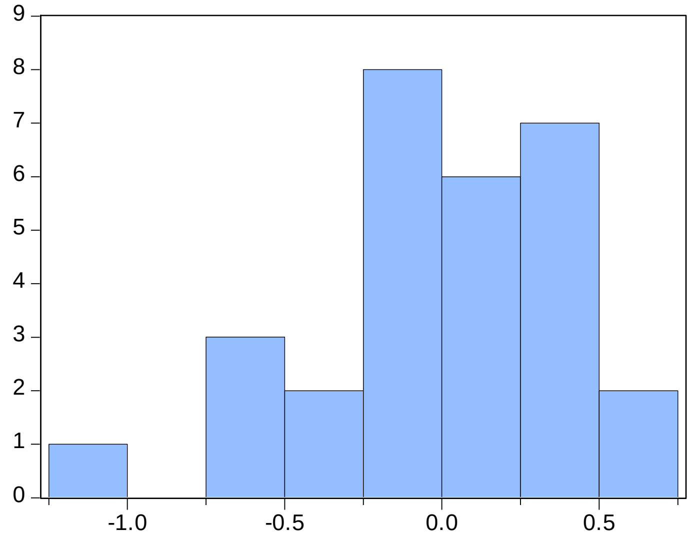
Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/15/12 Time: 17:27
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	19.37893	0.814918	23.78021	0.0000
GDP	2.91E-12	8.36E-12	0.347688	0.7315
GDPG	0.054179	0.033766	1.604566	0.1235
OREER	-0.803537	0.386136	-2.080971	0.0499
TL	-0.056388	0.075309	-0.748748	0.4623
TO	2.654155	1.148582	2.310810	0.0311
INF	0.066051	0.049206	1.342345	0.1938
CFDI	4.89E-12	8.42E-12	0.580837	0.5675

R-squared	0.813519	Mean dependent var	21.64097
Adjusted R-squared	0.751359	S.D. dependent var	0.907256
S.E. of regression	0.452394	Akaike info criterion	1.480423
Sum squared resid	4.297861	Schwarz criterion	1.857608
Log likelihood	-13.46613	Hannan-Quinn criter.	1.598553
F-statistic	13.08743	Durbin-Watson stat	1.814509
Prob(F-statistic)	0.000002		

Appendix 9:

<u>Normality Test of Semi-logarithmic: Log-Lin Model (Jarque-Bera Normality Test)</u>



Series: Residuals	
Sample 1982 2010	
Observations 29	
Mean	-1.12e-15
Median	0.047150
Maximum	0.663597
Minimum	-1.097911
Std. Dev.	0.391784
Skewness	-0.654396
Kurtosis	3.521145
Jarque-Bera	2.397970
Probability	0.301500

H_0 : Error terms are normally distributed
H_1: Error terms are not normally distributed
Critical value: α= 0.10
Test statistic: p-value = 0.301500
Decision rules: Reject H_0 if p-value less than α= 0.10, otherwise do not reject H_0.
Decision: Do not reject $H_{0,}$ since p-value (0.301500) is more than α= 0.10
Conclusion: We have enough evidence to conclude that the error terms are normally distributed.

Appendix 10:

Model Specification test of Semi-Logarithmic: Log-Lin Model (Ramsey RESET Test)

Ramsey RESET Test:

F-statistic	0.441456	Prob. F(1,20)	0.5140
Log likelihood ratio	0.633149	Prob. Chi-Square(1)	0.4262

Test Equation:
Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/15/12 Time: 17:42
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	64.07198	67.27116	0.952444	0.3522
GDP	1.58E-11	2.12E-11	0.746192	0.4642
GDPG	0.322988	0.406020	0.795497	0.4357
OREER	-5.059446	6.417378	-0.788398	0.4397
TL	-0.346041	0.442579	-0.781872	0.4434
TO	16.34850	20.64378	0.791934	0.4377
INF	0.388013	0.487134	0.796522	0.4351
CFDI	3.27E-11	4.27E-11	0.765540	0.4529
FITTED^2	-0.119100	0.179254	-0.664422	0.5140

R-squared	0.817546	Mean dependent var	21.64097
Adjusted R-squared	0.744565	S.D. dependent var	0.907256
S.E. of regression	0.458533	Akaike info criterion	1.527556
Sum squared resid	4.205044	Schwarz criterion	1.951889
Log likelihood	-13.14956	Hannan-Quinn criter.	1.660452
F-statistic	11.20211	Durbin-Watson stat	1.922435
Prob(F-statistic)	0.000007		

H_0: Model specification is correct.
H_1: Model specification is incorrect.
Critical Value: $\alpha = 0.10$
p-value = 0.5140
Decision rules: Reject H_0, if p-value less than $\alpha = 0.10$, otherwise do not reject H_0.
Decision: Reject H_0, since the p-value (0.5140) more than the significance level, 0.10
Conclusion: We have enough evidence to conclude that the model specification is correct.

Appendix 11:

Empirical Result of Model 1

Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/15/12 Time: 18:28
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	19.62773	0.705766	27.81055	0.0000
GDPG	0.068305	0.026728	2.555526	0.0177
OREER	-0.693089	0.346083	-2.002668	0.0571
TO	1.860519	0.461854	4.028367	0.0005
INF	0.077766	0.045178	1.721305	0.0986
CFDI	7.66E-12	1.84E-12	4.169426	0.0004

R-squared	0.808367	Mean dependent var	21.64097
Adjusted R-squared	0.766708	S.D. dependent var	0.907256
S.E. of regression	0.438208	Akaike info criterion	1.369743
Sum squared resid	4.416595	Schwarz criterion	1.652632
Log likelihood	-13.86128	Hannan-Quinn criter.	1.458341
F-statistic	19.40425	Durbin-Watson stat	1.773665
Prob(F-statistic)	0.000000		

Appendix 12:

Empirical Result of Model 2

Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/15/12 Time: 18:30
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	19.65046	0.821058	23.93310	0.0000
GDPG	0.106277	0.026020	4.084340	0.0005
OREER	-0.172537	0.308930	-0.558499	0.5819
TL	0.087694	0.030484	2.876740	0.0085
INF	0.107534	0.049503	2.172258	0.0404
CFDI	7.92E-12	2.06E-12	3.843187	0.0008

R-squared	0.759643	Mean dependent var	21.64097
Adjusted R-squared	0.707391	S.D. dependent var	0.907256
S.E. of regression	0.490765	Akaike info criterion	1.596288
Sum squared resid	5.539553	Schwarz criterion	1.879177
Log likelihood	-17.14618	Hannan-Quinn criter.	1.684885
F-statistic	14.53820	Durbin-Watson stat	1.654779
Prob(F-statistic)	0.000002		

Appendix 13:

Empirical Result of Model 3

Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/15/12 Time: 18:36
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	19.46177	0.723421	26.90242	0.0000
GDP	7.04E-12	1.84E-12	3.830467	0.0009
GDPG	0.065417	0.027658	2.365210	0.0268
OREER	-0.673539	0.358007	-1.881360	0.0726
TO	1.773820	0.484693	3.659679	0.0013
INF	0.076571	0.046766	1.637319	0.1152

R-squared	0.794574	Mean dependent var	21.64097
Adjusted R-squared	0.749916	S.D. dependent var	0.907256
S.E. of regression	0.453704	Akaike info criterion	1.439250
Sum squared resid	4.734498	Schwarz criterion	1.722139
Log likelihood	-14.86913	Hannan-Quinn criter.	1.527847
F-statistic	17.79246	Durbin-Watson stat	1.819414
Prob(F-statistic)	0.000000		

Appendix 14:

Empirical Result of Model 4

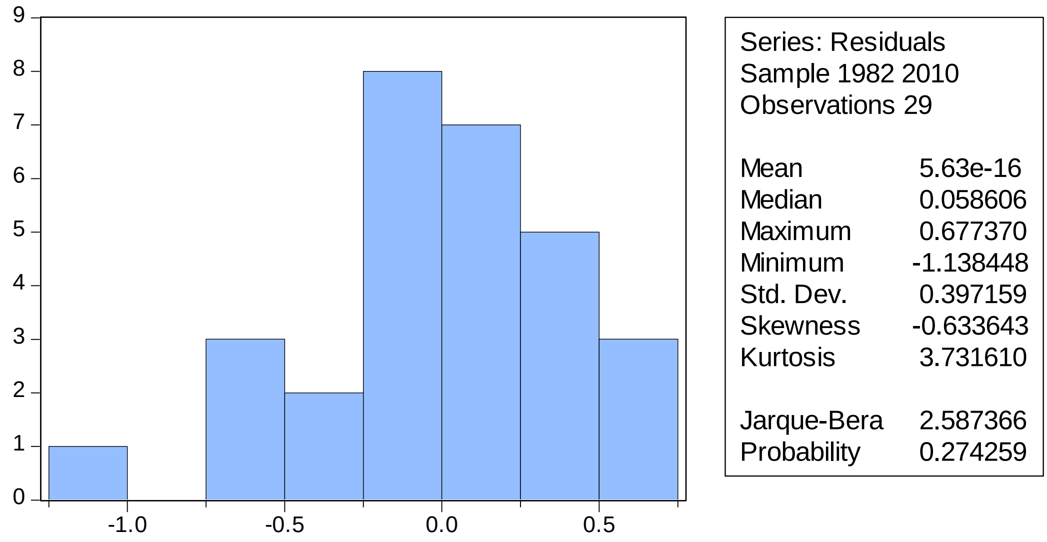
Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/15/12 Time: 18:37
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	19.35685	0.851557	22.73113	0.0000
GDP	7.17E-12	2.14E-12	3.343553	0.0028
GDPG	0.103847	0.027389	3.791622	0.0009
OREER	-0.104738	0.322322	-0.324948	0.7482
TL	0.075415	0.033241	2.268752	0.0330
INF	0.105715	0.052028	2.031886	0.0539

R-squared	0.734392	Mean dependent var	21.64097
Adjusted R-squared	0.676651	S.D. dependent var	0.907256
S.E. of regression	0.515900	Akaike info criterion	1.696184
Sum squared resid	6.121517	Schwarz criterion	1.979073
Log likelihood	-18.59467	Hannan-Quinn criter.	1.784781
F-statistic	12.71876	Durbin-Watson stat	1.662235
Prob(F-statistic)	0.000005		

Appendix 15:

<u>Normality Test of Model 1 (Jarque-Bera Normality Test)</u>



H_0 : Error terms are normally distributed
H_1: Error terms are not normally distributed
Critical value: α= 0.10
Test statistic: p-value = 0.274259
Decision rules: Reject H_0 if p-value less than α= 0.10, otherwise do not reject H_0.
Decision: Do not reject H_0, since p-value (0.274259) is more than α= 0.10
Conclusion: We have enough evidence to conclude that the error terms are normally distributed.

Appendix 16:

Model Specification Test of Model 1 (Ramsey RESET Test)

Ramsey RESET Test:

F-statistic	0.149474	Prob. F(1,22)	0.7028
Log likelihood ratio	0.196368	Prob. Chi-Square(1)	0.6577

Test Equation:
Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/15/12 Time: 19:13
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	44.21453	63.59844	0.695214	0.4942
GDPG	0.250366	0.471692	0.530782	0.6009
OREER	-2.668913	5.122673	-0.521000	0.6076
TO	6.991600	13.28001	0.526475	0.6038
INF	0.282478	0.531491	0.531482	0.6004
CFDI	2.90E-11	5.53E-11	0.524720	0.6050
FITTED^2	-0.063731	0.164842	-0.386619	0.7028

R-squared	0.809660	Mean dependent var	21.64097
Adjusted R-squared	0.757750	S.D. dependent var	0.907256
S.E. of regression	0.446542	Akaike info criterion	1.431938
Sum squared resid	4.386790	Schwarz criterion	1.761975
Log likelihood	-13.76310	Hannan-Quinn criter.	1.535301
F-statistic	15.59716	Durbin-Watson stat	1.840249
Prob(F-statistic)	0.000001		

H_0: Model specification is correct.
H_1: Model specification is incorrect.
Critical Value: $\alpha = 0.10$
p-value = 0.7028
Decision rules: Reject $H_{0,}$ if p-value less than $\alpha = 0.10$, otherwise do not reject H_0.
Decision: Do not reject H_0, since the p-value (0.7028) more than the significance level, 0.10
Conclusion: We have enough evidence to conclude that the model specification is correct.

Appendix 17:

Multicollinearity Testing of Model

17.1 Correlation table

	GDPG	INF	OREER	TL	CFDI
GDPG	1.000000	0.026234	-0.392392	-0.145708	-0.136784
INF	0.026234	1.000000	-0.313685	-0.234635	-0.194607
OREER	-0.392392	-0.313685	1.000000	0.797065	0.547252
TL	-0.145708	-0.234635	0.797065	1.000000	0.553830
CFDI	-0.136784	-0.194607	0.547252	0.553830	1.000000

Appendix 18:

Heteroscedasticity Testing (Autoregressive Conditional Heteroscedasticity (ARCH) Test) of Model 1

18.1 Lag length = 1

Heteroskedasticity Test: ARCH

F-statistic	0.209467	Prob. F(1,26)	0.6510
Obs*R-squared	0.223777	Prob. Chi-Square(1)	0.6362

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/15/12 Time: 19:25
Sample (adjusted): 1983 2010
Included observations: 28 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.170728	0.058071	2.939985	0.0068
RESID^2(-1)	-0.088992	0.194443	-0.457676	0.6510

R-squared	0.007992	Mean dependent var	0.157047
Adjusted R-squared	-0.030162	S.D. dependent var	0.259561
S.E. of regression	0.263446	Akaike info criterion	0.238813
Sum squared resid	1.804500	Schwarz criterion	0.333971
Log likelihood	-1.343388	Hannan-Quinn criter.	0.267904
F-statistic	0.209467	Durbin-Watson stat	2.055376
Prob(F-statistic)	0.650987		

18.2 Lag length = 2

Heteroskedasticity Test: ARCH

F-statistic	1.011949	Prob. F(2,24)	0.3785
Obs*R-squared	2.099809	Prob. Chi-Square(2)	0.3500

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/15/12 Time: 19:25
Sample (adjusted): 1984 2010
Included observations: 27 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.221140	0.067304	3.285675	0.0031
RESID^2(-1)	-0.124215	0.195557	-0.635187	0.5313
RESID^2(-2)	-0.258310	0.195187	-1.323397	0.1982

R-squared	0.077771	Mean dependent var	0.162737
Adjusted R-squared	0.000918	S.D. dependent var	0.262720
S.E. of regression	0.262599	Akaike info criterion	0.268065
Sum squared resid	1.655002	Schwarz criterion	0.412047
Log likelihood	-0.618876	Hannan-Quinn criter.	0.310878
F-statistic	1.011949	Durbin-Watson stat	1.894781
Prob(F-statistic)	0.378501		

18.3 Lag length = 3

Heteroskedasticity Test: ARCH

F-statistic	1.117446	Prob. F(3,22)	0.3634
Obs*R-squared	3.437980	Prob. Chi-Square(3)	0.3289

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/15/12 Time: 19:26
Sample (adjusted): 1985 2010
Included observations: 26 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.181778	0.082977	2.190714	0.0394
RESID^2(-1)	-0.077363	0.206746	-0.374195	0.7118
RESID^2(-2)	-0.245480	0.199806	-1.228594	0.2322
RESID^2(-3)	0.225106	0.205434	1.095758	0.2850

R-squared	0.132230	Mean dependent var	0.165805
Adjusted R-squared	0.013898	S.D. dependent var	0.267429
S.E. of regression	0.265564	Akaike info criterion	0.326720
Sum squared resid	1.551538	Schwarz criterion	0.520273
Log likelihood	-0.247358	Hannan-Quinn criter.	0.382456
F-statistic	1.117446	Durbin-Watson stat	1.932228
Prob(F-statistic)	0.363394		

18.4 Lag length = 4

Heteroskedasticity Test: ARCH

F-statistic	0.949456	Prob. F(4,20)	0.4563
Obs*R-squared	3.989675	Prob. Chi-Square(4)	0.4074

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/15/12 Time: 19:26
Sample (adjusted): 1986 2010
Included observations: 25 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.218762	0.096073	2.277040	0.0339
RESID^2(-1)	-0.047571	0.219787	-0.216441	0.8308
RESID^2(-2)	-0.294433	0.213769	-1.377344	0.1836
RESID^2(-3)	0.205367	0.214028	0.959535	0.3487
RESID^2(-4)	-0.169736	0.218473	-0.776917	0.4463

R-squared	0.159587	Mean dependent var	0.168986
Adjusted R-squared	-0.008496	S.D. dependent var	0.272441
S.E. of regression	0.273596	Akaike info criterion	0.422529
Sum squared resid	1.497097	Schwarz criterion	0.666304
Log likelihood	-0.281614	Hannan-Quinn criter.	0.490142
F-statistic	0.949456	Durbin-Watson stat	2.037981
Prob(F-statistic)	0.456258		

18.5 Lag length = 5

Heteroskedasticity Test: ARCH

F-statistic	0.788746	Prob. F(5,18)	0.5713
Obs*R-squared	4.313285	Prob. Chi-Square(5)	0.5052

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/15/12 Time: 19:27
Sample (adjusted): 1987 2010
Included observations: 24 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.265263	0.115383	2.298984	0.0337
RESID^2(-1)	-0.082071	0.231756	-0.354125	0.7274
RESID^2(-2)	-0.284342	0.227887	-1.247732	0.2281
RESID^2(-3)	0.145089	0.234405	0.618967	0.5437
RESID^2(-4)	-0.193102	0.227749	-0.847871	0.4076
RESID^2(-5)	-0.125086	0.233445	-0.535827	0.5986

R-squared	0.179720	Mean dependent var	0.175626
Adjusted R-squared	-0.048135	S.D. dependent var	0.276227
S.E. of regression	0.282797	Akaike info criterion	0.524141
Sum squared resid	1.439531	Schwarz criterion	0.818654
Log likelihood	-0.289686	Hannan-Quinn criter.	0.602275
F-statistic	0.788746	Durbin-Watson stat	2.014303
Prob(F-statistic)	0.571306		

18.6 Lag length = 6

Heteroskedasticity Test: ARCH

F-statistic	0.632885	Prob. F(6,16)	0.7024
Obs*R-squared	4.411618	Prob. Chi-Square(6)	0.6212

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/15/12 Time: 19:27
Sample (adjusted): 1988 2010
Included observations: 23 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.297861	0.144331	2.063741	0.0557
RESID^2(-1)	-0.096138	0.248516	-0.386850	0.7040
RESID^2(-2)	-0.307895	0.243978	-1.261978	0.2250
RESID^2(-3)	0.173575	0.252197	0.688251	0.5012
RESID^2(-4)	-0.230216	0.251478	-0.915451	0.3735
RESID^2(-5)	-0.131756	0.249184	-0.528749	0.6042
RESID^2(-6)	-0.146310	0.248708	-0.588280	0.5646

R-squared	0.191809	Mean dependent var	0.170613
Adjusted R-squared	-0.111262	S.D. dependent var	0.281316
S.E. of regression	0.296553	Akaike info criterion	0.652611
Sum squared resid	1.407102	Schwarz criterion	0.998196
Log likelihood	-0.505023	Hannan-Quinn criter.	0.739524
F-statistic	0.632885	Durbin-Watson stat	2.044158
Prob(F-statistic)	0.702391		

18.7 Summary of Heteroscedasticity Testing, Autoregressive Conditional Heteroscedasticity (ARCH) test result of Model 1

Lag Length	AIC	p-value
1	0.238813	0.6510
2	0.268065	0.3785
3	0.326720	0.3634
4	0.422529	0.4563
5	0.524141	0.5713
6	0.652611	0.7024

Lag length 1 has the lowest AIC

$H_{0:}$ There is no heteroscedasticity problem.
$H_{1:}$ There is heteroscedasticity problem.
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.6510
Decision: Do not reject H_0 since the p-value, 0.6510 is greater than the critical value, 0.10.
Conclusion: There is not enough evidence to conclude that the model has heteroscedasticity problem in the estimated model at 10% significant level.

Appendix 19:

Autocorrelation Testing (Breusch-Godfrey LM Test) of Model 1

19.1 Lag length = 1

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.243489	Prob. F(1,22)	0.6266
Obs*R-squared	0.317449	Prob. Chi-Square(1)	0.5731

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/15/12 Time: 19:41
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.043871	0.723153	0.060667	0.9522
GDPG	0.000547	0.027202	0.020100	0.9841
OREER	-0.001928	0.351940	-0.005478	0.9957
TO	-0.017321	0.470953	-0.036778	0.9710
INF	-0.005739	0.047390	-0.121099	0.9047
CFDI	1.35E-13	1.89E-12	0.071767	0.9434
RESID(-1)	0.111358	0.225674	0.493446	0.6266

R-squared	0.010947	Mean dependent var	5.63E-16
Adjusted R-squared	-0.258795	S.D. dependent var	0.397159
S.E. of regression	0.445597	Akaike info criterion	1.427702
Sum squared resid	4.368249	Schwarz criterion	1.757739
Log likelihood	-13.70168	Hannan-Quinn criter.	1.531066
F-statistic	0.040581	Durbin-Watson stat	1.939462
Prob(F-statistic)	0.999654		

19.2 Lag length = 2

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.254524	Prob. F(2,21)	0.7776
Obs*R-squared	0.686333	Prob. Chi-Square(2)	0.7095

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/15/12 Time: 19:42
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.056852	0.735815	0.077264	0.9391
GDPG	0.001334	0.027703	0.048154	0.9620
OREER	-0.036946	0.364106	-0.101471	0.9201
TO	0.033483	0.488675	0.068518	0.9460
INF	-0.005173	0.048204	-0.107309	0.9156
CFDI	2.07E-13	1.92E-12	0.107688	0.9153
RESID(-1)	0.128084	0.231711	0.552774	0.5863
RESID(-2)	-0.125429	0.239796	-0.523066	0.6064

R-squared	0.023667	Mean dependent var	5.63E-16
Adjusted R-squared	-0.301778	S.D. dependent var	0.397159
S.E. of regression	0.453141	Akaike info criterion	1.483723
Sum squared resid	4.312069	Schwarz criterion	1.860908
Log likelihood	-13.51399	Hannan-Quinn criter.	1.601853
F-statistic	0.072721	Durbin-Watson stat	2.092448
Prob(F-statistic)	0.999192		

19.3 Lag length = 3

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	4.508404	Prob. F(3,20)	0.0143
Obs*R-squared	11.69959	Prob. Chi-Square(3)	0.0085

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/15/12 Time: 19:42
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.412683	0.597754	0.690389	0.4979
GDPG	-0.001474	0.022204	-0.066366	0.9477
OREER	-0.376291	0.306759	-1.226667	0.2342
TO	0.412342	0.405567	1.016705	0.3214
INF	0.002579	0.038672	0.066694	0.9475
CFDI	9.99E-13	1.56E-12	0.641644	0.5284
RESID(-1)	0.034641	0.187436	0.184817	0.8552
RESID(-2)	-0.072011	0.192656	-0.373781	0.7125
RESID(-3)	-0.720574	0.201946	-3.568162	0.0019

R-squared	0.403434	Mean dependent var	5.63E-16
Adjusted R-squared	0.164808	S.D. dependent var	0.397159
S.E. of regression	0.362959	Akaike info criterion	1.060075
Sum squared resid	2.634790	Schwarz criterion	1.484408
Log likelihood	-6.371081	Hannan-Quinn criter.	1.192970
F-statistic	1.690651	Durbin-Watson stat	2.153384
Prob(F-statistic)	0.162327		

19.4 Lag length = 4

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.420390	Prob. F(4,19)	0.0288
Obs*R-squared	12.14034	Prob. Chi-Square(4)	0.0163

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/15/12 Time: 19:42
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.542814	0.632951	0.857592	0.4018
GDPG	-0.005118	0.023075	-0.221806	0.8268
OREER	-0.500468	0.357176	-1.401181	0.1773
TO	0.567850	0.466280	1.217831	0.2382
INF	0.005147	0.039337	0.130847	0.8973
CFDI	1.04E-12	1.58E-12	0.656828	0.5192
RESID(-1)	-0.078440	0.248563	-0.315575	0.7558
RESID(-2)	-0.099942	0.199111	-0.501942	0.6215
RESID(-3)	-0.730766	0.205046	-3.563913	0.0021
RESID(-4)	-0.190818	0.270750	-0.704773	0.4895

R-squared	0.418632	Mean dependent var	5.63E-16
Adjusted R-squared	0.143248	S.D. dependent var	0.397159
S.E. of regression	0.367614	Akaike info criterion	1.103234
Sum squared resid	2.567666	Schwarz criterion	1.574715
Log likelihood	-5.996886	Hannan-Quinn criter.	1.250896
F-statistic	1.520173	Durbin-Watson stat	2.094256
Prob(F-statistic)	0.211062		

19.5 Lag length = 5

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.543144	Prob. F(5,18)	0.0210
Obs*R-squared	14.38459	Prob. Chi-Square(5)	0.0133

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/15/12 Time: 19:43
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.953250	0.653865	1.457869	0.1621
GDPG	-0.020303	0.023888	-0.849898	0.4065
OREER	-0.845241	0.399679	-2.114799	0.0487
TO	1.005794	0.518013	1.941637	0.0680
INF	0.004791	0.037629	0.127314	0.9001
CFDI	1.11E-12	1.51E-12	0.733597	0.4726
RESID(-1)	-0.143556	0.240975	-0.595730	0.5588
RESID(-2)	-0.403203	0.263725	-1.528877	0.1437
RESID(-3)	-0.804692	0.201120	-4.001048	0.0008
RESID(-4)	-0.262305	0.262540	-0.999105	0.3310
RESID(-5)	-0.437491	0.263150	-1.662517	0.1137

R-squared	0.496020	Mean dependent var	5.63E-16
Adjusted R-squared	0.216031	S.D. dependent var	0.397159
S.E. of regression	0.351653	Akaike info criterion	1.029352
Sum squared resid	2.225875	Schwarz criterion	1.547981
Log likelihood	-3.925603	Hannan-Quinn criter.	1.191780
F-statistic	1.771572	Durbin-Watson stat	2.209799
Prob(F-statistic)	0.139775		

19.6 Lag length = 6

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.023280	Prob. F(6,17)	0.0337
Obs*R-squared	14.97028	Prob. Chi-Square(6)	0.0205

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/15/12 Time: 19:43
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.194635	0.718784	1.662023	0.1148
GDPG	-0.030086	0.026737	-1.125246	0.2761
OREER	-1.052933	0.472381	-2.228993	0.0396
TO	1.281384	0.616242	2.079350	0.0530
INF	0.002563	0.038029	0.067408	0.9470
CFDI	1.08E-12	1.52E-12	0.710544	0.4870
RESID(-1)	-0.220724	0.259638	-0.850123	0.4071
RESID(-2)	-0.458022	0.273725	-1.673293	0.1126
RESID(-3)	-0.973609	0.285162	-3.414230	0.0033
RESID(-4)	-0.354825	0.286563	-1.238207	0.2325
RESID(-5)	-0.477957	0.269612	-1.772761	0.0942
RESID(-6)	-0.226837	0.269265	-0.842431	0.4112

R-squared	0.516216	Mean dependent var	5.63E-16
Adjusted R-squared	0.203180	S.D. dependent var	0.397159
S.E. of regression	0.354523	Akaike info criterion	1.057419
Sum squared resid	2.136676	Schwarz criterion	1.623196
Log likelihood	-3.332573	Hannan-Quinn criter.	1.234613
F-statistic	1.649062	Durbin-Watson stat	2.231417
Prob(F-statistic)	0.171407		

19.7 Summary of Autocorrelation Testing (Breusch-Godfrey LM test) result of Model 1

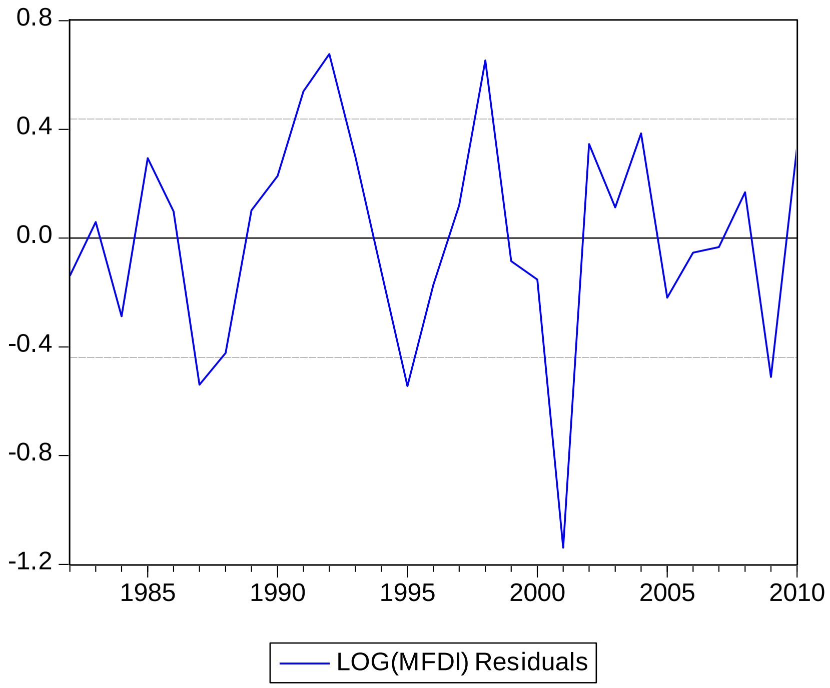
Lag Length	AIC	p-value
1	1.427702	0.6266
2	1.483723	0.7776
3	1.060075	0.0143
4	1.103234	0.0288
5	1.029352	0.0210
6	1.057419	0.0337

Lag length 5 has the lowest AIC

$H_{0:}$ There is no autocorrelation problem.
$H_{1:}$ There is autocorrelation problem.
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.0210
Decision: Reject H_0 since the p-value, 0.0210 is smaller than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the model has autocorrelation problem in the estimated model at 10% significant level.

Appendix 20:

Residual Graph of Model 1



Appendix 21:

Heteroscedasticity Problem Solving of Model 1 by using White's Heteroscedasticity-consistent Variances and Standard Errors Methods

Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/15/12 Time: 21:51
Sample: 1982 2010
Included observations: 29
White Heteroskedasticity-Consistent Standard Errors & Covariance

	Coefficient	Std. Error	t-Statistic	Prob.
C	19.62773	0.522269	37.58163	0.0000
GDPG	0.068305	0.035372	1.931031	0.0659
OREER	-0.693089	0.304931	-2.272940	0.0327
TO	1.860519	0.483130	3.850971	0.0008
INF	0.077766	0.035864	2.168383	0.0407
CFDI	7.66E-12	1.69E-12	4.543127	0.0001

R-squared	0.808367	Mean dependent var	21.64097
Adjusted R-squared	0.766708	S.D. dependent var	0.907256
S.E. of regression	0.438208	Akaike info criterion	1.369743
Sum squared resid	4.416595	Schwarz criterion	1.652632
Log likelihood	-13.86128	Hannan-Quinn criter.	1.458341
F-statistic	19.40425	Durbin-Watson stat	1.773665
Prob(F-statistic)	0.000000		

Appendix 22:

Empirical Result of Model 5

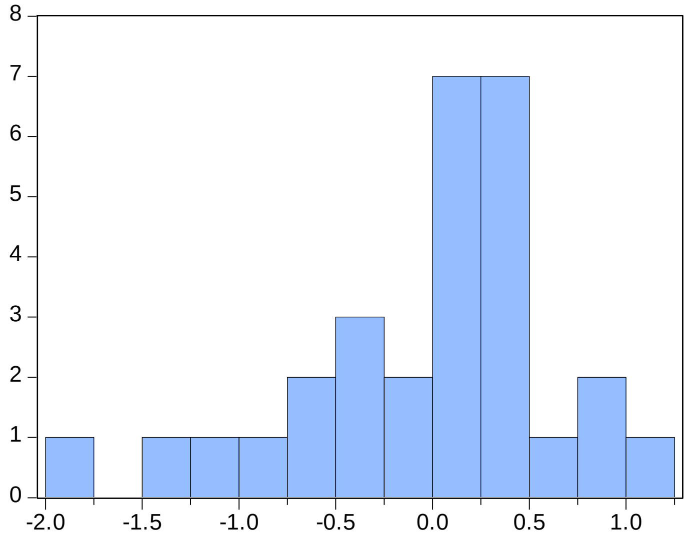
Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/16/12 Time: 14:44
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	20.37068	0.351983	57.87399	0.0000
GDP	6.67E-12	2.87E-12	2.322017	0.0283
TL	0.049327	0.031772	1.552558	0.1326

R-squared	0.447374	Mean dependent var	21.64097
Adjusted R-squared	0.404864	S.D. dependent var	0.907256
S.E. of regression	0.699903	Akaike info criterion	2.221948
Sum squared resid	12.73648	Schwarz criterion	2.363393
Log likelihood	-29.21825	Hannan-Quinn criter.	2.266247
F-statistic	10.52403	Durbin-Watson stat	1.160225
Prob(F-statistic)	0.000448		

Appendix 23:

Normality Test of Model 5 (Jarque-Bera Normality Test)



Series: Residuals	
Sample 1982 2010	
Observations 29	
Mean	-2.50e-15
Median	0.195113
Maximum	1.066423
Minimum	-1.826099
Std. Dev.	0.674444
Skewness	-0.904909
Kurtosis	3.604388
Jarque-Bera	4.399207
Probability	0.110847

H_0 : Error terms are normally distributed
H_1: Error terms are not normally distributed
Critical value: α= 0.10
Test statistic: p-value = 0.110847
Decision rules: Reject H_0 if p-value less than α= 0.10, otherwise do not reject H_0.
Decision: Do not reject H_0, since p-value (0.110847) is more than α= 0.10
Conclusion: We have enough evidence to conclude that the error terms are normally distributed.

Appendix 24:

Model Specification Test of Model 5 (Ramsey RESET Test)

Ramsey RESET Test:

F-statistic	6.475804	Prob. F(1,25)	0.0175
Log likelihood ratio	6.679956	Prob. Chi-Square(1)	0.0098

Test Equation:
Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/16/12 Time: 14:51
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	896.8774	344.4360	2.603901	0.0153
GDP	6.29E-10	2.45E-10	2.571867	0.0164
TL	4.432366	1.722620	2.573038	0.0164
FITTED^2	-2.116837	0.831841	-2.544760	0.0175

R-squared	0.561070	Mean dependent var	21.64097
Adjusted R-squared	0.508399	S.D. dependent var	0.907256
S.E. of regression	0.636116	Akaike info criterion	2.060571
Sum squared resid	10.11609	Schwarz criterion	2.249163
Log likelihood	-25.87827	Hannan-Quinn criter.	2.119635
F-statistic	10.65225	Durbin-Watson stat	1.805962
Prob(F-statistic)	0.000107		

H_0: Model specification is correct.
H_1: Model specification is incorrect.
Critical Value: $\alpha = 0.10$
p-value = 0.0175
Decision rules: Reject H_0, if p-value less than $\alpha = 0.10$, otherwise do not reject H_0.
Decision: Reject H_0, since the p-value (0.0175) less than the significance level, 0.10
Conclusion: We have enough evidence to conclude that the model specification is incorrect.

Appendix 25:

Heteroscedasticity Testing (Autoregressive Conditional Heteroscedasticity (ARCH) Test) of Model 5

25.1 Lag length = 1

Heteroskedasticity Test: ARCH

F-statistic	0.269522	Prob. F(1,26)	0.6080
Obs*R-squared	0.287276	Prob. Chi-Square(1)	0.5920

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/16/12 Time: 15:11
Sample (adjusted): 1983 2010
Included observations: 28 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.497462	0.165740	3.001451	0.0059
RESID^2(-1)	-0.101406	0.195330	-0.519155	0.6080

R-squared	0.010260	Mean dependent var	0.451518
Adjusted R-squared	-0.027807	S.D. dependent var	0.731432
S.E. of regression	0.741532	Akaike info criterion	2.308551
Sum squared resid	14.29660	Schwarz criterion	2.403709
Log likelihood	-30.31972	Hannan-Quinn criter.	2.337642
F-statistic	0.269522	Durbin-Watson stat	2.025344
Prob(F-statistic)	0.608044		

25.2 Lag length = 2

Heteroskedasticity Test: ARCH

F-statistic	0.321277	Prob. F(2,24)	0.7283
Obs*R-squared	0.704025	Prob. Chi-Square(2)	0.7033

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/16/12 Time: 15:12
Sample (adjusted): 1984 2010
Included observations: 27 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.573447	0.197272	2.906880	0.0077
RESID^2(-1)	-0.120834	0.201676	-0.599149	0.5547
RESID^2(-2)	-0.125176	0.219837	-0.569402	0.5744

R-squared	0.026075	Mean dependent var	0.467428
Adjusted R-squared	-0.055085	S.D. dependent var	0.740412
S.E. of regression	0.760531	Akaike info criterion	2.394840
Sum squared resid	13.88178	Schwarz criterion	2.538822
Log likelihood	-29.33034	Hannan-Quinn criter.	2.437653
F-statistic	0.321277	Durbin-Watson stat	2.061480
Prob(F-statistic)	0.728293		

25.3 Lag length = 3

Heteroskedasticity Test: ARCH

F-statistic	0.636637	Prob. F(3,22)	0.5994
Obs*R-squared	2.076868	Prob. Chi-Square(3)	0.5566

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/16/12   Time: 15:12
Sample (adjusted): 1985 2010
Included observations: 26 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.717105	0.232151	3.088962	0.0054
RESID^2(-1)	-0.162853	0.207186	-0.786022	0.4402
RESID^2(-2)	-0.143923	0.223468	-0.644046	0.5262
RESID^2(-3)	-0.241951	0.225136	-1.074688	0.2942

R-squared	0.079880	Mean dependent var	0.479929
Adjusted R-squared	-0.045591	S.D. dependent var	0.752163
S.E. of regression	0.769118	Akaike info criterion	2.453494
Sum squared resid	13.01394	Schwarz criterion	2.647048
Log likelihood	-27.89542	Hannan-Quinn criter.	2.509231
F-statistic	0.636637	Durbin-Watson stat	2.121372
Prob(F-statistic)	0.599376		

25.4 Lag length = 4

Heteroskedasticity Test: ARCH

F-statistic	0.878666	Prob. F(4,20)	0.4942
Obs*R-squared	3.736673	Prob. Chi-Square(4)	0.4428

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/16/12 Time: 15:12
Sample (adjusted): 1986 2010
Included observations: 25 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.918857	0.280218	3.279077	0.0038
RESID^2(-1)	-0.233631	0.215541	-1.083927	0.2913
RESID^2(-2)	-0.194896	0.228771	-0.851925	0.4043
RESID^2(-3)	-0.271689	0.228486	-1.189086	0.2483
RESID^2(-4)	-0.277725	0.232662	-1.193686	0.2466

R-squared	0.149467	Mean dependent var	0.488164
Adjusted R-squared	-0.020640	S.D. dependent var	0.766476
S.E. of regression	0.774346	Akaike info criterion	2.503259
Sum squared resid	11.99222	Schwarz criterion	2.747035
Log likelihood	-26.29074	Hannan-Quinn criter.	2.570872
F-statistic	0.878666	Durbin-Watson stat	2.113314
Prob(F-statistic)	0.494225		

25.5 Lag length = 5

Heteroskedasticity Test: ARCH

F-statistic	0.850370	Prob. F(5,18)	0.5323
Obs*R-squared	4.585882	Prob. Chi-Square(5)	0.4685

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/16/12 Time: 15:13
Sample (adjusted): 1987 2010
Included observations: 24 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.120198	0.357309	3.135094	0.0057
RESID^2(-1)	-0.296029	0.230516	-1.284201	0.2154
RESID^2(-2)	-0.254135	0.242899	-1.046257	0.3093
RESID^2(-3)	-0.316827	0.240527	-1.317225	0.2043
RESID^2(-4)	-0.309966	0.242619	-1.277579	0.2176
RESID^2(-5)	-0.250045	0.247264	-1.011244	0.3253

R-squared	0.191078	Mean dependent var	0.477075
Adjusted R-squared	-0.033622	S.D. dependent var	0.780910
S.E. of regression	0.793929	Akaike info criterion	2.588673
Sum squared resid	11.34583	Schwarz criterion	2.883187
Log likelihood	-25.06408	Hannan-Quinn criter.	2.666808
F-statistic	0.850370	Durbin-Watson stat	2.089974
Prob(F-statistic)	0.532286		

25.6 Lag length = 6

Heteroskedasticity Test: ARCH

F-statistic	0.799595	Prob. F(6,16)	0.5842
Obs*R-squared	5.305623	Prob. Chi-Square(6)	0.5053

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/16/12   Time: 15:14
Sample (adjusted): 1988 2010
Included observations: 23 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.354256	0.456625	2.965794	0.0091
RESID^2(-1)	-0.356908	0.242085	-1.474309	0.1598
RESID^2(-2)	-0.313686	0.257288	-1.219203	0.2404
RESID^2(-3)	-0.382725	0.257772	-1.484739	0.1570
RESID^2(-4)	-0.358904	0.257190	-1.395481	0.1819
RESID^2(-5)	-0.286107	0.258875	-1.105192	0.2854
RESID^2(-6)	-0.277049	0.260682	-1.062784	0.3037

R-squared	0.230679	Mean dependent var	0.449208
Adjusted R-squared	-0.057816	S.D. dependent var	0.786164
S.E. of regression	0.808572	Akaike info criterion	2.658695
Sum squared resid	10.46061	Schwarz criterion	3.004280
Log likelihood	-23.57499	Hannan-Quinn criter.	2.745609
F-statistic	0.799595	Durbin-Watson stat	2.192746
Prob(F-statistic)	0.584207		

25.7 Summary of Heteroscedasticity Testing, Autoregressive Conditional Heteroscedasticity (ARCH) test result of Model 5

Lag Length	AIC	p-value
1	2.308551	0.6080
2	2.394840	0.7283
3	2.453494	0.5994
4	2.503259	0.4942
5	2.588673	0.5323
6	2.658695	0.5842

Lag length 1 has the lowest AIC

$H_{0:}$ There is no heteroscedasticity problem.
$H_{1:}$ There is heteroscedasticity problem.
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.6080
Decision: Do not reject H_0 since the p-value, 0.6080 is greater than the critical value, 0.10.
Conclusion: There is not enough evidence to conclude that the model has heteroscedasticity problem in the estimated model at 10% significant level.

Appendix 26:

Autocorrelation Testing (Breusch-Godfrey LM Test) of Model 5

26.1 Lag length = 1

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	5.353857	Prob. F(1,25)	0.0292
Obs*R-squared	5.115062	Prob. Chi-Square(1)	0.0237

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/16/12 Time: 15:47
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.058575	0.326745	0.179268	0.8592
GDP	8.30E-13	2.68E-12	0.309602	0.7594
TL	-0.009790	0.029708	-0.329540	0.7445
RESID(-1)	0.425828	0.184035	2.313840	0.0292

R-squared	0.176381	Mean dependent var	-2.50E-15
Adjusted R-squared	0.077547	S.D. dependent var	0.674444
S.E. of regression	0.647766	Akaike info criterion	2.096866
Sum squared resid	10.49000	Schwarz criterion	2.285459
Log likelihood	-26.40456	Hannan-Quinn criter.	2.155931
F-statistic	1.784619	Durbin-Watson stat	2.004069
Prob(F-statistic)	0.175864		

26.2 Lag length = 2

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.736327	Prob. F(2,24)	0.0850
Obs*R-squared	5.384888	Prob. Chi-Square(2)	0.0677

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/16/12 Time: 15:48
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.083960	0.335119	0.250538	0.8043
GDP	7.10E-13	2.73E-12	0.260047	0.7970
TL	-0.011270	0.030281	-0.372192	0.7130
RESID(-1)	0.371828	0.213344	1.742859	0.0942
RESID(-2)	0.122949	0.234785	0.523664	0.6053

R-squared	0.185686	Mean dependent var	-2.50E-15
Adjusted R-squared	0.049967	S.D. dependent var	0.674444
S.E. of regression	0.657378	Akaike info criterion	2.154470
Sum squared resid	10.37150	Schwarz criterion	2.390211
Log likelihood	-26.23982	Hannan-Quinn criter.	2.228301
F-statistic	1.368163	Durbin-Watson stat	1.925313
Prob(F-statistic)	0.274453		

26.3 Lag length = 3

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.768947	Prob. F(3,23)	0.1812
Obs*R-squared	5.436791	Prob. Chi-Square(3)	0.1425

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/16/12 Time: 15:48
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.070196	0.347375	0.202075	0.8416
GDP	6.70E-13	2.79E-12	0.240119	0.8124
TL	-0.009891	0.031500	-0.313989	0.7564
RESID(-1)	0.373455	0.217813	1.714569	0.0999
RESID(-2)	0.149543	0.267123	0.559828	0.5810
RESID(-3)	-0.055685	0.247395	-0.225084	0.8239

R-squared	0.187476	Mean dependent var	-2.50E-15
Adjusted R-squared	0.010840	S.D. dependent var	0.674444
S.E. of regression	0.670778	Akaike info criterion	2.221236
Sum squared resid	10.34870	Schwarz criterion	2.504124
Log likelihood	-26.20792	Hannan-Quinn criter.	2.309833
F-statistic	1.061368	Durbin-Watson stat	1.953369
Prob(F-statistic)	0.406961		

26.4 Lag length = 4

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.686436	Prob. F(4,22)	0.1890
Obs*R-squared	6.805411	Prob. Chi-Square(4)	0.1465

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/16/12 Time: 15:48
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.011906	0.351846	-0.033838	0.9733
GDP	-7.22E-14	2.84E-12	-0.025405	0.9800
TL	0.001270	0.032694	0.038832	0.9694
RESID(-1)	0.335986	0.218524	1.537524	0.1384
RESID(-2)	0.203354	0.269072	0.755760	0.4578
RESID(-3)	0.068606	0.267689	0.256292	0.8001
RESID(-4)	-0.300284	0.257812	-1.164740	0.2566

R-squared	0.234669	Mean dependent var	-2.50E-15
Adjusted R-squared	0.025943	S.D. dependent var	0.674444
S.E. of regression	0.665638	Akaike info criterion	2.230363
Sum squared resid	9.747621	Schwarz criterion	2.560400
Log likelihood	-25.34027	Hannan-Quinn criter.	2.333727
F-statistic	1.124291	Durbin-Watson stat	2.069574
Prob(F-statistic)	0.380745		

26.5 Lag length = 5

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.827803	Prob. F(5,21)	0.1509
Obs*R-squared	8.793633	Prob. Chi-Square(5)	0.1176

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/16/12 Time: 15:48
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.130401	0.353367	-0.369024	0.7158
GDP	-1.72E-12	3.00E-12	-0.573046	0.5727
TL	0.021176	0.034803	0.608446	0.5494
RESID(-1)	0.226934	0.226496	1.001934	0.3278
RESID(-2)	0.221568	0.263085	0.842193	0.4092
RESID(-3)	0.143760	0.266605	0.539227	0.5954
RESID(-4)	-0.174308	0.266599	-0.653819	0.5203
RESID(-5)	-0.394274	0.274284	-1.437467	0.1653

R-squared	0.303229	Mean dependent var	-2.50E-15
Adjusted R-squared	0.070972	S.D. dependent var	0.674444
S.E. of regression	0.650070	Akaike info criterion	2.205478
Sum squared resid	8.874416	Schwarz criterion	2.582663
Log likelihood	-23.97943	Hannan-Quinn criter.	2.323608
F-statistic	1.305574	Durbin-Watson stat	2.028262
Prob(F-statistic)	0.295847		

26.6 Lag length = 6

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.510218	Prob. F(6,20)	0.2256
Obs*R-squared	9.042191	Prob. Chi-Square(6)	0.1712

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/16/12 Time: 15:49
Sample: 1982 2010
Included observations: 29
Presample missing value lagged residuals set to zero.

	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.183681	0.375360	-0.489345	0.6299
GDP	-2.41E-12	3.36E-12	-0.718664	0.4807
TL	0.029971	0.039582	0.757184	0.4578
RESID(-1)	0.183608	0.246454	0.744998	0.4649
RESID(-2)	0.192653	0.274111	0.702827	0.4903
RESID(-3)	0.157851	0.272967	0.578279	0.5695
RESID(-4)	-0.145129	0.277721	-0.522572	0.6070
RESID(-5)	-0.366983	0.284625	-1.289354	0.2120
RESID(-6)	-0.150184	0.300921	-0.499082	0.6232

R-squared	0.311800	Mean dependent var	-2.50E-15
Adjusted R-squared	0.036520	S.D. dependent var	0.674444
S.E. of regression	0.662014	Akaike info criterion	2.262066
Sum squared resid	8.765252	Schwarz criterion	2.686399
Log likelihood	-23.79996	Hannan-Quinn criter.	2.394962
F-statistic	1.132663	Durbin-Watson stat	1.989274
Prob(F-statistic)	0.384492		

26.7 Summary of Autocorrelation Testing (Breusch-Godfrey LM test) result of Model 5

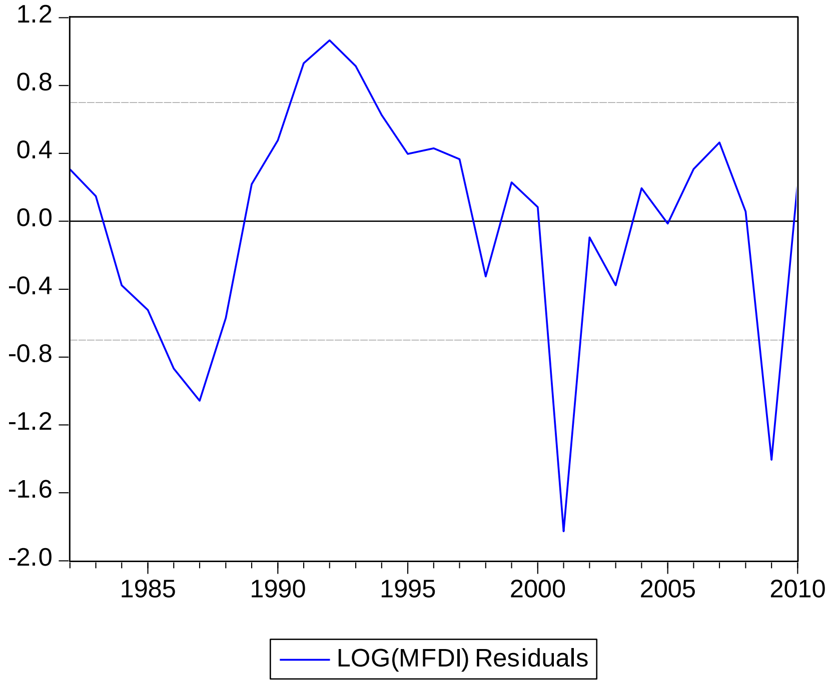
Lag Length	AIC	p-value
1	2.096866	0.0292
2	2.154470	0.0850
3	2.221236	0.1812
4	2.230363	0.1890
5	2.205478	0.1509
6	2.262066	0.2256

Lag length 1 has the lowest AIC

$H_{0:}$ There is no autocorrelation problem.
$H_{1:}$ There is autocorrelation problem.
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.0292
Decision: Reject H_0 since the p-value, 0.0292 is smaller than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the model has autocorrelation problem in the estimated model at 10% significant level.

Appendix 27:

Residual Graph of Model 5



Appendix 28:

Heteroscedasticity Problem Solving of Model 5 by using White's Heteroscedasticity-consistent Variances and Standard Errors Methods

Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/16/12 Time: 16:28
Sample: 1982 2010
Included observations: 29
White Heteroskedasticity-Consistent Standard Errors & Covariance

	Coefficient	Std. Error	t-Statistic	Prob.
C	20.37068	0.328888	61.93805	0.0000
GDP	6.67E-12	2.75E-12	2.426117	0.0225
TL	0.049327	0.031196	1.581192	0.1259

R-squared	0.447374	Mean dependent var	21.64097
Adjusted R-squared	0.404864	S.D. dependent var	0.907256
S.E. of regression	0.699903	Akaike info criterion	2.221948
Sum squared resid	12.73648	Schwarz criterion	2.363393
Log likelihood	-29.21825	Hannan-Quinn criter.	2.266247
F-statistic	10.52403	Durbin-Watson stat	1.160225
Prob(F-statistic)	0.000448		

Appendix 29:

Hypothesis Testing Overall Significance and Individual Regression Coefficients Significance of Multiple Regression of Model 1

Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/15/12 Time: 21:51
Sample: 1982 2010
Included observations: 29
White Heteroskedasticity-Consistent Standard Errors & Covariance

	Coefficient	Std. Error	t-Statistic	Prob.
C	19.62773	0.522269	37.58163	0.0000
GDPG	0.068305	0.035372	1.931031	0.0659
OREER	-0.693089	0.304931	-2.272940	0.0327
TO	1.860519	0.483130	3.850971	0.0008
INF	0.077766	0.035864	2.168383	0.0407
CFDI	7.66E-12	1.69E-12	4.543127	0.0001

R-squared	0.808367	Mean dependent var	21.64097
Adjusted R-squared	0.766708	S.D. dependent var	0.907256
S.E. of regression	0.438208	Akaike info criterion	1.369743
Sum squared resid	4.416595	Schwarz criterion	1.652632
Log likelihood	-13.86128	Hannan-Quinn criter.	1.458341
F-statistic	19.40425	Durbin-Watson stat	1.773665
Prob(F-statistic)	0.000000		

29.1 Hypothesis Testing Overall significance and of multiple regression of model 1

H_0: $\beta_{17} = \beta_{18} = \beta_{19} = \beta_{20} = \beta_{21} = 0$
H_1: At least one coefficient is different from zero.
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.000000
Decision: Reject H_0 since the p-value, 0.000000 is less than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the model is significant to explain Malaysia FDI inflows.

29.2 Hypothesis Testing of Individual Regression Coefficients Significance of Model 1

29.2.1 Hypothesis Testing of Significance of β_{17}: Gross Domestic Product Growth, GDPG, of Model 1

H_0: $\beta_{17} = 0$
H_1: $\beta_{17} \neq 0$
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.0659
Decision: Reject H_0 since the p-value, 0.0659 is smaller than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the $\beta_{17} \neq 0$. This shows that β_{17}: Gross Domestic Product Growth, GDPG, significantly affect Malaysia FDI inflows at 0.10 significance level.

29.2.2 Hypothesis Testing of Significance of β_{18}: Official Real Exchange Rate, OREER of Model 1

H_0: $\beta_{18} = 0$
H_1: $\beta_{18} \neq 0$
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.0327
Decision: Reject H_0 since the p-value, 0.0327 is less than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the $\beta_{18} \neq 0$. This shows that β_{18}: Official Real Exchange Rate, OREER, significantly affects Malaysia FDI inflows at 0.10 significance level.

29.2.3 Hypothesis Testing of Significance of β_{19}: Trade Openness, TO of Model 1

H_0: $\beta_{19} = 0$
H_1: $\beta_{19} \neq 0$
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.0008
Decision: Reject H_0 since the p-value, 0.0008 is less than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the $\beta_{19} \neq 0$. This shows that β_{19}: Trade Openness, TO, significantly affects Malaysia FDI inflows at 0.10 significance level.

29.2.4 Hypothesis Testing of Significance of β_{20}: Inflation Rate, Consumer Prices, INF of Model 1

H_0: $\beta_{20} = 0$
H_1: $\beta_{20} \neq 0$
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.0008
Decision: Reject H_0 since the p-value, 0.0008 is less than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the $\beta_{20} \neq 0$. This shows that β_{20}: Inflation Rate, Consumer Prices, INF, significantly affects Malaysia FDI inflows at 0.10 significance level.

29.2.5 Hypothesis Testing of Significance of β_{21}: China FDI inflows, CFDI of Model 1

$H_{0:}$ $\beta_{21} = 0$
$H_{1:}$ $\beta_{21} \neq 0$
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.0001
Decision: Reject H_0 since the p-value, 0.0001 is less than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the $\beta_{21} \neq 0$. This shows that China FDI inflows, CFDI, significantly affects Malaysia FDI inflows at 0.10 significance level

Appendix 30:

Hypothesis Testing Overall Significance and Individual Regression Coefficients Significance of Multiple Regression of Model 5

Dependent Variable: LOG(MFDI)
Method: Least Squares
Date: 06/16/12 Time: 14:44
Sample: 1982 2010
Included observations: 29

	Coefficient	Std. Error	t-Statistic	Prob.
C	20.37068	0.351983	57.87399	0.0000
GDP	6.67E-12	2.87E-12	2.322017	0.0283
TL	0.049327	0.031772	1.552558	0.1326

R-squared	0.447374	Mean dependent var	21.64097
Adjusted R-squared	0.404864	S.D. dependent var	0.907256
S.E. of regression	0.699903	Akaike info criterion	2.221948
Sum squared resid	12.73648	Schwarz criterion	2.363393
Log likelihood	-29.21825	Hannan-Quinn criter.	2.266247
F-statistic	10.52403	Durbin-Watson stat	1.160225
Prob(F-statistic)	0.000448		

30.1 Hypothesis Testing Overall significance and of multiple regression of model 5

H_0: $\beta_{41} = \beta_{42} = 0$
H_1: At least one coefficient is different from zero.
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.000448
Decision: Reject H_0 since the p-value, 0.000448 is less than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the model is significant to explain Malaysia FDI inflows.

30.2 Hypothesis Testing of Significance of β_{41}: Gross Domestic Product, GDP of Model 5

H_0: $\beta_{41} = 0$
H_1: $\beta_{41} \neq 0$
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.0283
Decision: Reject H_0 since the p-value, 0.0283 is less than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the $\beta_{41} \neq 0$. This shows that β_{41}: Gross Domestic Product, GDP, significantly affects Malaysia FDI inflows at 0.10 significance level.

30.3 Hypothesis Testing of Significance of β_{42}: Telephone Line (per 100 people), TL of Model 5

H_0: $\beta_{42} = 0$
H_1: $\beta_{42} \neq 0$
Critical Value: 0.10
Decision rule: Reject H_0 if the p-value is smaller than the critical value. Otherwise,
do not reject H_0.
P-value: 0.1326
Decision: Do not reject H_0 since the p-value, 0.1326 is more than the critical value, 0.10.
Conclusion: There is enough evidence to conclude that the $\beta_{41} = 0$. This shows that β_{42}: Telephone Line (per 100 people), insignificantly affects Malaysia FDI inflows at 0.10 significance level.