Malaysia Foreign Exchange Rate Depreciation Does Political Matters?

BY

Lim Chin Yang

Lai Yi Khang

Chua Jian Hean

John Lim Zhe Meng

A research project submitted in partial fulfillment of the requirement for the degree of

BACHELOR OF ECONOMICS (HONOURS) FINANCIAL ECONOMICS

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF BUSINESS AND FINANCE DEPARTMENT OF FINANCE ECONOMICS

JUNE 2020

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 _____21768_____."

	Student Name	Student ID:	Signature
1.	Lim Chin Yang	17ABB05919	_____
2.	Lai Yi Khang	16ABB05241	_____
3.	Chua Jian Hean	17ABB06473	_____
4.	John Lim Zhe Meng	17ABB06287	_____

Date: _____

ACKNOWLEDGEMENT

With the help of several types of authorities, this study was successfully finalised. Therefore, to help finish this research, we are very grateful to the individuals who are legitimately or in a roundabout way included. We are grateful to “Universiti Tunku Abdul Rahman (UTAR)” for offering us the opportunity to lead the “Malaysia Foreign Exchange rate Depeciation Does Political Matters?” Final Year Project.

Firstly, we are grateful to Dr. Abdelhak Senadjki, the supervisor of this project, for providing expertise and guidance. We would not be able to achieve this result without his expertise and understanding. His persistence in leading us through this examination has significantly added to the achievement of this undertaking. In addition, we were driven by his extensive knowledge of the economic finance sector to solve the problem we faced while doing this research project.

Finally, a very special thanks to all the group mates who, together, experienced good and bad and endeavored to compose a fruitful research project. A huge thank you for the exertion to finish this research and sincerely value the relatives and companions who had provided this study's suggestions and needs.

TABLE OF CONTENTS

ABSTRACT

This study examines the weakening of the foreign exchange rate in Malaysia. The country will be heavily impacted by the weakening of the Malaysian foreign exchange rate. The economic variables of the foreign exchange rate should be researched in order to maintain a stable exchange rate. The annual data consisting of 30 sample size which includes five economic variables and political variables, ranging from 1970 to 2018. Real interest rate, inflation rate, foreign direct investment, export, financial crisis and political stability are variables. The data was derived from data from the World Bank. Autoregressive distributed lag (ARDL) was used to evaluate the relation between the foreign exchange rate and the independent variables. This study examines the factors influencing the foreign exchange rate in order to avoid the economic problems from occurring. In addition, this study will provide some useful information for those parties involved in it, such as investors, governments, policy makers and international researchers, to gain a better understanding of the foreign exchange rate.

“Chapter 1 Research Overview”

“1.0 Introduction”

It starts with the background of the examination for this chapter, which provides the implication of the proposed work and next to the problem statement which is the briefly characterization of problems carried out by research group. Besides, this study also brings out the “research questions” and “research objectives”. Next, it also carried out the “significance of study” which depended on the data of the previous researchers’ research. Last but not least, this chapter also included the chapter layout.

1.1Research Background

We will be using the nominal exchange rate in this research as opposed to the real exchange rate. It represents how much foreign currency can be exchanged for a unit of domestic currency while the real exchange rate represents how much goods and services can be exchanged in a foreign nation.

Nominal exchange rate is adopted for our research due to the fact that real exchange rate is affected by the foreign and domestic price of goods. Thus, by using nominal exchange rate, this research could reflect purely on Malaysia’s inflation and price of goods to show if the currency appreciates or depreciates when the independent variable changes. Whereas with real exchange rate, factors such as the inflation or monetary policy in the foreign country could have a significant effect on the result of this research.

This research will be using the US Dollar to be compared to Malaysian Ringgit to better portray how Malaysia’s currency appreciates and depreciates. US Dollar is chosen due to the currency is the best hard currency currently in the market. Hard currency is a currency that is relatively stable and would not fluctuate much. Thus, by using hard currency and nominal exchange rate, this research will be able to show purely on how Malaysia’s currency appreciates and depreciates when there is presence of political instability and financial crisis.

The ringgit was established as the official monetary unit of Malaysia in 1946. Ringgit replaced the Straits Settlement dollar at mid-19th century. The term of Ringgit is an outdated term in Malay for "serrated", originally referring to the jagged edges of Spanish silver. (Michelle Leong, 2018)

In the 16 centuries, Malaysia was become a part of the European colonial powers, therefore at that time Malaysia has adopted the Spanish dollars. In the following 1903, Malaysia changed its currency to the strait dollar. The exchange rate between the strait dollar and the pound was two shillings. (Farhan Gazi, 2019). It was not until 1967 that the Central Bank of Malaysia announced that the ringgit currency was available. The initial currency called as Malaysia dollar. Singapore and Brunei also had been used the official currency- Malaysia dollar. A few months later, the new currency, pegged at 8.57 dollars per British pound, was not affected by the devaluation of the pound. The value was reduced to 85 cents per dollar for the older notes that are always pegged with British Pound. (Gavin Pereira, 2019).

The Interchangeability Agreement connected Malaysia, Singapore and Brunei in 1967. Means that the dollar in Malaysia trades in par with the dollar in Singapore and the dollar in Brunei. When Malaysia withdrew from the currency union in 1973, Malaysia agreed to abolish the currency. The value of the ringgit currency is no longer convertible into the currencies of Singapore or Brunei. However, the agreement is still being enforced by Brunei and Singapore. Soon after 1975, they formally adopted the Malay called "ringgit" and "sen" as the official forenames. In addition, only in 1993 was the currency symbol "RM" adopted to replace the dollar sign. (Tanya Ong, 2018).

In 1993, RM1 notes have stop producing and it was replaced by the RM1 coins because of the lower demand of the 1 Ringgit bill. (Tang Ruxyn, 2016). Malaysia introduce the bigger division RM50 and RM100 notes with 3D image strip in 1996 in order to prevent the problem of the counterfeit money. When the AFC hit Malaysia in 1997, there was a large flow out of ringgit taken out of the country for to trade the RM500 and RM1000 notes. As a result, RM500 and RM1,000 banknotes were stop production in 1999 and they are no longer legal notes. In order to avoid currency fluctuations after the crisis, the central bank issued a financial arrangement to secure the estimation of the cash and received the "floating" guideline. (Bank Negara Malaysia, 1998). Until at 1997 the Asian financial crisis, Malaysia BNM gave up sustaining the exchange rate. Since 1998, Malaysia was decided pegged ringgit with US dollar at 3.8ringgit per US dollar to hopes stabilising of the Ringgit currency. Due to the sluggish demand for coins in 2005, RM1 coins were cancelled and retired. This is also done to prevent counterfeiting and ensure the standardization of 1 Ringgit coin.

However, facing the recent pessimistic outlook of turmoil and uncertainty. Malaysia has faced a series of challenges as it faces increasing pressure to maintain the competitiveness of its ringgit currency.

1.1.1 Malaysia's Exchange Rate

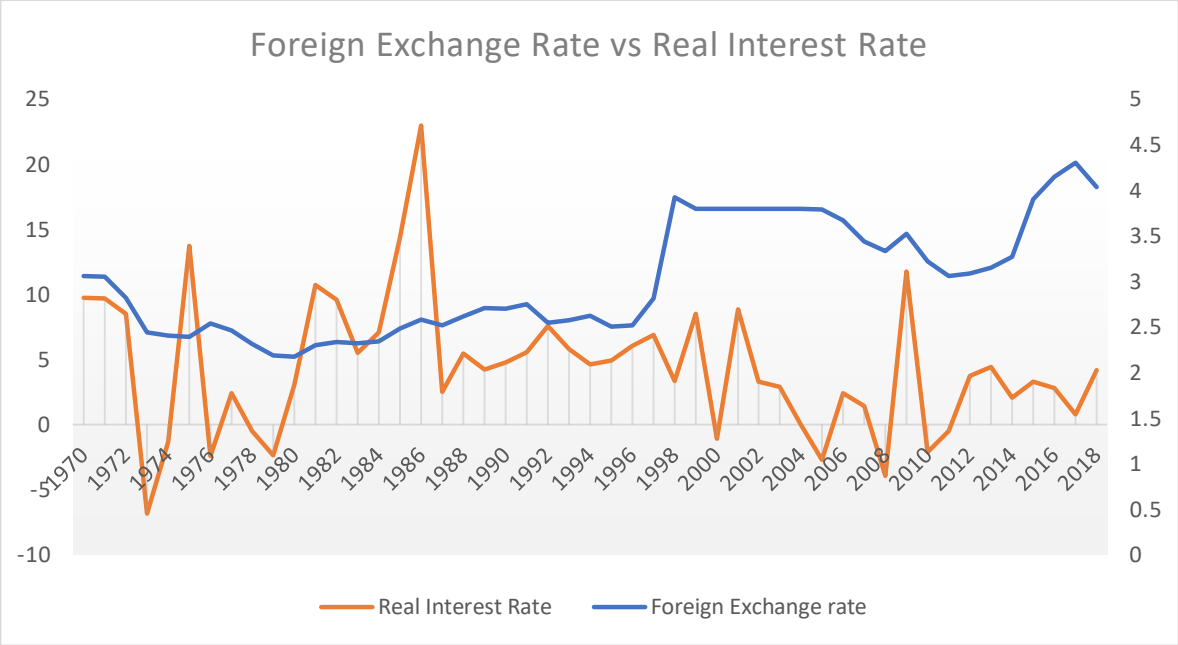
In the era of globalization, money is an essential for daily usage. Foreign exchange rate shows the nation's currency value against the value of currency of another country or economic zone. In international market, investor prefer to invest on the nation which have a more stable foreign exchange rate as instability foreign exchange rate have uncertainty risk. Investor would highly unlikely to capitalize in this kind of investment. Therefore, a nation must accomplish the foreign exchange rate to stimulate their country economy. (Chowdhury and Hossain, 2014).

Furthermore, the foreign exchange rate has several regimes, depending on the state of the nation as well as the nature of the monetary market. The exchange rate is of a different type, such as free floating, fixed, pegged and regulated. Next, exchange rate system essentially is the method of a position to deals with its cash in unfamiliar trade market. In this way, government needs to make an unfamiliar trade system that is linked to a country's monetary policy. Because of both of them, the government's key instrument is to achieve its national economic target (Bunjaku,2015).

In the earliest 1971, most the nations have begun to float their currencies. Malaysia and Singapore float their currency begin in June 1973. (Mohammed, 1988). Following the 1997 financial crisis, Malaysia Ringgit endured a hard blow that making to depreciate to RM4.72 per US Dollar (USD). This situation causes RM pegs to USD at RM 3.80 from1998 until 2005 decided by Prime Minister, Tun Dr Mahathir Mohamed. According to the Calvin Loo (2015), the oil depreciate is the main reason because of the Malaysia is a nation which is intensely dependent on item trade, specially oil.

In 2005, Malaysia monetary policy maker decided to floated the foreign exchange rate. Let the market decide its value. After leaving the pegged US dollar, in earlies 2012 Malaysia have a little appreciate, ringgit was quoted at USD 3.00 per USD. But, ten years after the abolition of the fixed exchange rate which 2015, Malaysia Ringgit gradually depreciated. It is trading price at RM3.80 per USD. On October 2015, it was hit hard, and the ringgit fell to a low point of RM4.2460 per dollar. (Bank Negara, 2015).

1.1.2 Exchange Rate with Real Interest Rate



Real interest rates are the first independent variable used in this study. A real interest rate is an interest rate changed in accordance with eliminate the inflation effect on mirror the genuine expense of assets to the borrower and the genuine profit for the financial specialists.

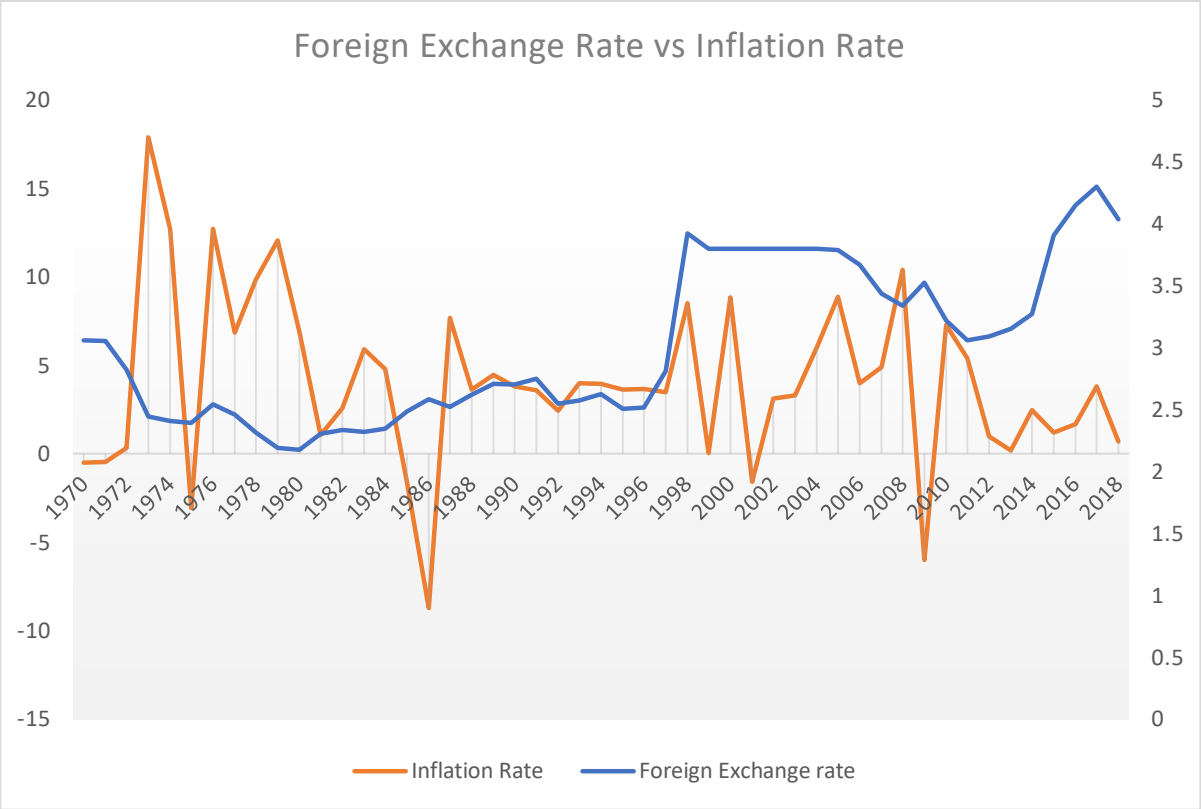
Based on the graph above, the graph shows the real interest rate has been fluctuating throughout the years. Through observation, it shows the highest peak level of real interest rate is in year 1986 which amounted 22.96% and the lowest level is in year 1973, which shows -6.8%. In contrast, the graph does not show any huge connection between the exchange rate and the real interest rate.

There is an immense debate about the position of the interest rate in the exchange rate. In Frenkel's empirical study (1979) he argues that the exchange rates are determined by interest rate differentials among countries. In other research, Feldstein (1986) and Hakkio (1986) assign a part in deciding the exchange rate to interest rate differentials. Contrary to the research of the above-mentioned authors, Meese and Rogoff (1988) and Edison and Pauls (1991), Woo (1985), Hooper and Morton (1980), Campbell and Clarida (1987), do not indicate any connection between the exchange rate and the interest rate differentials.

The higher rates of real interest can be gained appear to draw overseas speculation, thus growing demand for the currency of the home nation. This raises the currency's value, as demand increases. Higher interest rates, on the other hand, appear to be unpleasant for overseas

speculation and decrease the value of the currency due to the declining demand. For three advanced countries, including Australia, Sun (2011) analyzed the exchange rate and distinguished that the interest rate differential was the most relevant illustrative variable that defined the exchange rate for all nations.

1.1.3 Exchange Rate with Inflation Rate

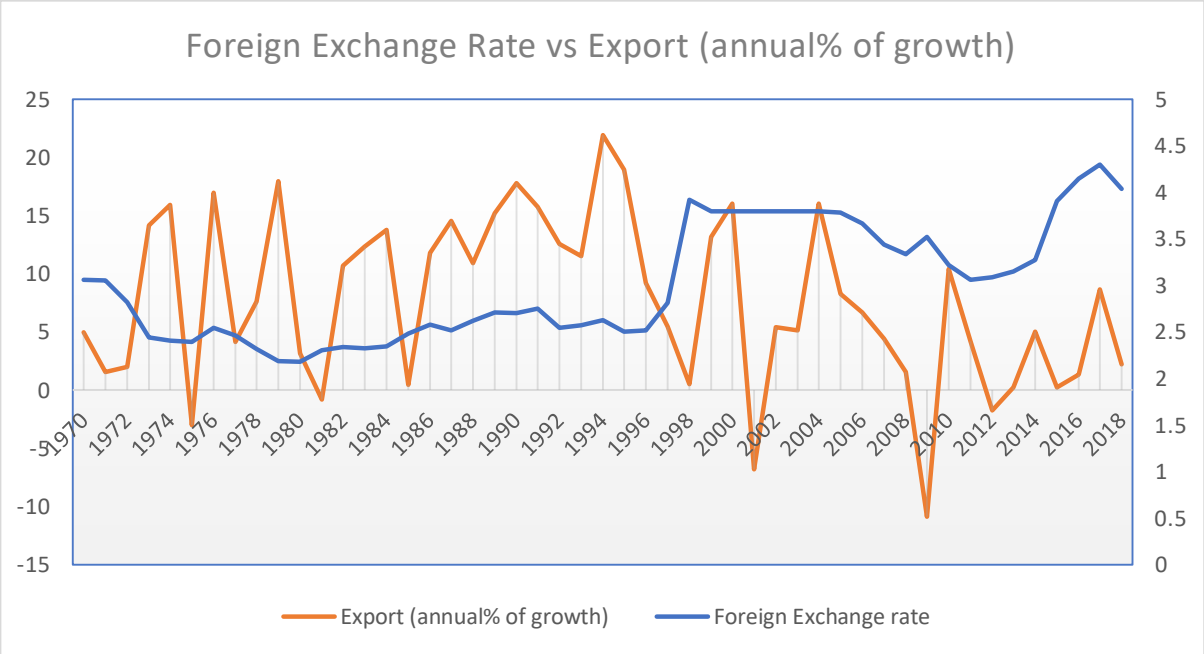


Next variable is rate of inflation. Inflation rate is the average percentage upswing in the price of the chosen products. “The connection between inflation and exchange rates has always been a hottest subject for economists”, (Svensson, 1987). In these economies, the general level of prices can be greatly influenced by exchange rate fluctuations (Dornbuch, 1976). It would have some changes in the overall level of prices, according to Dornbuch, when the exchange rate characterized as the pace of progress between two public monetary forms. Then, when the exchange rate increases, that is to say, at the point when the home-grown money acknowledges, costs are probably going to drop at the overall level. A vary in exchange rates would affect production costs, as it affects the costs of imported goods. For this reason, a substantial relationship can be said to exist between the inflation and exchange rate (Sanam & Fetullah, 2017).

Based on the graph above, it shows that the peak level of inflation rate is in year 1973 which amounts to 17.87% and in contrast, the lowest level of inflation rate is in year 1986 which amounts to -8.72%. To support the theory, in year 1997 to 1998, it shows that the inflation rate increases from 3.48% to 8.5%. This is being followed up by the increases of exchange rate from RM2.81/USD to RM3.9/USD.

Theoretically, when inflation rate is high, the demand for local goods decrease, foreign consumers will tend to buy from a cheaper country, thus, decreasing the demand of the home currency. Local consumers will also purchase imported goods as it is cheaper then purchasing local goods. This may upsurge the supply of the home currency, which will decrease the value of the currency (Dornbuch, 1976). To add on, when inflation rate is high, central bank will often rise interest rate with the purpose of slow the economy down, and bring inflation back into an adequate range.

1.1.4 Exchange rate with Exports



The third independent variable that can affect foreign exchange rate which is export of a country. Exports are one element of worldwide trade. It is produces good and service in one country and acquired by citizens of another nation. Thus, export has been seen like the engine that can growth up economic of country.

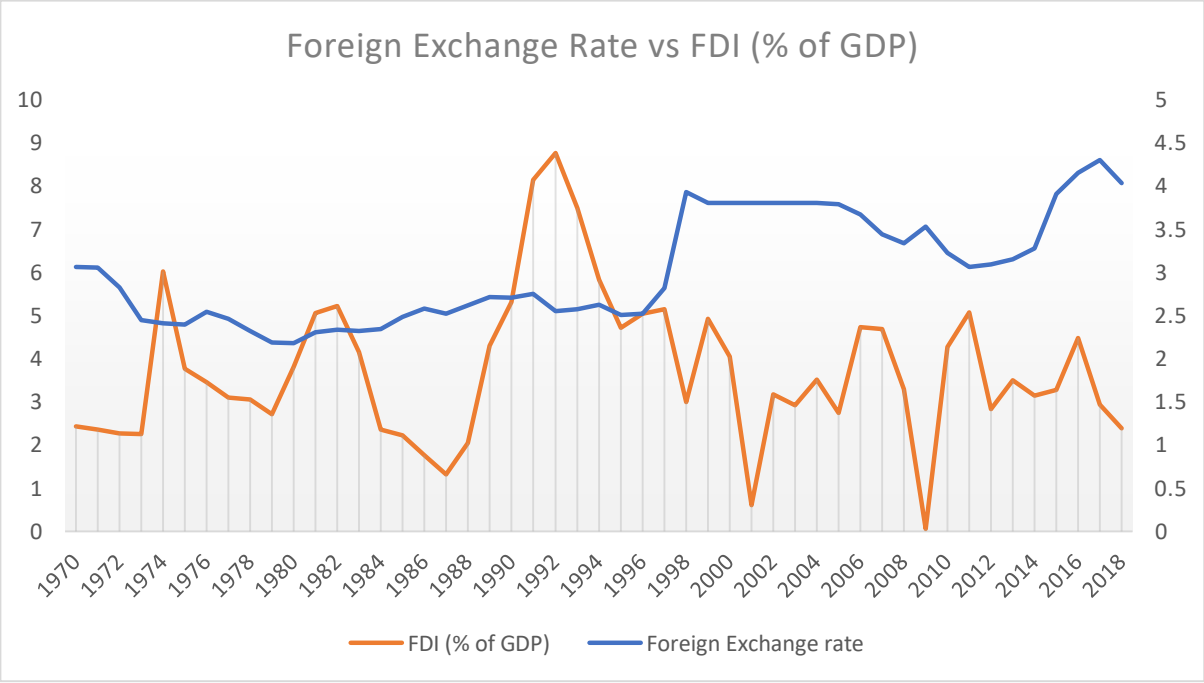
Based on the graph above, the graph shows Malaysia's export rate have huge volatility throughout the years. However, foreign exchange rate also influences by export rate. Possible

positive externalities from the international market have been linked to the relationship between them. Furthermore, "the existence of a positive correlation between exchange rate volatility and exports is hypothetically confirmed" (Broll &Eckwert, 1999).

From the graph, Malaysia export increased by 10.37% in 1993, where from 11.54% in 1993 to 21.91% in 1994. Its influence the foreign exchange rate that against US dollar also increased by 0.05, where from 2.57 to 2.64. For next example in 2008, where the export decreased by 2.85% and the exchange rate that against US dollar also decreased by 0.1. From those data showing the relationships between export and exchange rate are positive relationships.

Theoretically, exports can have an indirect effect on economic growth through various courses, for example, productive assignment of capital, improved limit use, abuse of economies of scale and incitement of innovative advancement because of rivalry from the worldwide markets (Blair, 2008). Besides the increase in exports, foreign exchange offers a rise in the amount of imports of intermediate goods, thereby increasing the creation of capital and stimulating the growth of production. (Caglayan & Jing, 2010). The currency would then become more expensive, thereby boosting the foreign exchange rate.

1.1.5 Exchange rate with Foreign Direct Investment



Forth variable is "foreign direct investment (FDI)". "A foreign direct investment (FDI) is an investment made by a firm or individual in one nation into business interests located in

another country" (Investopedia, 2020). Overall, FDI occurs at the point when a financial specialist sets up overseas business tasks or acquires overseas business resources in a foreign company (Duce & España, 2003). It can be seen from the graph that FDI is fluctuating, but it still can realize that some impact on the exchange rate when look carefully. For example, FDI in1974 increase 3.77% from 1973, then foreign exchange rate has a little appreciate from 2.44 to 2.40 against US dollar. The next signal that told us impact is 1982-1987, when FDI keep decreasing and foreign exchange rate depreciate constantly. In year 1998 and 2009, we also can see FDI decrease and our currency depreciate (World Bank, 2020).

Theoretically, when a country's FDI increase, it indicates that more foreign investors are exchanging their currency to the home currency. This will rise the demand of home currency, thus, increasing the rate of the currency (Lily and etc, 2014). In other words, we also can speculate performance of FDI will have some impact on our exchange rate.

1.1.6 Exchange Rate with Financial Crisis and Political Stability

After including the real interest rate, inflation rate, export and foreign direct investment, we also include financial crisis and political stability to examine is there a connection between exchange rate and the financial crisis and political stability. This research will use political stability and financial crisis as the dummy variable and will only take the value of 0 or 1 to imply the absence or existence of any categorical effect which could be expected to change the outcome.

Political stability can be defined in many ways. In this research, we will use the definition from encyclopedia where;

> *"Political instability can be defined in at least three ways. A first approach is to define it as the propensity for regime or government change. A second is to focus on the incidence of political upheaval or violence in a society, such as assassinations, demonstrations, and so forth. A third approach focuses on instability in policies rather than instability in regimes (i.e., the degree to which fundamental policies of, for instance, property rights are subject to frequent changes)."*

Thus, this research has compiled all political instability that has occurred from 1968 until year 2018.

Year	Political Instability that occurred in Malaysia
1968-1989	Malaysia's Second Emergency and 13 May in 1969
1998-2000	Dato' Seri Anwar bin Ibrahim imprison for corruption and sodomy
2007	"Bersih 1.0"
2011	"Bersih 2.0"
2012	"Bersih 3.0" (largest rally)
2013	Lahad Datu Standoff
2014	MH370 missing and MH17 being shot down
2015	Bersih 4.0 and IMDB scandal
2018	BN fall for the first time

The Communist insurgency occurred in Malaysia in the year 1968 until 1989, also known as the Second Malayan Emergency. The incident was an armed conflict between the Communist Party of Malaya (MCP) and federal security forces of Malaysia. In year 1969 as well, the incident of 13 May that took place have cause tension between the Malay and Chinese. Each conflict meets the definition of political instability according to the second approach which is incidence that include violence in the society.

In year 1998 until 2000, Dato' Seri Anwar bin Ibrahim was imprisoned for corruption and sodomy. As the Deputy Prime Minister during the time, it is considered as political instability as it is the first time a Deputy Prime Minister found guilty by the court for corruption. This event also has caused several riots that do not support Anwar's sentence as most believe that Anwar is being falsely accused.

In year 2007, 2011, and 2012, Bersih Rally occurred which seeks for free, fair, and clean elections. As mentioned in encyclopaedia, demonstrations are also considered as political instability, thus was included in this research.

In year 2013, Lahad Datu was infiltrated by 235 armed militants from Philippines due to unresolved territorial claim. At the end of the incident, a total of 56 militants, 6 civilians, 10 Malaysian security force personnel, and one Malaysian police were killed. This portrayed violence and is considered political instability in Malaysia.

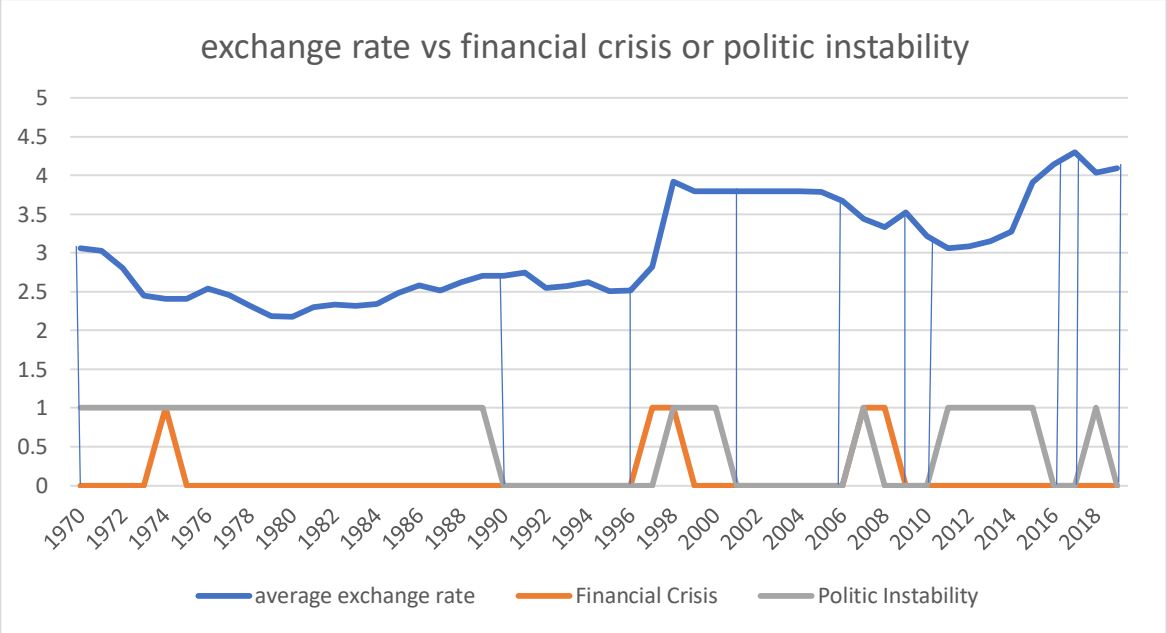
In year 2014, MH370 went missing while MH17 is being shot down. As the country's airline, Malaysia's government has been criticised as the government have given imprecise,

incomplete, and inaccurate information which cause contradictory of information while searching for MH370. In the Malaysia's defence, it is due to trust issues and regional conflict to simply share any information.

Bersih 4.0 occurred in year 2015 which followed by the 1MDB scandal. With demonstration and corruption happened in a year, 2015 will also be recorded as the year where Malaysia experienced political instability.

In year 2018, Barisan Nasional was defeated for the first time after Independence Day. This caused a huge change in the government as Barisan Nasional has always been the party that wins the elections. According to the first approach, government change is also considered political instability.

As for the financial crisis, we will include 3 events in this research namely the 1974's oil crisis, 1997-1998's "Asian Financial Crisis", as well as "Global Financial Crisis" in 2007-2008.



Resource costs are going through a sharp reduction in rate, companies and clients cannot pay their obligations, and budgetary establishments face liquidity concerns during the financial crisis, according to Hasan (2002). A financial crisis is also related to a frenzy wherein speculators sell their benefits or pull back cash from bank accounts since they accept that in the event that they remain in a money related organization, the estimation of those advantages will diminish (Zakaria et al., 2010). For example, in year 1997-1998, Malaysia fall victim to the "Asian Financial Crisis" which began on the Thai Baht. In that year, RM value have been depreciated up till RM4.72 per USD. This is due to the spillover effects. When THB

depreciated steeply, Thailand would not be able to import any product from other country as foreign goods are very expensive. This greatly affects the trade between Malaysia and Thailand (Khor, 2017).

According to Ali and Hatta (2013), the 2008 Ecomomics Crisis is the worst economic and had inflicted profound damage on many country's financial system and economy. However, it has not too big influence in Malaysia. The financial and economic sector worse in the second half 2008 and in the first-quarter of 2009. From the graph we can see 2008 Economics Crisis had an impression on the exchange rate. For the most part, capital outflow depreciates the currency Malaysia, from 3.3358 to 3.5245 in 2009 (World Bank, 2020). This drop in the value of the Malaysian currency is mainly because weakening export demand and lower outflows of portfolio capital. The Malaysian Ringgit 's depreciation could help to boost the country's export output, limiting the negative effect of the worldwide recession. The declining value of the Malaysian Ringgit can help improve the country 's export output, thereby limiting Malaysia's negative impact from the global recession (Khoon & Mah-Hui, 2010).

Lastly, political stability was believed to be one of the main concern of investors before investing in a foreign country. A country's political state can indirectly influence its money quality. A nation with low danger for political uproar is more attractive to overseas stakeholders, consequently, attracting speculation away from other nations with more risk of political turmoil. When a nation is inclined to political disturbance, this might result in investor selling of their assets therefore reducing the value of the currency (Beh et al., 2016). For example, we can see from graph exchange rate depreciate a little during 1971 until 1973. Malaysia's Second Emergency occurred in 1968-1989 may be a factor that influence the exchange rate.

Same with Malaysia's Second Emergency, we can realise from graph that from 2010 until 2016, Bersih 2.0, Bersih 3.0, Lahad Datu Standoff, MH370 and MH17, Bersih 4.0, 1MDB Scandal, and the change in government when Barisan Nasional lost in the 14th election in 2018 will also depreciate Ringgit Malaysia.

1.2 Problem Statement

Policymakers, multinational businesses, investors, importers, exporters, foreign students and, eventually, tourist are very concerned about the value of the Malaysian Ringgit.. Malaysia's exchange rate has recently become a widely debated topic across the globe, and the nation has been hit with many political problems as the currency depreciated. In Asia, though

Ringgit Malaysia (RM) is one of the best performing currencies, due to political danger, success may be short-lived (Chan, Lye & Hooy , 2013).

The financial crisis of 1997-1998 started when Thai Baht depreciated greatly when the country decided to unpegged from US Dollar which resulted the depreciation of Ringgit Malaysia (RM), followed by other South-East Asian countries. The Ringgit Malaysia (RM) fluctuated at its worst during the financial crisis. But the recent RM / USD pattern has suffered a similar condition.

Additionally, Ringgit Malaysia (RM) experience a steep depreciation from RM3.27 per USD in year 2014 to RM3.91 per USD in 2015. In year 2015 as well, Malaysia is being bombarded by critics from all around the world regarding the 1MDB scandal. This research will investigate whether political stability has a significant influence over the exchange rate as shown in year 2015.

Therefore, in deciding whether real interest rates, inflation rates, exports and foreign direct investment may be factors determining the depreciation or appreciation of the exchange rate, this study is critical. This research also includes political stability and financial crisis as the dummy variable as it is believed that exchange rate is also being influenced by political stability and financial crisis. This problem is important to be fixed to ensure a sound and stable currency to boost Ringgit Malaysia (RM) into a strong currency in the future.

1.3 Research Question

There are six questions in this research which are:

1. “What is the impact of Real Interest Rate on Foreign Exchange rate?”
2. “What is the impact of Foreign Direct Investment on Foreign Exchange rate?”
3. “What is the impact of Export on Foreign Exchange rate?”
4. “What is the impact of Inflation Rate on Foreign Exchange rate?”
5. “What is the impact of Financial Crisis on Foreign Exchange rate?”
6. “What is the impact of Political Stability on Foreign Exchange rate?”

1.4 Research Objectives

Referred to the present condition of the market economics, there are still containing many fundamental influences which will cause to vary in foreign exchange rate and make the publics feel worry about to purchase or finance in foreign currency.

"1.4.1 General Objective"

The general objective or the goal of this paper is to study economic variables and political variables such as the financial crisis and political issues affecting foreign exchange rates with the purpose of safeguard the public attentiveness and to prevent potential economic issues.

"1.4.2 Specific Objectives"

- "To determine the influences of Real Interest Rate on Foreign Exchange Rate."
- "To investigate the influences of Foreign Direct Investment on Foreign Exchange Rate."
- "To examine the influences of Export on Foreign Exchange Rate."
- "To examine the influences of Inflation Rate on Foreign Exchange Rate."
- "To determine the influences of Financial Crisis on Foreign Exchange Rate."
- "To evaluate the influences of Political Stability on Foreign Exchange Rate."

1.5 Significance of the Research Study

The previous studies concentrated on analysis on the foreign exchange rate over the past few years using macroeconomic variables and there is still no popular perspective on the determinants of the foreign exchange rate until today. So, it is important to address the explanation behind the movement in foreign exchange rates in extraordinary detail. The examination is seen from Malaysia 's perspective, so as to give a thumb rule to conversion standard administration. In the meantime, this study has completed a further input by introducing the financial crisis and political stability as the variables influencing Malaysia's foreign exchange rate.

Firstly, this research will give some benefits for the investors who are involved in the foreign investment which have a clear vision to make the investment decision. When they understand which variables that actually affect the Malaysia foreign exchange rate, they can make more accurate prediction and decision with the purpose of avoid the risk of exchange

rate. In other words, by knowing the effect of the economy and political variables on the foreign exchange rate is necessary, it helps people to forecast foreign exchange rate changes and to take reasonable measures to protect their self-interest beforehand. Furthermore, companies often prefer to turn to exercises in the event that they wish to lessen the general conversion standard danger that their organizations are exposed to.

Next, this research will give the advantages for the policy makers by stimulating the foreign exchange rate policy which includes those independent variables like inflation rate, exports, financial crisis and political stability. Moreover, with the purpose of diminish the properties of unforeseen economic shocks and emergencies, this analysis is critical for policy makers to study the exchange rate movement. In addition, the strategy producers will profit by this research to initiate policies that will diversify the Malaysian economy's income stream. At the same time, this research is also critical for controlling monetary policy implementation hence, policymakers' efforts to provide the society with the optimum economic welfare.

1.6 Chapter layout

For chapter 2, it shows the study of literatures and theoretic models which are correlated with foreign exchange rate. Besides, an association between the foreign exchange rate with the six independent variables, theoretical framework and the gap of the study are discovered too.

For the chapter 3 which is focusing on this project’s data and its methodology. The purpose of this is to explain the method of data collections, research design, sampling design, data processing and the way of data being processes and evaluated.

While the chapter 4 will discover the outcomes of the evaluated data by using the E-view 10. Details of the outcomes will be explained by the graphs, tables and charts. Lastly, chapter 5 will be the final chapter which summarize the important findings of this project, discuss the limitation and the recommendation for the future researches which related to this topic.

“CHAPTER 2: LITERATURE REVIEW”

“2.0 Introduction”

In this chapter, theories and perceptions that is related to the foreign exchange rate and all other variable will be discussed. In addition, the study gap will also be addressed in this chapter too.

“2.1 Review of Theories and Concepts”

“2.1.1 Purchasing Power Parity Theory (PPP)”

A theory of the determination of the exchange rate is “Purchasing Power Parity (PPP)”. It states that the foreign exchange rate for any time period between the currencies of 2 countries is determined by the difference in the relative price levels of the 2 nations. This is because the theory shows that as the predominant determinant of the foreign exchange rate 's behaviour, the price level increases (Ruiz & Napoles, 2004).

According to Krugman (2009), it further forecast that a drop in a currency’s local purchasing power will be associated to the depreciation in currency in the foreign exchange market. Therefore, this theory states that when there is an increase in the currency’s domestic purchasing power, there will be also an appreciation in the currency. One of the advantages of the “Purchasing Power Parity (PPP)” theory is the stability. As stated by Krugman (2009), its main advantage is it remains stable over time. It also states that although the currency of a nation has devalued, it would not cause the huge impact on the citizens due to the purchasing power remains near parity for the domestic goods.

At the point when a serious exchange awkwardness creates between a country's imports and exports, financial specialists may propose an assortment of cures. A typical proposition is toerect exchange boundaries which may additionally twist markets. Assuming, be that as it may, financial specialists can watch a differentiation between a nation's buying force and its money rate, the unevenness become a lot simpler to address. Revising the currrency to coordinate real the buying force can help in understanding the issue without absurd government affiliation. (Krugman, 2009) This hypothesis likewise talks about what the parity of installments itself is calculated by. According to Rose (2012), it indicates that trade and

payment differ between nations since there are certain long run shifts in the comparative price levels of the nation concerned. Foreign exchange rates are thus dependent on relative prices, which differ in price. When price action is a critical element that influences the foreign exchange rate, the theory has its significance.

One of the drawbacks of this theory is that the theory can only hold great on account of costs of merchandise entering unfamiliar trade, so it is preposterous to apply it regarding general lists in light of the fact that there can be no immediate connection between the homegrown and worldwide costs of goods only limited to the trading nations' domestic markets (Curry, 2013). Next, according to Rose and Marquis (2012), purchasing power parities cannot be used to determine the equilibrium values or to measure precision deviations from the worldwide balance of payments. Purchasing power parities can be used at most to find the estimated range with which the exchange balance rate can be positioned. Actual use of purchasing power parity control to measure the translation norm has shown that it can't give the equilibrium exchange rates a correct conjecture. Finally, another drawback to the argument is that it neglects to include certain things other than product trading in the balance of payments. Thus, the definition of purchasing power parity applies at maximum only to current account purchases, totally neglecting capital account (Craig, 2005).

2.1.2 Nexus of Inflation and Foreign Exchange Rate

This theory is meant to analyze the relationship between inflation and the foreign exchange rate. They suggested a theoretical statement about the exchange rate-inflation nexus in the sense of monetary policy legitimacy, according to Barro and Gordon (1983). They concluded that by lowering inflation by adding legitimacy, a fixed exchange rate strategy could make the monetary authority 's job simpler. Some authors have put the argument into words in the following years. They also dispute that a stable exchange rate regime gives cost dependability as well as increment the effectiveness of financial arrangement. In this system, an economy with a moderately advanced swelling rate against the remainder of the world is probably going to experience tenacious outer deficiencies and along these lines a decrease in its foreign exchange holds.

Another point in favour of a regime of fixed exchange rates is that it would improve monetary policy 's legitimacy. Growing monetary policy legitimacy would encourage the

money related power to convey on its pledge to low swelling. Both of these are going to go around as a battle over inflationary impulse. Diminishing inflationary desires would not only help reduce the tempo of currency, but also reduce the expense potential to brief fiscal stuns (Levy-Yeyati and Sturzenegger, 2001). Furthermore, by making a certainty effect, the exchange rate system will add to getting lower expansion paces, that is, a more notable willingness to keep household cash instead of goods or remote monetary standards (Ghosh et al., 1997). Contrast and the gliding exchange rate framework, not at all like the fixed conversion standard framework, is connected to over-shooting the symmetry exchange rate in the two ways and making costs increment by rising the neighborhood costs of imported items when devaluation happens, i.e., fail to limit costs while valuing the supposed effect of the wrench.

Obviously, against the unfavourable claims above, there are some counter-arguments for getting lower inflation rates in favour of the flexible exchange-rate system. For example, Tornell and Velasco (1995) contended that the adaptable conversion standard framework permits the impact of unsound money related procedures to be communicated in improvements in return rates and, given that swelling is expensive for financial specialists, the adaptable rates hold straight imposition and give more control of approach by provoking them to pay the expense. It is additionally contended that adaptable swapping scale systems have fiscal flexibility, which is therefore crucial in an inviting way to pursue the money-related strategy while reducing unemployment. With regard to its impact on development, the freedom of financial policy with a completely adaptable trade framework would guarantee that the administration focuses on the ideal movement of extension that gives a positive area to money related development.

2.1.3 International Fisher Effect

This model demonstrates the close connection through the exchange rate, interest rate, and inflation rate is significant. According to Ortiz and Monge (2015), IFE is supposed to be in line with a productive market theory in which the latest and current evidence of interest and inflation rate shifts leads to the movement of exchange rates. The combination of “Purchasing Power Parity (PPP)” and “Fisher Effect (FE)” is also the exchange rate theory, since it is understood that both the interest rate and inflation rate are extraordinarily related (Shalishali, 2012). It thus represents the effectiveness of the foreign exchange rate in responding to the inflation rate and interest rate differentials in order to minimise the future arbitration chances.

$$:\frac{i^a - i^b}{1+i^b} = \frac{S_{t+1}}{S_t}$$

Where: S_t = "Spot exchange rate in period t"

S_{t+1} = "Forward exchange rate in period t +1"

i^a = "Interest rate of Country A"

i^b = "Interest rate of Country B"

From this equation, we can realize the related between comparable interest rates in different country and the spot exchange rate over time period (Beh et al., 2016). Besides, high nominal interest rates with a high anticipated rate of expansion will lead to a large drop in estimation of home currency. By observing changes between two currencies, there is a reverse direction of the interest rate among these two countries. Country Y, for example, has a lower currency due to higher interest rates and the currency inflation in Country Z could be at lower interest rates (Madura, 2011).

Based on this effect, the return of investor should in the long term, same in difference countries. At the same time, the country offer lower interest rate will increase the currency value to provide the investor with an advantage that compensate the lower interest rate. This will benefit the investor and help them easily to speculate the exchange rate and interest rate before making decision (Ortiz & Monge, 2015).

However, some of researcher content that International Fisher Effect (IFE) not continually useful like Alizadeh, Nassir and Abou Masou (2014) stated that the distinction between both interest rate in each country does not generally measure expected inflation rate in that country. Other than that, interest rate not the only factor that affect exchange rate. Due to these reasons, they would be barriers to practice International Fisher Effect (IFE).

2.1.4 The Theory of Exchange Rates on Imperfect Capital Markets

This is the foreign direct investment (FDI) theory, and the exchange rate originated in the 1970s and 1980s. Cushman (1985) reported that the effect of uncertainty as a foreign direct

investment factor (FDI) shows that real exchange rate changes stimulate USD-invested FDI, whereas a foreign currency appreciation decreases USD-invested foreign direct investment (FDI). Imperfect capital markets strategy, according to Froot and Stein (1991), to contend that exchange rates work on wealth to affect foreign direct investment (FDI). Thus, a depreciation of home currency is anticipated to positively impact inbound FDI (IFDI), as it immediately increases foreign investor capital, enabling them to make more investment. It also indicates an undesirable relationship between FDI and foreign exchange rates.

However, there is some limitation of this theory. First, the simultaneous FDI between countries with different currencies cannot be explained. They claim that since investments are made at various times, the principle conflicts with appropriate instances **(**Denisia, 2010). The second limitation is according to Shivangi and Indra (2016), foreign direct investment is in a condition of imperfect market. Other from these factors, it may include taxation policy, inflation, political stability, trade policy and others. These factors let the theory may not more accurate.

2.1.5 The Theory of exchange rate during the financial crisis

Based on some scholars use various approaches to analyze the effect of the foreign exchange rate on the financial crisis. The results of these studies indicate that the relationship between the foreign exchange rate and the financial crisis is positive. For example, between 1970 and 1998, Gupta, Mishra, and Sahay (2003) analyzed the production behaviour of a model of 195 currency crisis occurrences in emerging nations. It is a major positive correlation among currency exchange rates and financial crisis. For other studies, Fratzscher (2009) analyzed data from 50 developed and emerging countries to studies the affect in global exchange rates during the financial crisis. He pointed out that the financial crisis has caused sharp fluctuations in the global exchange rate structure. However, during the financial crisis, bank's investors might be race to change over their homegrown money resources into unfamiliar currencies to against the loss become bigger. Therefore, the studies of the limitation are that relative estimate higher exchange rate may increase the possibility to occurs currency crisis, further more financial crisis. Therefore, the strongly macroeconomic foundation is importance, especially the sufficient foreign exchange reserves to reverse capital flows. In case of a money emergency, bank contributors might be anxious to change over their homegrown cash resources into unfamiliar currencies, so the ratio reflects the central bank's capability to meet these needs and

stabilize the currency. From the studies, it showing the importance of the macroeconomic foundation to avoid the currency crisis happened.

2.1.6 The Theory of the Political Stability

The theory that to define the relationship among political stability with foreign exchange rate. In the early studies, economists have trying to find out how the political instability affect the economy. As per the Drazen (2000), he gives two reasons why political flimsiness may be affected economic results. First is the political instability lead the uncertainty to future institutions and policymakers. Second Political instability would direct influence on the productivity. Due to we cannot measure directly the political instability of a nation. Therefore, empirical research has depended on the number of coups (Londregan & Poole, 1990). Researchers often calculate one-dimensional indicators by utilizing discriminant examination (Gupta, 1990; Venieris and Gupta, 1986). Additionally, other studies aim to predict governmental change propensity by using a binary selection model where government transfers are linked to different economic, political, and social influences, institutional factors. (Cukierman, Edwards & Tabellini, 1992; Chen & Feng, 1996). Such indicators may represent certain parts of political unsteadiness.

Of course, they're not flawless. Some journalists acknowledged the delinquent of calculating error using utilizing discriminant examination (Gupta, 1990; Venieris & Gupta, 1986). Those approaches have in general the belief that the metrics used are strongly associated with political instability. The limitation of this theory is the first hypothesis is usually verified in theory, but never fully to test it. Political instability has only one assumption. Thus, have many political studies use major components to argument in the ways to identify different aspects of political instability.

In this research all the theories that have been illustrated above are adopted. For example, the purchasing power parity theory (PPP) has clearly shown the relationship among the foreign exchange rate, trade, and interest rate. Since the foreign exchange rate is primary instrument for an economy's strength, nations are greatly in need of it. Therefore, an important role has been played in determining the relationship among the foreign exchange rate and the variables. Furthermore, the foreign exchange rate and the inflation nexus are added as the relationship among the foreign exchange rate and inflation could be calculated. The

determination of inflation is important for evaluating the theories of the foreign exchange rate. In addition, the relationship between the foreign exchange rate, inflation, and interest rate is explicitly checked by embracing the nexus theories of inflation and foreign exchange rate and the International Fisher effect. Next, it can be proven that it is a substantial relationship among the foreign exchange rate and FDI by observing the exchange rate on the imperfect markets.

In addition, although there is no proper name of the theories that used to explain the relationship between foreign exchange rate, financial crisis, and political stability, here are some provens that show that there is a substantial relationship among the foreign exchange rate and the variables. According to Fratzscher (2009) analyzed data from 50 developed and emerging countries to studies the affect in global exchange rates during the financial crisis. He pointed out that the financial crisis has caused sharp fluctuations in the global exchange rate structure. Besides, according to Drazen (2000), he gives two reasons why political flimsiness may be affected economic results. First is the political instability lead the uncertainty to future institutions and policymakers. Second Political instability would direct influence on the productivity.

2.2 Reviews of Empirical Studies

2.2.1 Foreign Exchange Rate and Inflation Rate

The results of the analysis of the exchange-rate-inflation relationship can be categorised into three components, significant positive effects, significant negative effects and no significant effects. There are several researchers who have obtained a significantly positive effect. The findings show that the analysis for the foreign exchange rate and inflation according to “Chowdhury and Hossain (2014)” is positively significant, taking place in Bangladesh from 1990 to 2011. Next, he said, according to “Thaddeus and Nnneka (2014)”, that “when inflation rises, the money supply rises and the domestic currency depreciates because of the shift in the foreign exchange rate”. Furthermore, according to the analysis in Nigeria, the researcher also determines that inflation has a positive consequence on the rate of exchange. It shows that the relationship between the foreign exchange rate and inflation in Nigeria is slightly different in both the short and long run. In addition, significantly positive results have been achieved in Iran, according to Namjour, Gholizadeh and Haghighi (2014). Iran is a nation that has endured a high and unceasing period of inflation and fluctuating exchange rates in recent decades. Since

the 1979 transition in Iran, trailing through the eight-year Iran-Iraq war and world oil emergencies, great swelling has gotten one of the huge issues confronting Iran. Specifically, boycotts against exchange have caused precarious trade rates and high expansion in Iran over the previous year. The effect of cash flexibly and the conversion scale on swelling have additionally been analyzed by presenting the cash gracefully component to the VAR model. According to the results, they display the significantly positive result in the relation through the foreign exchange rate and inflation rate.

Compared to the findings obtained above, some researchers have also found that it is a negative relationship among the exchange rate and the inflation rate. The researchers said that studies have found that the inflation rate has a negative effect on the exchange rate, according to Mirchandani (2013) and Oriavwote and Oyovwi (2012). “Hsing (2006)” has done a research in Venezuela to classify the actions of short-term real exchange rates where the findings showed that the actual exchange rate had negative and important results due to the volatility of the inflation rate. On the other hand, some analysts have also found that it is no meaningful correlation between inflation and the foreign exchange rate. According to “Proti (2013)”, “the researchers reported that there was no strong correlation between the inflation rate and the exchange-rate effort in Tanzania and suggested that the source of the irrelevant link may be interventions by the government or central bank”. Finally, “the exchange rates of the powerful economies like AUD / USD, Euro / USD and AUD / Euro are checked for the significance of the inflation rate in exchange rate movements and the findings have been found to be negligible.”, (Ramasamy & Abar, 2015). Inflation is not the only element that infringes foreign exchange rates to examine foreign exchange rate and inflation. This can often cause the issue of multicollinearity in the model (Gujarati & Porter, 2009).

2.2.2 Foreign Exchange Rate and Real Interest Rate

Based on difference researcher, the results of studying the relationship between foreign exchange rate and interest rate will be difference. Among the results, positive relationship is the most can be found. According to Sanchez (2005), there is a positive significant effect among exchange rates and interest rate in Euro. He also argued that these two variables rise up in response to the economic shock. Next, in the case of Romania, Andries, Capraru and Ihnatoy (2017), state that the relationship among exchange rate and interest rate is negative in present moment but positive in long term. This is because these two periods are confirming two

different model or theory. They confirming stiky-price model in short term and confirming purchasing power parity (PPP) in long term. Lastly, Lahiri and Végh (2001), same with Calvo and Reinhart (2000), their model also predicts a positive relationship among exchange rate and interest rates.

Besides these, some researcher proved that foreign exchange rate and real interest rate are negative relationship. According to Scott and Karlsson (2010), their result is same with Andries, Capraru and Ihnatoy (2017), a negative significant effect among the exchange rate and the interest rate in the short-run with stiky- price, while positive significant effect in the long-run with the flexible movement of the price levels. Engel (1986) also stated that there is negative significant effect between exchanges rate and interest rate due to interest go up will lead inflation increase and expected inflation decrease. On the other hand, Belke, Geisslreither and Gros suggested "that there is no relationship among foreign exchange rate and interest rate". They believe that "pricing to market" behaviour may possible to explain the movement of exchange rate. Of course, there are contradiction in these finding, because the different model or source of data as well should be a possible reason to influence the result. What we can do is to collect these possible results as the references (Silberzahn & etc, 2018).

2.2.3 Foreign Exchange Rate and Foreign Direct Investment (FDI)

The outcome of the analysis of the relationship among Foreign Direct Investment (FDI) and foreign exchange rate can be separate in 3 categories namely positive effect, negative effect and no significant effect. Most researchers considered the relationship between the FDI and foreign exchange rate to have a substantial positive effect. According to Bilawal et al. (2014), there is a clear positive connection between the Foreign Direct Investment (FDI) and exchange rate in Pakistan. The positive relationship among the exchange rate and Foreign Direct Investment (FDI) and the exchange rate was noticed not only in Pakistan but also in Kenya by Kamau Njuguna (2016). They believe that high exchange rate can attracting Foreign Direct Investment (FDI) from other country. Lily et al. (2014) stated that when home currency appreciation, the Foreign Direct Investment (FDI) inflows become positive if the Foreign Direct Investment (FDI) project is serving the local market, but the negative relationship if the Foreign Direct Investment (FDI) aim is to diminish purpose of cost or export. Next, Latief and

Lefen (2018) explore that in some countries such as Bhutan, Maldives and Nepal, exchange rate volatility showed a positive significant effect on worldwide trade.

Besides these, Kyereboah-Coleman and Agyire-Tettey found that impulsiveness of the real exchange rate and Foreign Direct Investment (FDI) inflow has a negative impact in China and also liberalization process does not lead to an increasing inflow of Foreign Direct Investment (FDI) in Ghana. Finally, Güneş, Sevcan (2016) and Joseph, Donghyun and Peiming, (2009) suggest that they are no relationship among exchange rates and Foreign Direct Investment (FDI) inflow, both of these researchers fails to find a meaningful impact between the average inflow of Foreign Direct Investment (FDI) and exchange rate.

There are insufficient tools to extend the investigation of the relationship among the foreign exchange rate and FDI and foreign exchange rate. The relationship between the FDI and foreign exchange rate and has been proved by too little studies in the past. It is backed only by limited empirical studies that have reviewed the latest proof.

2.2.4 Foreign Exchange Rate and Financial Crisis

Based on some researchers use different methods to examine the consequence of the financial crisis with the foreign exchange rate. The result of the studies shows that there has positive relationship among foreign exchange rate and financial crisis. For example, Gupta, Mishra, and Sahay (2003) analyzed the output behavior of a sample of 195 currency crisis events in developing countries between 1970 and 1998. It is a positive significant effect between exchange rates and financial crisis. For other studies, Fratzscher (2009) analyzed data from 50 developed and emerging countries to studies the affect in global exchange rates during the financial crisis. He pointed out that the financial crisis has caused sharp fluctuations in the global exchange rate structure. However, during the financial crisis, bank's contributors might be hurry to change over their homegrown money resources into overseas currencies to against the loss become bigger. Therefore, the relative estimate higher exchange rate may increase the possibility to occurs currency crisis, further more financial crisis. Therefore, the strongly macroeconomic foundation is importance, especially the sufficient foreign exchange reserves to reverse capital flows. From the studies, it showing the importance of the macroeconomic foundation to avoid the currency crisis happened.

The limitation of the studies is that the existing of crisis of financial is because of the uncertainly of the monetary market, and also may affecting the determinations of exchange rates. The increasing of asymmetric information in credit markets are related to the uncertainty financial market. When the market participants realize that the valuation are no longer valid on the market, it would cause people inclined to government bonds and cash or bank deposits. Therefore, we can through that to build a sound transparency framework by reliable valuation practices to solve the uncertainty of financial market.

2.2.5 Foreign Exchange Rate and Political Stability

As a result, the financial crisis may be affected the determination of exchange rates due to the uncertainty in financial markets (Keblowski and Welfe, 2011). The financial crisis causes the influence of the foreign exchange rates which has adversely affected the exchange rate of the country through external shocks. There have two main channels which are net foreign capital flows and exports (Blanchard, 2010).

The result of the studies the relationships between foreign exchange rate and political stability that could separate into positive significant effect and negative significant effect depending on the characteristics of each research study. Most economists think that the political system is unstable, so would cause negative impact on national outcome. The studies by Alesina and Perotti (1996) indicate that the relationship among economic advance and political uncertainty is negative significant effect. Svensson (1998) also contends that political precariousness is contrarily identified with capital amassing (and thus financial development) due to it creates uncertainty to the security of property rights. Similarly, Lehkonen and Heimonen (2015) examine the impact that political risk has on the stock markets and show a negative relationship between the risk of political and typical market returns. They also indicate a decrease in risk of political lead to advanced returns.

However, Asteriou & Price (2001) shows that the evidence of a range of effects of political instability on economic advance and also the positive effect on economic advance. by using the panel regression to estimate and test the relationship among the exchange rate regime with the degree of economic reform. They show that structural reforms in government size and market regulation have had a positive impact on exchange rates. This form a

contradiction of the studies from Alesina and Perotti (1996) and Svensson (1998). However, the limitation of the studies is there had no actual information, we only can detect the relationship among foreign exchange rate and political factor. Although previous studies have analyzed the effect of political factors on certain macroeconomic variables, but the empirical literature on exchange rate determination basically no mention about the political factors. However, from our data show that the exchange rate policy decisions are not only relate with economic contingency, but also relate of the political. Therefore, the developing countries need pay more attention to the political causes.

2.2.6 Foreign Exchange Rate and Export

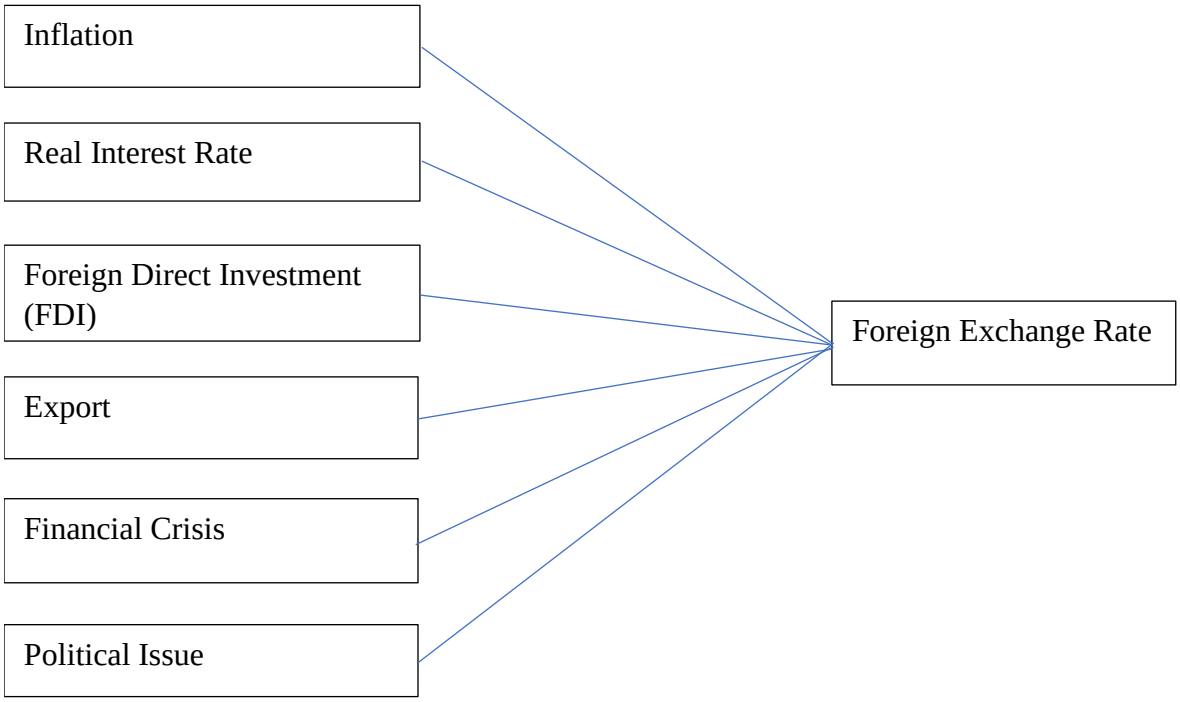
Export is projected to be the key variable influencing currency demand in the world of economics (Heim, 2010; Parveen et al., 2012). Swiss economy is suffering from development problems during the year 2008 until 2011, although the country was largely dependent on its exports. “This causes its exchange rate to drop tremendously, resulting in CHF being pegged to EUR on September 6th 2011”, (Lera et al., 2016). According to Ito et al. (1999), “successful exports would result in excess of the current balance of payment account and thus an upward some force on the currency and only if the government does not intervene in the foreign exchange market”. Furthermore, a research conducted by Wong and Tang in 2017, a nation heavily dependent on exporting the technology market, the currency of the nation will be appreciated due to increased demand for electronic goods. Furthermore, “an increase in the export rebate rate would also restore the effectiveness of a nation's exports and thus increase the foreign exchange rate”, (Meng, 2015).

From 2004 to 2013, a research performed by “Bouraoui and Phisuthtiwatcharavong” in 2015 was about the “causes of the Thai Baht (THB) against the US Dollar (USD)”, which includes the terms of the exchange component since Thailand is considered “export-oriented”. “The terms of trade shall be adopted as the percentage ratio of the export price and the import price of goods and services exchanged in Thailand and, as a result, the terms of trade shall have a significant negative effect on the THB / USD. This implies that the increase in trade conditions suggests a faster rate of rising export prices rather than import prices, contributing to a growing demand for Thai Baht, which lowers the THB / USD rate”. From 1980 to 2000, Cermeño, Grier and Grier (2010) also related trade terms and real exchange rates in Latin America by using trade index terms as the calculation method for trade terms. The result

showed that there was a negative and weakly relevant relationship among the variables. The scholars suggested that in Latin America, the cause of income is more than the cause of substitution. The drawback of the research is that between export and foreign exchange rates, there is only a poor significance. Nevertheless, even between the two variables there are just feeble meaningful. In a model the trade exchange rate balance is determined by the flow of financial assets necessary and real. The role of imports and exports in deciding the exchange rate can, therefore, be consistent with the effect of the methods of financial assets on exchange rates. In short, imports and exports are the secret to the determination of the foreign exchange rate (Rodriguez, 1980).

2.3 Theorectical Framework

Theoretical Framework



The theoretical framework for this research is outlined above. In this research six variables are used. As a dependent variable, we use the foreign exchange rate. While inflation, real interest rate, foreign direct investment (FDI), export, financial crisis and political issues are independent variables.

There are several theories that may explain the influence in the theoretical analysis between these independent variables and dependent variables. Ruiz-Napoles (2014) notes that the theory of "Purchasing Power Parity (PPP)" shows that the level of price shifts because the primary cause of foreign exchange rate activity. Inflation and foreign exchange nexus believe that the monetary authority 's job can be made easy and quick by lowering inflation (Dornbusch, 2001), (Velasco, 1996), and (Giavazzi & Giovannini, 1989). Because we know inflation is an average rise in price levels, we therefore conclude that these two hypotheses can be used in this study.

The near relationship among the exchange rate, the inflation rate and the interest rate are demonstrated by the International Fisher Effect (IFE). It also involves the "Purchasing Power Parity" (PP) and "Fisher Effect (FE)" to describe the foreign exchange rate as well as the interest rate and inflation rate (Shalishali, 2012). The exchange rate theory on imperfect capital markets may also describe the relationship between foreign direct investment (FDI) and exchange rates. Cushman (1985) found that foreign currency appreciation would minimise USD-invested foreign direct investment (FDI). Since financial crisis and political issue have no actual theory but we found that most researchers state that these two variables may give bad impact on foreign exchange rate (Frankel & Rose, 1996); (Kaminsky, 1998), (Kaminsky & Reinhart, 1999), (Drazen, 2000), and (Londregan and Poole, 1990).

Through the theoretical review and empirical of study from previous researches on this chapter, the "relationship of foreign exchange rate and macroeconomic factors", financial crisis and political issue had been further explained. According to Thaddeus and Nnneka (2014), it stated the inflation possessed a positive effect on exchange rate in Nigeria. It shows that it is slightly different in both short-term and long-term relationship among the foreign exchange rate and inflation in Nigeria. Besides, according to Namjour, Gholizadeh and Haghighi (2014), there is a positive and significant results in Iran. Iran is a nation that has endured strong and unceasing inflation and fluctuating exchange rates in recent decades. It also notes that to classify the short-term real exchange rate actions in Venezuela, the outcomes suggest "that there are negative and significant real exchange rate results due to inflation rate volatility", (Hsing, 2006).

Among the results, positive relationship is the most can be found. According to Sanchez (2005), there is a positive significant effect among exchange rates and interest rate in Euro. Next, in the case of Romania, Andries, Capraru and Ihnatoy (2017), state that the relationship

among exchange rate and interest rate is negative in short term but positive in long term. This is because these two periods are confirming two different model or theory. Engel (1986) also stated that there is negative significant effect between exchanges rate and interest rate due to interest go up will lead inflation increase and expected inflation decrease. Instead, Belke, Geisslreither and Gros "proved that it is no relationship among foreign exchange rate and interest rate".

According to Bilawal and etc (2014), the result of exchange rate has solid positive correlation with FDI in Pakistan. Not only Pakistan but also Kenya, Kamau Njuguna (2016) found that positive relationship between exchange rate and Foreign Direct Investment (FDI). They believe that high exchange rate can attracting Foreign Direct Investment (FDI) from other country. Besides, Latief and Lefen (2018) investigate that the exchange rate volatility showed the positive significant impact on worldwide trade and Foreign Direct Investment (FDI) in some country like Bhutan, Maldives and Nepal. Next, Kyereboah-Coleman and Agyire-Tettey found that volatility of the real exchange rate and Foreign Direct Investment (FDI) inflow has a negative impact in China while Güneş, Sevcan (2016) and Joseph, Donghyun and Peiming, (2009) suggest that they are "no relationship among exchange rates and Foreign Direct Investment (FDI) inflow".

In addition, according to the study conducted in 2017 by Wong and Tang, a nation that is heavily dependent on technology sector exports, the currency of the nation will appreciate due to increased demand for electronic goods. Moreover, an improvement in the send out discount rate will likewise reestablish the intensity of a nation's fares and accordingly improve the unfamiliar swapping scale (Meng, 2015). From 2004 to 2013, an examination directed by "Bouraoui and Phisuthtiwatcharavong" in 2015 was about the identification of the Thai Baht (THB) against the US Dollar (USD), which incorporates the details of the trade segment since Thailand is viewed as fare situated. Exchange terms are embraced as the rate proportion of the fare cost and the import cost of the products and ventures traded in Thailand and the outcome shows that exchange terms have a significant negative impact on the THB/USD. As per Cermeño, Grier and Grier (2010), the outcome demonstrated that there was a negative and pitifully noteworthy connection between the factors through the conventional least square cycle, utilizing exchange file terms as the estimation type of exchange terms.

The performance behaviour of a sample of 195 currency crisis events between 1970 and 1998 in developing countries was analysed, according to Gupta, Mishra, and Sahay (2003).

The exchange-rate and financial crisis have a major positive impact. For other studies, Fratzscher (2009) analyzed data from 50 developed and emerging countries to studies the affect in global exchange rates during the financial crisis. He pointed out that the financial crisis has caused huge variability in the global exchange rate structure. Next, according to Asteriou and Price (2001), the evidence indicates a number of consequences of political uncertainty on economic advance and also the positive effect on economic advance. Furthermore, on the other hand, studies by Alesina and Perotti (1996) show that the relationship among economic advance and political instability has a major negative impact. Asteriou and Price (2001) demonstrate the evidence of a number of effects of political uncert ainty on economic advance and also the positive consequences on economic advance.

2.4 Finding the Gap

As indicated by the writing survey that had been done, the greater part of the examinations talked about are not mainly in Malaysia. Just few investigations that examined about the determinants of exchange rate in Malaysia but not on how it affects the exchange rate. This brings difficulty as there is no previous studies that touched about the politic issues and financial crisis in Malaysia. Nevertheless, this study will implement dummy variables which includes political stability and financial crisis to shows its present or absence. Another issue that should be highlighted are some of the independent variables could also be affected by the dependent variable itself. For example, for export, some studies mentioned that as the currency appreciate, export will decrease due to the price of goods increase based on the other country perspective. Nevertheless, this would not significantly affect the outcome of the research as it still shows the causality affect between both export and rate of exchange.

“Chapter 3: Methodology”

“3.0 Introduction”

“The research methodology is discussed deeply in this chapter. There are two sectors for the chapter 3. Firstly, the first segment is explained about the research design, the data collection method and the target population. The next segment is discussed about the data processing and the methodology.”

3.1 Research Design

This examination is conducted by using quantitative data. One of the reasons for this is that it is more scientific. Quantitative data analysis is not number crunching, but a way of critical thinking for how to analyze the data. Furthermore, quantitative research is characterised as social research, according to Cohen (1980), which employs analytical strategies and logical proclamations. He noticed that an observational proclamation is portrayed as a spellbinding explanation of what "is" the situation in "this present reality" as opposed to what "wanted" the case to be. Experimental articulations are normally communicated in mathematical terms. Another factor in quantitative analysis is the linkage between retrospective evaluations. So, for the most part, quantitative analysis revolves on the assessment of social truth. Both quantitative analysis and investigations are checking for quantities of anything and numerically setting up analysis. Quantitative experts see the world as a fact that can be reasonably determined, so that unbending aides are necessary throughout the period spent accumulating and analysing knowledge.

3.2 Data Collection Method

Table 1. Sources of data

No.	Variables	Proxy	Unit Measurement	Source
1.	Foreign Exchange Rate(DV)	FER	Real effective exchange rate by taking the year 2010 as the based year (Based rate 2010=100)	World Development Indicators World Bank
2.	Inflation (IV)	INF	Percentage (annually)	World Development Indicators World Bank
3.	Real Interest rate (IV)	RIR	Percentage	World Development Indicators World Bank
4.	Foreign Direct Investment (IV)	FDI	Percentage of Gross Domestic Product (GDP)	World Development Indicators World Bank
5.	Export	X	Current US$	World Development Indicators World Bank
6.	Financial Crisis	FC	Crisis happened year	Journals, articles, news and websites
7.	Political Stability	PS	Instability year	Journals, articles, news and websites

3.3 Sampling Design

The target population is characterized as an intended group that is identified from the various groups of individuals. This study aims to investigate the connection between foreign exchange rate and the real interest rate, inflation, exports, foreign direct investment, financial crisis, and political stability from 1970 to 2018 for the foreign exchange rate in Malaysia. Malaysia is a multiracial nation mainly consists of three major races: Malay, Chinese, and Indian. Malaysia has a population of roughly 29.72 million people and this country is involved in foreign trade based on world bank results. Malaysia is adopting a floating exchange rate mechanism for foreign trade, the value of which is relying on currency demand and supply.

3.4 Data Processing

The kind of data that adopted in this study is time series data and is made up of one dependent variable, foreign exchange rate and six independent variables which are inflation, foreign direct investment, exports, real interest rate, financial crisis and political stability. Furthermore, secondary data of dependent variable are collected from World Bank database and it started from year 1970 to 2018. Besides, the independent variables are also collected from World Bank database except the dummy variables which are financial crisis and political stability. The aim that usage the secondary data is because World Bank database had provided the accuracy and completed analysis and it has always been more saving on time for the research. At the other hand, for the dummy variables in this research, "0" represents that there is no financial crisis and political is instability while "1" represents that there is financial crisis and political is stable at the year. Moreover, the periodical data and EViews 10 are used in this study. E-Views 10 will be used to run the data analysis and the analyze the outcomes. The analysis and interpretation will be carried out after the outcomes have been collected.

"3.5 Data Analysis"

3.5.1 Autoregressive Distributed Lag Model (ARDL)

In this research, "Autoregressive Distributed Lag (ARDL)" model is adopted to evaluate the relationships among the variables either they are long-run or short-run relationship. (Pesaran et al., 2001) Besides, this model are also the purpose for determine the present of the cointegration relationship between the variables. There are some benefits by adopting this

model. Firstly, it evades the issue of the request for coordination related with the Johansen probability approach. (Johansen and Juselius, 1990) Besides, according to Harris & Sollis (2003), it runs the unbiased of the long-run model and legal T-statistic.

H_0: $\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0$ (unit root, no cointergration)

H_1: $\delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq \delta_7 \neq 0$ (stationary, cointergration)

Decision Rule: Reject H_0 if the test-statistic value is higher than the critical value. Otherwise, do not reject.

The null hypothesis states that the variables do not have a long-run relationship, while the alternative hypothesis states that there is a long-run relationship between the variables. If the value of the test statistic is greater than the critical value, null hypothesis is then denied, implying that the variables have a long-run relationship. In addition, to evaluate the presence of co-integration between the variables, p-value can also be used. If the p-value is greater than the significance level then the null hypothesis cannot be rejected, which means the variables have a short-run relationship.

Economic Function:

$\ln FER_t$ = f [Inflation($\ln INF_t$), Export ($\ln X_t$), Foreign Direct Investment ($\ln FDI_t$), Real Interest rate($\ln RIR_t$), Financial Crisis ($\ln FC_t$), and Political Stability($\ln PS_t$)

Economic Model:

$$\Delta \ln FER_t = \alpha_0 + \sum \varnothing_i \Delta \ln FER_{t-i} + \sum \varphi_i \Delta \ln INF_{t-i} + \sum \pi_i \Delta \ln X_{t-i} + \sum \gamma_i \Delta \ln FDI_{t-i} + + \sum \rho_i \Delta \ln RIR_{t-i} + \sum \rho_i \Delta \ln FC_{t-i} + \sum \rho_i \Delta \ln PS_{t-i} + \delta_1 \ln EXC_{t-1} + \delta_2 \ln INF_{t-1} + \delta_3 \ln X_{t-1} + \delta_4 \ln FDI_{t-1} + \delta_5 \ln RIR_{t-1} + \delta_6 \ln FC_{t-1} + \delta_7 \ln PS_{t-1} + \mu_t$$

Where,

$\ln FER_t$ = The natural logarithm form of foreign exchange rate at year t

$\ln INF_t$ = The natural logarithm form of inflation rate measured by percentage change in consumer price index at year t

$\ln X_t$ = The natural logarithm form of export measured by current US$ at year t

$\ln FDI_t$ = The natural logarithm form of foreign direct investment measured by percentage of gross domestic product at year t

$\ln RIR_t$ = The natural logarithm form of real interest rate measured by percentage at year t

$\ln FC_t$ = The natural logarithm form of financial crisis at year t where 0 indicate no financial crisis in the specific year and 1 indicate financial crisis occur in the specific year

$\ln PS_t$ = The natural logarithm form of political stability at year t where 0 indicate political stable in the specific year and 1 indicate political not stable in the specific year

μ_t = error term

$\varnothing$,φ, π, γ and ρ represent the short run parameters and δ_2 to δ_7 represent the long run parameters.

"3.5.2 Unit Root Test"

"The primary objective behind the unit root test is to test for the stationary variable of the series". The ability of the test used in the time series to discern every possible structural split, as the test is typically used in the study of time series. The stationary variables of the series are important for a meaningful, non-spurious and accurate regression to be acquired to ensure that the result evaluated is reliable (Chandran & Munusamy, 2009). According to Elder and Kennedy (2001), it is strongly related to the time series data to support the independent mean and variance of the stationary time series study that remains constant for the length of the time. Diebold and Kilian (2000) also show the utility of unit root tests in identifying with the appropriateness of utilizing the deciding model in stages or disparities for the unrivalled impacts in prediction. In general, the unit root testing method implicitly assumes the time series can be written as:

$$y_t = D_t + Z_t + \varepsilon_t$$

Where,

D_t= deterministic component (trend, seasonal component, etc.)

Z_t = the stochastic component.

ε_t= is the stationary error process.

A generally utilized test that is valid in enormous examples is the Augmented Dickey Fuller (ADF) test. the analysts who applying ADF test typically will in general depend on the

impact of the lag orders and this will influence conduct of the test along with the limited sample size (Cheung and Lai, 1995).

"H_0: All variables have a unit root and non-stationary.

H_1: All variables do not have a unit root and stationery.

Level of Significance: α=0.05

Decision rule: If the p-value of ADF test is less than significant level, then the null hypothesis will be rejected. Otherwise, do not reject null hypothesis."

According to Brooks (2008), "the Phillips Perron unit root test is a non-parametric test that relies on the long-term variance forecast instead of the Augmented Dicker-Fuller (ADF) test that recognises the serial correlation via the autoregressive parametric structure". In time series analysis, it is used to investigate the null hypothesis that a time series of order 1 is incorporated. Fahami (2011) added that the Phillips Perron test is valid for any "disturbance" serial correlation as it is robust against the serial correlation assortment form and conditional homoscedasticity is not necessary.

3.5.3 Heteroscedasticity

The essence of Heteroscedasticity is that the variance of the term of error depends on exactly which observation (or the values of the independent variables) is being discussed. Since the ordinary regression of the least squares (OLS) is assumed all residuals are taken from homoscedasticity where there is constant variance (Jim Frost, 2017). Although the Heteroscedasticity is the violation of the principle of homoscedasticity. Simply put, heteroscedasticity is the issue of a variable's variability being unequal to the value range of a second variable that predicts it.

ARCH test is adopted in this research to assess the question of heteroscedasticity. This test is available only for data models of the time series and is based on the independent variable. As below, the hypothesis argument is shown:

H_0: There is no heteroscedasticity problem

H_1: There is heteroscedasticity problem

When the value of probability is greater than the 0.01, do not reject the H_0 while if p-value is less than 0.01, H_0 should be rejected. Otherwise do not reject H_0.

3.5.4 Autocorrelation

Autocorrelation is to calculating the correlation between two different periods. Tim Smith (2019). The (CLRM) assumes that absent of autocorrelation or the error terms among two periods are not interrelated, which $\boldsymbol{cov}$ ($\boldsymbol{\mu}$I, $\boldsymbol{\mu j}$) = 0, I≠j. There is an autocorrelation, if the two error terms are dependent, which $\boldsymbol{cov}$ ($\boldsymbol{\mu}$I, $\boldsymbol{\mu j}$) ≠ 0, I≠j. There have two type of autocorrelation which are spatial autocorrelation and serial correlation. The spatial autocorrelation is using the cross-sectional data to analysis. In additional, the time series data is using to analysis on the serial correlation while serial autocorrelation also can type to pure or impure. The pure serial correlation is induced by the underlying distribution of the error term to an equation 's true specification. Specification bias is caused by impure serial correlation, such as missed variables or an incorrect functional type. This can detect autocorrelation by using the Durbin-Watson d test. This test is based on residual estimates, which are systematically determined in regression analysis.

To test for **two-sided autocorrelation** at significance α, the test statistics are d and (4-d), to compared lower and upper critical values $(d_l \; and \; d_u)$:

$H_0: \rho = 0$ (no serial correlation)

$H_1: \neq 0$ (serial correlation)

Decision rule: -reject H_0 if d < lower critical value

-reject H_0 if d > $4 - d_l$

-do not reject H_0 if $d_u \leq$ d ≤ $4 - d_u$

-otherwise, inconclusive.

To test for the **Positive autocorrelation** at significance α the test statistics are d and (4-d), to compared lower and upper critical values $(d_l \; and \; d_u)$:

$H_0: \rho \leq 0$ (no positive serial correlation)

$H_1: \rho > 0$ (positive serial correlation)

Decision rule: -reject H_0 if d < lower critical value

-do not reject H_0 if d > upper critical value

-inconclusive if lower critical value ≤ d ≤ upper critical value

For the **negative autocorrelation** at significance α, the test statistics are d and (4-d), to compared lower and upper critical values $(d_l \; and \; d_u)$:

$H_0: \rho \geq 0$ (no negative serial correlation)

$H_1: \rho < 0$ (negative serial correlation)

Decision rule: -reject H_0 if d > $4 - d_l$

-do not reject H_0 if d < $4 - d_u$

-inconclusive if $4 - d_u \leq$ d $\leq 4 - d_l$

"3.5.5 CUSUM and CUSUMSQ"

The "CUSUM" and "CUSUMSQ" tests were used to determine the stability of the parameter by using the total of recursive residuals, according to Brown, Durbin, and Evans (1975). The CUSUM test is plotted against the break point and relies on the initial outcome. It is further imperative to assess the methodical difference in the relapse coefficients. Furthermore, the CUSUMSQ test is more applicable when the exodus from the reliability of the regression coefficients occurs infrequently compared to CUSUM. If the "CUSUM" and "CUSUMSQ" points plot inside the range of the straight line at the 5 percent level of significance, the parameters are stable.

3.5.6 Normality Test

Initially introduced by Jarque and Bera (1987), the Jarque-Bera test is the most commonly used to assess normality. The aim is to analyze whether the data set is all around displayed by the distribution of normality. According to Brys, Hubert and Struyf (2004), the test of normality is often adopted to test the normality of the term of error. When the data is distributed normally, a bell-shaped frequency distribution will be seen. The main inputs for calculating the statistics by using the following formula are skewness and kurtosis:

$$"JB = n\left[\frac{S^2}{6} + \frac{(K-3)^2}{24}\right]"$$

"Where, n = sample size S = skewness coefficient K = kurtosis coefficient

Hypothesis of the normality test:

H_0: The data are sampled from a normal distribution

H_1: The data are not sampled from a normal distribution

Decision Rule: Reject H0 if the calculated test statistic exceeds a critical value, otherwise do not reject H0."

The examination of normality is typically conducted via the skewness-kurtosis test. For time series results, the coefficient of skewness associated with kurtosis is valuable. The skew for a typical dispersion ought to be comparable to or equivalent to zero. Kurtosis is a computation of the hefty followed or light-followed information comparative with the typical conveyance, with a standard kurtosis coefficient of 3. High kurtosis information displays high exceptions. Probability can also be used to evaluate normal distribution as well as to use the formula. When the value is higher than the significance level, it shows that the data is normally distributed and the other way around.

"3.5.7 Model Specification"

The probability of model specific error will be high when a model overlooks relevant and significant factors, contains insignificant factors, selected wrong example, applies an incorrect useful structure or error of estimation (Heckman, 1979; Gujarati and Porter, 2009). All hypotheses evaluated alongside the model would become invalid as a result of model mis-specification (Gujarati and Porter, 2009). Ramsey RESET test may be adopted to classify the incorrect practical form of free and ward variables. Model specification test hypothesis:

"H_0: The model is correctly specified.

H_1: The model is not correctly specified.

Decision rule: Reject H_0 if test statistic value is higher than upper critical

value (P-value is less than significant level), otherwise, do not reject H_0."

If the null hypothesis H_0 is rejected for this research the model specification is not stated correctly, and vice versa. Researchers may modify the model type into another type.

“Chapter 4: Data Analysis”

“4.0 Introduction”

The review of this examination will be addressed at here by using “Autoregressive Distributed Lag Model (ARDL)”. The ARDL model is to explain the test and the model used in this analysis included the ARDL Bound test, the Unit root test, and the diagnostic test to analyse the existence of the model's long-term relationship, multicollinearity, autocorrelation, heteroscedasticity, and the issue of model specification. In the table type, all the findings are measured in order to provide a clearer way of understanding.

4.1Augmented Dickey-Fuller (ADF) Test (“Unit Root Test”)

Table 4.1 displays the effects of the “Augmented Dickey-Fuller unit root test” for the dependent variable, the foreign exchange rate and the six independent variables, including inflation, foreign direct investment, exports, real interest rates, financial crisis and political stability. The results show that the variables are either stationary in level or first difference form. At the level phase, it is found that only the foreign exchange rate and the exports are not stationary while others variables show stationary in the form of intercept and trend and intercept. While at the first difference level form which conclude intercept and trend and intercept, it is found that all variables are stationary.

Table 4.1: Results of ADF test

	Level		First difference	
Variables	Intercept	Trend & Intercept	Intercept	Trend & Intercept
lnFEC	-0.7379 (0)	-3.4641 (1) *	-5.0988 (0) ***	-5.1530 (0) ***
lnInf	-7.0509 (0) ***	-7.2480 (0) ***	-8.8153 (0) ***	-8.8522 (1) ***
lnFDI	-5.8954 (0) ***	-5.8741 (0) ***	-7.7857 (0) ***	-7.7027 (1) ***
lnX	-7.8250 (0) *	-1.1425 (0)	-5.6078 (0) ***	-6.5147 (0) ***
lnRIR	-5.5419 (0) ***	-5.7157 (0) ***	-7.1211 (2) ***	-7.0237 (2) ***
lnFC	-4.9856 (1) ***	-4.9379 (1) ***	-7.3978 (0) ***	-7.3215 (0) ***
lnPS	-3.6253 (0) ***	-3.865 (0) *	-10.1356 (0) ***	-10.0284 (0) ***

Reminder: *, **, ***, represents the rejection of null hypothesis at 10%, 5%, and 1% level of significance. Based on the Akaike Information Criterion (AIC), the figure in parenthesis (...) represents the optimal lag duration.

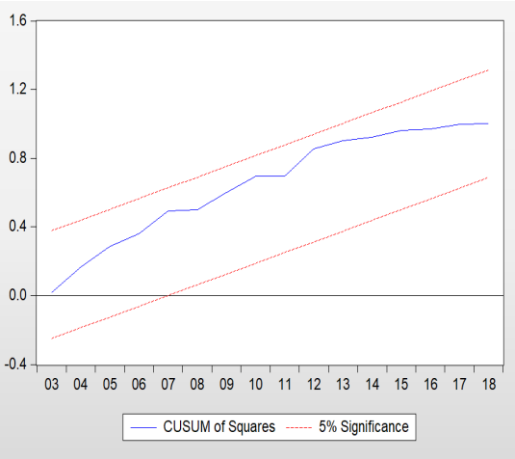
“4.2 Diagnostic Checking”

“Table 4.2 Results of diagnostic checking”

“Diagnostic Testing”	“t-statistic/ F-statistic”	“P-value”	Result
ARCH Test	2.2661	0.1458	No serious heteroscdedasticity problem
Breuch-Godfrey LM Test	2.0294	0.1543	No serious autocorrelation problem
Ramsey RESET Test	0.1484	0.8833	The model specification is correct.
“Jarque-Bera Test”	1.3756	0.5027	“The error term is normally distributed”

There are several diagnostic tests used in this study to make certain that the model that is previously developed is free from econometric problems. One of the tests used in this research is the ARCH test to verify the present of the heteroscedasticity problem in the model while the Breuch-Godfrey LM test is adopted to evaluate the problem of autocorrelation. Both demonstrate that because of their p-value, there is no heteroscedasticity and problem with autocorrelation is higher than the level of significance. In addition, in this study, the “Ramsey RESET test” is implemented to evaluate the specification of the model problem while the “Jarque-Bera test” used to examine the model's normality. It indicates that there is no model misspecification error based on the e-view results and the error term is normally distributed since the value of probability is higher than the level of significance.

“Figure 4.1and 4.2”



Figures 4.1 and 4.2 defined as the results of the "Cumulative Sum test (CUSUM)" and the "CUSUMSQ test" that is the Cumulative Sum Squared test. The points of "CUSUM" and "CUSUMSQ" fall inside the straight-line range at the 5 percent level of significance, based on the result. It demonstrates, therefore, that the parameters are stable.

"4.3 Bound Test for Co-integration"

With the purpose of evaluate the present of the long-term relation between the variables, the "Autoregressive Distributed Lag (ARDL)" bound test is performed. If the F-statistics value is greater than the upper critical value bound, it can be concluded as a long-term relationship, whereas when the F-statistics value is smaller than the lower critical value bound, it is concluded as a short-term relationship. The lower critical value 1.99 and the upper critical value is 2.94 at the level of significance of 10 per cent. The lower critical value that follows at 5 percent significance level is 2.27 and the upper critical value is 3.28.

"Table 4.3 Result of Bound Test for Co-integration (Foreign Exchange Rate)"

	"Optimal Lag Length"	"F-statistics"	"Conclusion"
F_{FER} (lnINF, lnFDI, lnX, lnRIR, lnFC, lnPS)	(4, 4, 4, 4, 4, 0, 2)	4.1775***	Cointergration

"Reminder: *, **, ***, represents the rejection of null hypothesis at 10%, 5%, and 1% level of significance."

"4.4 Long Run Effect of Independent Variables on Foreign Exchange Rate"

"Table 4.4 Estimated long run coefficients using the ARDL approach"

"Variable"	"Coefficient"	"Standard Error"	"t-statistic (Prob.)"
LNINF	0.0010	0.0648	0.0159(0.9874)
LNFDI	0.0726	0.0925	0.78972(0.4439)
LNX	0.1181	0.048274	2.4455(0.0264)**
LNRIR	-0.0035	0.0412	-0.0844(0.9338)
LNFC	0.3838	0.1759	2.1815(0.0444)**

LNPS	0.1187	0.1415	0.8383(0.4142)

“Reminder: *, **, ***, represents the rejection of null hypothesis at 10%, 5%, and 1% level of significance.”

“Table 4.5 Estimated short run coefficient using the ARDL approach”

“Variable”	“Coefficient”	“Standard Error”	“t-statistic (Prob.)”
D(LNINF(-1))	0.0386	0.00066	5.8624(0.0000)***
D(LNFDI(-1))	0.0437	0.0081	5.4149(0.0001)***
D(LNX(-1))	0.2731	0.0561	4.8641 (0.002)***
D(LNRIR(-1))	0.9278	0.1005	9.2361(0.000)***
D(LNFC(-1))	-0.0543	0.0186	-2.9262(0.0099)***
D(LNPS(-1))	-0.0305	0.0129	-2.3651(0.0310)**
CointEq(-1)	-0.2482	0.0358	-6.9312(0.0000)***

4.4.1 The impact of Inflation on Foreign Exchange Rate in long run and short run

Table 4.4 illustrates the relationship among inflation and the foreign exchange rate in Malaysia in the long run. It is no major inflation-foreign exchange rate relationship at even 10 percent of the outcome's significance level. With the value of probability=0.9874, the LNINF coefficient is not important at the 10% significance stage for k=1. This means that, in the long run, the foreign exchange rate only rose by 0.0010 per cent for every 1 per cent increase in inflation. This has completely demonstrated that there is no long-term correlation among inflation and the foreign exchange rate in Malaysia.

This result is quite same with some researcher. For example, Proti (2013) state that there is no relationship swelling rate and the development of conversion scale in Tanzania, he likewise inferred that administration or national bank mediations could be the reason for the immaterial relationship. Another result from Ramasamy & Abar (2015), also showed that “the exchange rate of solid economy nations which are AUD/USD, Euro/USD and AUD/Euro also being insignificant toward inflation rate”.

Malaysia's short-term relationship between inflation and foreign exchange rate was shown in table 4.5. The CointEq (-1) coefficient gained is -0.2482 (< 1.00) and value of

probability is 0, representing the notion of a short-term co-integrating and statistically meaningful relationship among inflation and foreign exchange. The D coefficient (LNINF (-1)) with p-value=0 at 10 % significance level is significant. This can be translated as the foreign exchange rate rises by an average of 0.0386 percent per 1 percent rise in inflation rate. Thus, the result showed that in the short run Malaysia has a positive relationship between inflation and foreign exchange rate.

The positive significant result of inflation between foreign exchange rate in table 4.5 is similar with Bangladesh from the year 1990 to year 2011 according to Chowdhury and Hossain (2014). Next, Thaddeus and Nnneka (2014) informed that when the inflation rate rises, it will lead the domestic currency depreciate finally reduce in the foreign exchange rate. They also proved that the inflation has a positive consequence on conversion standard dependent on their examination in Nigeria. Besides, in Iran Namjour, Gholizadeh and Haghighi (2014) found that the positive and significant result in the relationship among the foreign exchange rate and inflation rate. This may be cause by ceaseless expansion period and inconsistent trade rates during previous eras in Iran. According the result, it can conclude that inflation has a positive impact to foreign exchange rate in short run Malaysia.

4.4.2 “The impact FDI to Foreign Exchange Rate in long run and short run”

Table 4.4 reflects Malaysia's long-run relationship among foreign direct investment (FDI) and the foreign exchange rate. The outcome reflexes that Malaysia is not significant on the long-run between FDI and foreign exchange rate. With p-value=0.4439 at the level of significant 1%, 5%, 10%, the LNFDI coefficient is not significant. It can tell us that every 1 percent increase in FDI will increase the foreign exchange rate in long-term Malaysia by 0.0726 percent, which is not significant.

This result is different with Güneş, Sevcan (2016), he found that no any substantial relationship among FDI and foreign exchange rate level in a short run, but results point out that overseas exchange rate and FDI connect in a since quite a while ago run Turkey. He explained that the increase in the real exchange rate also means appreciation of the local currency for Turkey. However, the research of Joseph, Donghyun and Peiming, (2009) suggest that they are not significant relationship between foreign exchange rates and FDI inflow due to they fail to find a meaningful impact between FDI and foreign exchange rate.

Conversely, the outcome of Table 4.5 indicates the short-run relationship among FDI and the foreign exchange rate in Malaysia. According to the approximate CointEq(-1) coefficient, it was shown that -0.2482(<1.00) and p-value is 0, supporting the concept of a short-run Malaysia co-integrating and statistically relevant relationship among FDI and foreign exchange rate. With a value of probability 0.0001 at a meaningful 10% level, the coefficient of D (LNFDI (-1)) is significant. This proves that the foreign exchange rate might rise by 0.0437 percent on average for every 1 percent increase in FDI. There is, therefore, a positive short-run relationship in Malaysia among FDI and foreign exchange rate.

This result also supported by Bilawal et al. (2014), this is because they founded a solid positive correlation among FDI and foreign exchange rate in Pakistan. In Kenya, Kamau Njuguna (2016) also found that positive relationship among foreign exchange rate and FDI. What they have in common is they believe that high exchange rate can attracting more FDI from other country. Some researchers explained that if the Foreign Direct Investment (FDI) project is serving the local market, then when home currency rises, the FDI inflows become positive (Lily et al., 2014). Lastly, Latief and Lefen (2018) proved that the exchange rate impulsiveness showed the positive significant impact on worldwide trade and Foreign Direct Investment (FDI) in Bhutan, Maldives and Nepal. Synthesize these researches and the results in table 4.5, we can assume that there is a positive relationship among FDI and foreign exchange rate in short run Malaysia.

4.4.3 “The impact of export on the exchange rate in long run and short run”

Table 4.4 demonstrates the relationship among exports and Malaysia's exchange rate. A substantial export-exchange rate relationship exists at a degree of significance of 5 percent. With p-value=0.0264, the LNX coefficient is significant at 5 % of significance and 10 % for k=1. This proves that in the long run, the exchange rate increases by 0.1181 percent on average for every 1 percent increase in overall exports. The findings have thus shown that there is a positive relationship among exports and the foreign exchange rate in Malaysia. Similar to the prior findings of Heim (2010), Parveen et al. (2012), Lera et al. (2016), Ito et al. (1999), Wong and Tang (2017), and Meng (2015), rise in exports makes an rise in the exchange rate of the nation. This can be applied on account of Malaysia whereby it is intending to increase the exports of the country to increase the strength of the currency. Since Independence Day till

now, Malaysia's manufacturing sector has improved a lot from focusing only on agriculture to other sector such as electronics. Some of the top product being exported by Malaysia including electronics machinery and equipment, petroleum, and computer parts. It is recommended that Malaysia should improve more of its manufacturing sector to further increase its exports. Examples of manufacturing sector that has the potential to further increase Malaysia's exports are automobiles and agriculture. Malaysia has two local automobile brand which is Proton and Perodua but overall automobile exports of the country is considerably low compare to its import of automobile. Besides that, Malaysia is also one of the main countries that have sufficient land and skills to compete in the agriculture sector such as IOI cooperation and Genting which specialise in palm oil and tea plantation. With government support in this manufacturing company, Malaysia could further improve its export to strengthen its currency.

The short-run relationship among exports and the foreign exchange rate in Malaysia is shown in Table 4.5. The CointEq (-1) coefficient gained is -0.2482(<1.00), and the value of probability is 0 which is less than 0.01 which supports the concept of a co-integrating and statistically significant relationship among export and foreign exchange rates in Malaysia. The coefficient of D (LNX (-1)) is significant with value of probability =0.002 at the level of 1 %, 5% and 10% respectively, indicating that the foreign exchange rate rises by 0.2731% on average for every 1% rise in exports. Therefore, this proved that there is a positive relationship among export and the exchange rate in Malaysia in the short run. When export increase, the demand of Malaysia currency's increase which leads to appreciation.

4.4.4 The impact of Real interest rate on the foreign exchange rate in long run and short run

On the table 4.5 represents that the relationship among the real interest rate and foreign exchange rate in Malaysia in short run. We can see that the result of coefficient of CointEq (-1) obtained is -0.2482, which are lower than 1.00 and the p-value is 0.0000, which also lower than 1.00, it means to sustains the concept of a statistically and co-integrating significant relationship between real interest rate and foreign exchange rate in Malaysia.

Since the coefficient of D (LNRIR (-1)) is significant and the p-value is 0.000 at the level of significance of 0%, 5% and 10% correspondingly. It is defined as increase 1% in the real interest rate, on average, would lead the foreign exchange rate increase by 0.9278%. Therefore, it shows the positive relationship among real interest rate and the foreign exchange

rate in Malaysia in short run. Interest rate is an importance part of policy variables that to constitutes affecting the exchange rate where except for other monetary policy instruments. Although had been found the contradiction by empirical studies. While people generally assume that tight monetary policy and higher interest rates are more helpful in stabilising exchange rates, he argues in Frenkel's empirical study (1979) that exchange rates are decided by interest rate differentials between countries.

Due to the exogenous monetary shocks, central bankers in emerging nations will face more problems than the emerging nations. If the domestic interest rate decreased or the local currency depreciated, the public may prefer to use or maintain the foreign currency instead of using domestic currency against inflation. In addition, agents are more likely to keep their savings against inflation in the overseas currency than in the local currency. In additional, countries with the aim of decrease the risk of speculative and the balance of payment crisis, central bank would pay more attention on the foreign exchange reserves. Follow with the fluctuation of the interest rate, the exchange reserve would been influence where interest rate increase leads the increasing of foreign exchange rate increase. Therefore, central bank may use the interest rate to achieve their goal. (Berument, 2007). According to the empirical result of Chen (2006) also shows that there is an evidence to shows the increasing on interest rate would lead to an upper possibility of converting to a political power with more impulsive exchange rate. Beside that based on Sanchez (2005), there is a positive significant effect among exchange rates and interest rate in Euro. He also argued that these two variables rise up in response to the economic shock. It would thus be able to be inferred that a nation with high interest rate would also have a high foreign exchange rate. In long-run the real interest rate in our studies does not influence the foreign exchange rate. In the long run, the relationship between the real interest rate and the foreign exchange rate in Malaysia is reflected on table 4.4. Since the results of our studies show that the LNRIR coefficient is not significant, and the p-value is 0.9338. The result indicates that there is no significant relationship at the significance level of 0 percent, 5 percent and 10 percent among the foreign exchange rate and the real interest rate. Therefore, referred back to our results, it is apparent that the real interest rate does not have a long-run effect on Malaysia's foreign exchange rate.

4.4.5 "The Impact of Financial Crisis on Foreign Exchange rate in long run and short run"

Based on the result showed at above, it shows that there is a significant relationship among foreign exchange rate and financial crisis at significance level of 5%. The coefficient of financial crisis is significant with value of probability = 0.0444 at the level of significance of 5%. This shows that for every one dummy variable increase in the financial crisis, the foreign exchange rate will increase by 0.3838% on average in the long term. Therefore, it shows that there is positive relationship among foreign exchange rate and financial crisis.

This is similar to the other researcher such as Gupta, Mishra, and Sahay (2003), they had analyzed the output conduct of an example of 195 cash emergency occasions in emerging nations between 1970 and 1998. There is a positive significant effect among exchange rates and financial crisis. For other studies, Fratzscher (2009) analyzed data from 50 developed and emerging countries to studies the affect in global exchange rates during the financial crisis. He pointed out that the financial crisis has caused sharp fluctuations in the global exchange rate structure. However, during the financial crisis, bank's investors might be race to change over their local money resources into overseas currencies to against the loss become bigger. Therefore, the relative estimate higher exchange rate may increase the possibility to occurs currency crisis, further more financial crisis. Therefore, the strongly macroeconomic foundation is importance, especially the sufficient foreign exchange reserves to reverse capital flows. From the studies, it showing the importance of the macroeconomic foundation to avoid the currency crisis happened.

Results from the table at above showed that there is a short run relationship among the foreign exchange rate and financial crisis, the coefficient of CointEq (-1) obtained is -0.2482 which less than 1 and the value of probability is 0.00 which matched the concept of statistically and co-integrating significant relationship between foreign exchange rate and financial crisis. Besides, the coefficient of D (LNFC (-1)) is significant with value of probability= 0.0099 at level of significance of 1%, 5% and 10% respectively. This represent that for every 1% rise in financial crisis, the foreign exchange rate will drop by 0.0543% on average. Therefore, it shows that there is a negative relationship among foreign exchange rate and financial crisis in the short run.

Same with the findings in sub-Saharan African countries. With the beginning of the worldwide monetary emergency, the monetary standards of many sub-Saharan African nations, including those of many rising and created economies, experienced extraordinary deteriorations. Collapsing trade and financial flows, beginning in mid-2008, led to substantial equalisation of instalment cracks, setting off rapid deterioration and higher volatility of the swapping scale. The exchange rate misfortunes differed to a great extent comparable with the degree and nature of every nation's presentation to exchange and worldwide money related markets, which coming to as high as 40 percent for certain currency forms and under 10 percent for other people. Domestic just as external components recognized the effect. In the years going before the crisis, the majority of the currencies that devalued had delighted in solid increases set off by solid macroeconomic execution and ideal worldwide monetary and budgetary conditions. Furthermore, declining financing costs in advanced nations prompted a rise of noteworthy convey exchange activities to numerous African nations, which because of their solid macroeconomic circumstances and stable exchange rates, attracted significant foreign direct investment and portfolio flows. (Regional Economic Outlook, 2009)

4.4.6 The impact of Political stability on the foreign exchange rate in long run and short run

On the table 4.5 represents that the relationship among the political stability and foreign exchange rate in short run of Malaysia. We can see that the result of coefficient of CointEq (-1) obtained is -0.2482, which are lower than 1.00 and the p-value is 0.0000, which also lower than 1.00, it means to sustain the concept of statistically and a co-integrating significant relationship among political stability and foreign exchange rate in Malaysia.

Since the coefficient of D (LNPS (-1)) is significant and the value of probability is 0.0310 at the level of significant of 5% and 10% respectively. It shows each rise one dummy variable on political issue, on average, would lead the foreign exchange rate decrease by 0.0305%. Therefore, it shows the negative relationship among the absence of political stability and the foreign exchange rate in Malaysia in short run.

There have a lot of economist belief that a country with instability of the political would have a negative effect to the performance of the nations. According to the Alesina and Perotti (1996) indicated that the relationship among the absence of political stability and economic growth is negative. While, the instability of a political system would lead the frequently

switching of policy. Thus, cause the increased volatility and have a negative effect on the performance of economic. Beside that the studies from the Lehkonen and Heimonen (2015) examine the relationship between the democracy and political risk in stock markets and it show a negative relationship between democracy and political risk in return of stock market. They also indicated that reduction of political risk would lead higher return. In the research, Bouraouri and Hammami (2017) had study the relationship among political instability and exchange rates in five Arab countries. The results show that the political issue was directly negative impact on the volatility and value of the domestic currencies of those countries. Svensson (1998) also contends that political shakiness is adversely identified with capital collection (and subsequently financial development) because of it makes vulnerability to the security of property rights. There have some real cases such as according to Fratzscher (2009) analyzed data from 50 developed and emerging countries to studies the affect in global exchange rates during the financial crisis. He pointed out that the financial crisis has caused sharp fluctuations in the global exchange rate structure. Besides, according to Drazen (2000), he gives two reasons why political flimsiness might be influenced financial results which are the instability of political will lead the uncertainty to future institutions and policymakers and instability of political would direct influence on the productivity. It would thus be able to be inferred that a nation with high political instability would lead lower foreign exchange rate.

On the table "4.4" shows the relationship between the political stability and foreign exchange rate in Malaysia in the long run. Since the result of our studies shows that the coefficient of LNPS is not significant and with the value of probability is 0.4142. The result proves that it is not significant relationship among foreign exchange rate and political stability at level of significance 0%, 5% and 10% respectively. Therefore, based on the data shows that the political stability does not influence on foreign exchange rate in Malaysia in long run.

4.5 Conclusion

In this chapter, the Autoregressive Distributed Lag (ARDL) model method and diagnostic are used to investigate the results. As the result would had been communicated in table or figure structure. In additional, the whole results have showed the relationship between the variables by using E-views 10. It can be concluded that only financial crisis and export have the impact on foreign exchange rate in the short run and long run.

Chapter 5: Discussion, Conclusion and Implications

5.0 Introduction

For Chapter 5, the conclusion of the diagnostic check, analysis and hypothesis check in the previous chapter is provided and the main findings that have been observed are also deeply identified. The six independent variables (foreign direct investment, exports, real interest rate, inflation rate, financial crisis and political stability) and their relationship towards the dependent variable which is foreign exchange rate is discussed in detail to have a better sympathetic based on the outcomes. Besides, this chapter also discover the implication based on findings, limitation during this research and the recommendation for future study.

"5.1 Summary"

There is co-integration between the foreign exchange rate and independent variables in this analysis. It indicates that there is a long-run relationship between the variables of the financial crisis and exports. First, using the ARDL method, the coefficients of inflation, foreign direct investment, exports, real interest rates, the financial crisis and political stability can be measured in order to examine the long-run and short-run effects of these variables on foreign exchange rates.

The inflation rate has a positive short-run effect on the foreign exchange rate, but there is no long-run relationship, indicating that the rise in the inflation rate would have a positive impact on the foreign exchange rate. This result similar with Bangladesh from the year 1990 to year 2011 according to Chowdhury and Hossain (2014). Next, Thaddeus and Nnneka (2014) informed that when the inflation rate rises, it will lead domestic currency depreciate finally reduce in the foreign exchange rate.

Next, referred back to the result in previous chapter, it indicates that there is no long run relationship between foreign exchange rate and foreign direct investment (FDI). It shows that there is positive short run relationship which mean that increased in foreign direct investment will carried out the positive effect to foreign exchange rate. This result also sustained by Bilawal et al. (2014), this is because they founded a strong positive correlation between FDI and foreign exchange rate in Pakistan. In Kenya, Kamau Njuguna (2016) also found that positive relationship among foreign exchange rate and FDI. What they have in

common is they believe that high exchange rate can attracting more FDI from other country. Some researchers explained that if the Foreign Direct Investment (FDI) project is serving the local market, then when home currency appreciation, the FDI inflows become positive (Lily et al., 2014).

Moreover, there is a long and short run relationship between the foreign exchange rate and exports. It is positively affect the foreign exchange rate in both long and short run. Comparable to the prior findings of Heim (2010), Parveen et al. (2012), Lera et al. (2016), Ito et al. (1999), Wong and Tang (2017), and Meng (2015), rise in exports prompts an expansion in the exchange rate of the country. This can be applied on account of Malaysia whereby it is expecting to increase the exports of the country to increase the strength of the currency. Since Independence Day till now, Malaysia's manufacturing sector has improved a lot from focusing only on agriculture to other sector such as electronics. Some of the top product being exported by Malaysia including electronics machinery and equipment, petroleum, and computer parts. In addition, an increment in trade discount rate, will likewise re-establish a nation's fare seriousness and in this manner foreign exchange rate appreciate (Meng, 2015).

In addition, there is no long-run relationship between the foreign exchange rate and the real interest rate, but there is a positive impact on the short-run foreign exchange rate, which means that the rise in the real interest rate would have a positive impact on the foreign exchange rate. Chen (2006) also indicates that there is evidence that the interest rates will lead to an advanced probability of transitioning to a more impulsive exchange rate political force, according to the empirical result of Chen (2006). In addition to the Sanchez (2005) basis, there is a positive significant impact on exchange rates and interest rates in euros. He also argued that these two variables rise up in response to the economic shock. It would thus be able to be reasoned that a nation with high interest rate would also have a high foreign exchange rate. Central bankers of developing countries would confront a greater number of difficulties than the created nations because of the exogenous money related stuns.

Besides, it is positive long run relationship among the foreign exchange rate and financial crisis but negative relationship between them which mean that the presence of financial crisis will convey the positive effect to foreign exchange rate in long run but negative effect in short run. This is similar to the other researcher such as Gupta, Mishra, and Sahay (2003), they had analyzed the output behaviour of a sample of 195 currency crisis events in developing countries between 1970 and 1998. There is a positive significant effect among

exchange rates and financial crisis. For other studies, Fratzscher (2009) analyzed data from 50 developed and emerging countries to studies the affect in global exchange rates during the financial crisis. He pointed out that the financial crisis has caused sharp fluctuations in the global exchange rate structure. Next, according to the research in sub-Saharan African countries, the currencies of many sub-Saharan African nations, similar to those of many rising and creating economies, endured huge devaluations with the beginning of the worldwide budgetary emergency. Crumbling exchange and budgetary streams drove to considerable equalization of installments holes, setting off quick deteriorations and higher swapping scale instability, starting in mid-2008.

Lastly, the absent of long run relationship among the foreign exchange rate and political stability but negative relationship in short run which mean that the absence of political stability will cause negative impact on foreign exchange rate. According to the Alesina and Perotti (1996) indicated that the relationship among the absence of political stability and economic development is negative. While, the instability of a political system would lead the frequently switching of policy. Thus, cause the increased volatility and have a negative impact on the performance of economic. In the research, Bouraouri and Hammami (2017) had study the relationship among political instability and exchange rates in five Arab countries. The results show that the political issue was directly negative impact on the volatility and value of the domestic currencies of those countries. Svensson (1998) also contends that political precariousness is contrarily identified with capital collection (and consequently monetary development) because of it makes vulnerability to the security of property rights.

5.2 Implication

This study focuses on the reasons behind the foreign exchange rate changes in Malaysia. In addition to the normal variables (inflation, real interest rate, foreign direct investment FDI and export), we also add the financial crisis and political stability as tests. The results of this study will make great contributions in the following sectors.

First, this study is important for central bank for the regulation in the plan of financial arrangements put the endeavors of strategy producers in creating the ideal monetary government assistance to the general public. The central bank also is an independent arm of the government. It can improve monetary policy based on this research. It allows the central bank to change the factors that affect Malaysia Ringgit MYR 's appreciation and depreciation. For example, if the central bank raises the rate, it increases interest rates in the banking system

in Malaysia. The supply of money is decreased by this action. Compared to other currencies, these findings will make the Malaysia Ringgit MYR stronger. The central bank will benefit from it by acknowledging the influence of various variables on foreign exchange rate adjustments. The reform of the central bank may cause exchange rate changes to advance the economy.

Lastly, investors will benefit from this study. Investors involved in foreign investment can make investment decisions based on this research. It can also for financial specialists and worldwide merchants in supporting and dodge investment losses. When they understand well the relationship among variables and the foreign exchange rate, investors and international traders can plan well during the best dodging period to avoid risks of exchange rate. Besides, the firms also can make decision move their activities to stable exchange rate country to reduce overall exchange rate risk from their company. In addition, if the company's overall risk is reduced, they are likely to change their domestic business and boost the economy. Based on more detailed market status and data, investors can forecast the future and the efficiency of the currency market through this research.

5.3 Limitation

Few limitations were identified while conducting this research to study whether political stability and financial crisis has any significant relationship with Malaysia's exchange rate.

1. In Malaysia, all the conclusions and outcomes of this study must be important and merely noteworthy in assisting Malaysia's policymakers. This is due to the selection and location of information sources used in this analysis on account of Malaysia; thus, it focuses only on the exchange rate of Malaysia and, if applied to other countries, may be inaccurate. Moreover, each nation has its own historical context, distinctive modes of government policy and distinct economic conditions. The outcomes and discoveries of an investigation can in this way change from one nation to nation contingent on the specific nation or district's highlights and rules. When discussing the relationship between the variable exchange rate and non-macroeconomics, which involves political stability and the financial crisis, the discussions and consequences of this study can only be filled in as a kind of context for various countries to focus on.
2. Malaysia's exchange rate is affected not just by the variables discussed in this examination. It can similarly be affected by various variables, for instance, investor's speculation on the exchange rate, the strength of the currency being compared to which

is USD, government debt, pandemic such as COVID 19 and Influenza H1N1, government intervention on the currency, and economic growth or recession.

3. The data used for this investigation are from 1980 to 2014. Malaysia's exchange rate from 1998 to 2005 was pegged to USD and therefore the pegged period was incorporated inside the example size (Goh, 2008). This raises an inquiry on the failure to research the influences of the macroeconomic and political variable problems identifying with the swapping scale as the steady rate somewhere in the range of 1998 and 2005 may not be think about the factors under investigation because of cash limitations. The exact relationship could not be properly analysed.
4. CIA has published an article that defines political stability as "the potential for sudden and significant change in the leadership. policies, or condition of a country." Some researcher defines political stability as the measure of perceptions of the likelihood of a government being destabilised or overthrown by unconstitutionality or violent means including domestic and terrorist violence (Radu, 2015). The definition of political stability that is used in this research is obtained from encyclopedia.com and can be defined by 3 factors, the penchant for system or government change, frequency of political change or savagery in a general public, and instability in policies. This causes some other research to have different result as each researcher define political stability differently.

5.4 Recommendation

Since each nation has its own verifiable foundation, novel types of government strategy and unmistakable economic circumstances. The results and outcomes of a study can therefore diverge from one country to country depending upon the particular country or region's features and rules. Future researchers are encouraged to conduct studies for ease of comparison on exchange rate datasets of a few different currencies of the world such as China and Singapore and to decide the level of utilization of the discoveries got in this investigation.

Future analysts are urged to analyse the effect of other non-macroeconomic elements and the significant microeconomic factors that are not talked about in this investigation. For additional comprehension and conversations on the factors that influence swapping scale where because of The Malaysia's conversion standard is influenced not just by the variables examined in this examination. It can likewise be influenced by different factors. Just as increment the

example size. At the point when the example size increment, it suggests a further extent of opportunity. Accordingly, there would be more precise outcomes.

Future researchers are encouraged to come up with a solution to examine the relationship of exchange rate and other variables with the present of government intervention on the currency. They can correlation on the conversion standard between the 1980s, 1990s and the 2000s. This would give a superior comprehension to analysts on the elements that cause the swapping scale thankfulness and deterioration by the distinction financial and political of contrast timing and may tackle the issue of the irrelevance relationship of the conversion standard and a portion of the autonomous variable.

Since the exploration centers both around macroeconomic variable and related the political issues. It is recommended for future research on the 'true' definition of political stability that can be used to conduct research in the future. Such as more focus on political trend and issues. Therefore, there can be a superior understanding of how factors other than macroeconomic variables have an effect on the quality of conversion.

Reference

Ali, Isahaque & Hatta, Zulkarnain. (2013). 2008 Economics Crisis in Malaysia: Implications on the Economy, Society and Safety Nets. 261-276.

Ariff, M. (1998). The Malaysian economic experience and its relevance for the OIC member countries. Islamic Economic Studies, 6(1), 1-41.

Ang, J. B. (2007). Financial deepening and economic development in Malaysia. Economic Papers: A Journal of Applied Economics and Policy, 26(3), 249-260.

Bank NegaraMalaysia.www.bnm.gov.my.Bashir, Furrukh, and Adeel Luqman. "Long Run Determinants of Real Exchange Rate: An Econometric Analysis from Pakistan."Pakistan Journal of Commerce and Social Sciences8, no. 2 (2014): 471-84.

Barro, R. J. and Gordon, D. B. (1983), "A Positive Theory of Monetary Policy in Natural Rate Model", Journal of Political Economy, Vol: 91(4), pp. 589 610.

Baten, J. (2016). A History of the Global Economy: 1500 to the Present. Cambridge: Cambridge University Press. doi:10.1017/CBO9781316221839

Beh, S., Chong, H., Visionathan, T., Duraisingam, T. and TAN, Y. (2016). DOES MACROECONOMIC AND POLITICAL ISSUE AFFECT EXCHANGE RATE IN MALAYSIA?

OORJITHAM, S. (2015). Guard shot by Red Army in AIA siege in 1975 KL recounts his nightmare The Star Online. Available at: https://www.thestar.com.my/lifestyle/people/2015/03/26/security-guard-sukdave-singh-who-was-shot-during-the-japanese-red-army-siege-at-the-aia-building-in

Brooks, C. (2008). Introductory econometrics for finance. (2nd ed.). Cambridge: Cambridge University Press.

Brys, G., Hubert, M., & Struyf, A. (2004, January). A robustification of the Jarque–Bera test of normality. In COMPSTAT 2004 Symposium, Section: Robustness

Bunjaku, M. F. (2015). Exchange Rate Regimes–A periodical overview and a critical analysis of exchange rate regimes in Kosovo. Academic Journal of Business, Administration, Law and Social Sciences,1(1), 40-46.

Campbell, J., Clarida, R. H. (1987) "The Dollar and Real Interest Rates: An Empirical Investigation" Carnegie-Rochester Conference Series on Public Policy, 27: 103-140.

Calvin Loo. 2015. Positive and Negative Effects Of The Rings It's Shameful Fall That You Didn't Think About. Retrieved from:https://vulcanpost.com/343181/positive-negative-effect-fall-ringgit/

Chandran, V., & Munusamy. (2009). Trade openness and manufacturing growth in Malaysia. Journal of Policy Modeling, 31(5), 637-647.

Cheung, Y. W., & Lai, K. S. (1995). Lag order and critical values of the augmented Dickey Fuller test. Journal of Business & Economic Statistics, 13(3), 277-280.

Chowdhury, M. S. R., & Hossain, M. T. (2014). Determinants of Exchange Rate in Bangladesh: A Case Study. Journal of Economics and Sustainable Development, 5(1), 78-81

Craig, Valentine V (2005). "China's opening to the world: what does it mean for US Banks?" FDIC Banking Review, Vol 17, No 3

Cohen, L. and Manion, L. (1980). Research Methods in Education. London: Groom Helm Ltd.

Cumby, R. E., Obstfeld, M. (1982) "International Interest-rate and Price-level Linkages Under Flexible Exchange Rates: A Review of Recent Evidence" J. F. O. Bilson ve R. C. Marston (eds.) Exchange Rates: Theory and Practic, Univ. Chicago Press: Chicago.

Curry, Timothy (2013). "Assessing International Risk exposures of Foreign Banks," Journal review

Data worldbank.org. (2020). Official exchange rate (LCU per US$, period average) Available at: https://data.worldbank.org/indicator/PA.NUS.FCRF

Dauvin, M. (2014). Energy prices and the real exchange rate of commodityexporting countries. International Economics, 137, 52-72

Department of Statistics Malaysia Official Website (2020). Available at: https://www.dosm.gov.my/v1/index.php?r=column/ctwoByCat&parent_id=115&menu_id=L0pheU43NWJwRWVSZklWdzQ4TlhUUT09

Diebold, F. X., & Kilian, L. (2000). Unit-root tests are useful for selecting forecasting models. Journal of Business & Economic Statistics, 18(3), 265-273.

Dornbusch, R. (1976). Expectations and exchange rate Dynamics. The Journal of Political Economy, 84(6), 1161-1176

Dornbusch, R. (2001), "Fewer Monies, Better Monies", The American Economic Review, Vol: 91(2), pp. 238 242.

Duce, M. and España, B. (2003). Definitions of Foreign Direct Investment (FDI):

a methodological note Bis.org. Available at: https://www.bis.org/publ/cgfs22bde3.pdf

Edison, H. J., Pauls, B. D. (1991) "Re-assessment of The Relationship Between Real Exchange Rates and Interest Rates: 1974-1990" International Finance Discussion Papers no. 408.

Elder, J., & Kennedy, P. E. (2001). Testing for unit roots: what should students be taught? The Journal of Economic Education, 32(2), 137-146.

Fahami, N. A. (2011). The structure of linkages and causal relationships between BRIC and developed equity markets. 2011 International Conference on Information and Finance, 21, 72-77.

Federation of International Trade Associations (2020). Available at: http://www.fita.org/countries/malaysia.html?ma_rubrique=cadre

Feldstein, M. (1986) The Budget Deficit and the Dollar. NBER Macroeconomics Annual, Cambridge.

Feldstein, M. (1989) "The Case Against Trying to Stabilize the Dollar" American Economic Review Papers and Proceedings 79: 36-40.

Frenkel, J. (1979) "On The Mark: A Theory of Floating Exchange Rates Based on Real Interest Differentials" American Economic Review, 69: 610-622.

Ghosh, A. R., Gulde, A-M, Ostry, J. D. and Wolf, H. C. (1997), Does the Nominal Exchange Rate Regime Matter?, NBER Working Paper, No: 5874, pp. 1–35.

Giavazzi, F. and Giovannini, A. (1989), Limiting Exchange Rate Flexibility, Cambridge, Mass.: MIT Press.

Goodell, John W. & Vähämaa, Sami, 2013. "US presidential elections and implied volatility: The role of political uncertainty," Journal of Banking & Finance, Elsevier, vol. 37(3), pages 1108-1117.

Gujarati, D.N., & Porter, D.C. (2009). Basic econometrics. (5th ed.). Boston, MA: McGraw-Hill/Irwin.

Hakkio, C. S. (1986) "Does the Exchange Rate Follow a Random Walk? A Monte Carlo Study of Four Tests for a Random Walk" Journal of International Money and Finance, 5: 221-229.

Hannah Ellis. P, (2018). "Malaysia: Anwar Ibrahim released from prison". The Guardian. Available at: https://www.theguardian.com/world/2018/may/16/malaysia-anwar-ibrahim-released-from-prison

Harding, A. (1990). The 1988 Constitutional Crisis in Malaysia. The International and Comparative Law Quarterly, 39(1), 57-81. Retrieved February 25, 2020, from www.jstor.org/stable/760319

Harris, R. and Sollis, R. (2003), Applied Time Series modelling and Forecasting. Chichester: Wiley and Sons.

Hasan, Z (2002). The 1997-98 Financial Crisis in Malaysia: Causes, Response, and Results. Published in: Islamic Economic Studies, IRTI Jeddah , Vol. 9, No. 2 (2002): pp. 1-16.

Heckman, J. J. (1979). Sample selection bias as a specification error. Economica, 47(1), 153-162.

Hooper, P., Morton, J. (1980) "Fluctuations in The Dollar: A Model of Nominal and Real Exchange Rate Determination" Federal Reserve Board International Finance Discussion Paper no. 168.

Hsing, Y. (2006). Determinants of exchange rate fluctuations for Venezuela: Application of an extended mundell-fleming model. Applied Econometrics and International Development, 6(1), 139-146

Jim Frost. (2017). Heteroscedasticity in Regression Analysis. Retrieved from:https://statisticsbyjim.com/regression/heteroscedasticity-regression/

Johansen, S. and Juselius, K. (1990), "Maximum Likelihood Estimation and Inferences on Cointegration—with Applications to the Demand for Money," Oxford Bulletin of Economics andStatistics, (52):169–210.

Khoon, G. S., & Mah- hui, M. L. (2010). The Impact of the Global Financial Crisis: The Case of Malaysia. TWN Global Economy Series Paper No–26.

Khor, M. (2017). The Asian financial crisis – 20 years later. The Star Online. Available at: https://www.thestar.com.my/opinion/columnists/global-trends/2017/07/03/the-asian-financial-crisis-20-years-later-it-is-useful-to-reflect-on-whether-lessons-have-been-lear

Krugman, Paul R; Obstfeld, Maurice (2009), "International Economics Theory and Policy (8th edition), Pearson Education.

Levy-Yevati, E. and Sturzeegger, F. (2001), Exchange Rate Regimes and Economic Performance, IMF Staff Papers, Vol: 47, pp. 62 98.

Lily, J., Kogid, M., Mulok, D., Thien Sang, L. and Asid, R. (2014). Exchange Rate Movement and Foreign Direct Investment in Asean Economies.

Meese, R. A., Rogoff, K. (1988) "Was It Real? The Exchange Rate-interest Differential Relation Over The Modern Floating Period" Journal of Finance 43(4): 923-948.

Mirchandani, A. (2013). Analysis of macroeconomic determinants of exchange rate volatility in India. International Journal of Economics and Financial Issues, 3(1), 172-179.

Mohammed bin Yusoff. 1988. EXCHANGE RATE CHANGES AND THE TERMS OF TRADE. Retrieved from: http://www.ukm.my/fep/jem/pdf/1988-17/jeko_17-1.pdf

Namjour, R. P., Gholizadeh, M. H., & Haghighi, M. B. N. (2014). Survey the relationship between exchange rates and inflation rate in the first two years of fifth development plan. Universal Journal of Management and Social Sciences, 4(3), 31-40.

Oriavwote, V. E., & Oyovwi, D. O. (2012). The determinants of real exchange rate in Nigeria. International Journal of Economics and Finance, 4(8), 150-160.

Parveen, S., Khan, A. Q., & Ismail, M. (2012). Analysis of the factors affecting exchange rate variability in Pakistan. Academic Research International, 2(3), 670.

Proti, N. P. (2013). Exchange rate fluctuations-shock in Tanzania: An empirical analysis. Scholarly Journal of Business Administration, 3(1), 12-19.

Rahim, R. (2019). Families affected by Memali incident have moved on, says PAS. The Star Online. Available at: https://www.thestar.com.my/news/nation/2019/09/12/families-affected-by-memali-incident-have-moved-on-says-pas

Ramasamy, R., & Abar, S. K. (2015). Influence of macroeconomic variables on exchange rates. Journal of Economics, Business and Management, 3(2), 276-281.

Rose, Peter S; Marquis, Milton H (2012), "Money and Capital Markets(10th edition),"Financial Instruments and Instruments in a Global Market place, McGraw and Hill,

Ruiz-Napoles, P. (2004). The Purchasing Power Parity Theory And Ricardos Theory Of Value. *Contributions to Political Economy*, *23*(1), 65–80. doi: 10.1093/conpec/bzh004

Sargent, T. J., Wallace, N. (1981) "Some Unpleasant Monetarist Arithmetic" Federal Reserve Bank of Minneapolis Quarterly Review, 5: 1-18

Svensson, L.E.O. (2000). Open-economy Inflation Targeting. Journal of International Economics. (50), 155–183.

Thaddeus, E. O., & Nnneka, B. A. (2014). Exchange rate, inflation and interest rates relationships: An autoregressive distributed log analysis. Journal of Economics and Development Studies, 2(2), 263-279.

Tornell, A. and Velasco, A. (1995), "Fiscal Discipline and the Choice of Exchange Rate Regime", European Economic Review, Vol: 39(3-4), pp. 759 770.

Velasco, A. (1996), "Fixed Exchange Rates: Credibility, Flexibility and Multiplicity", European Economic Review, Vol: 40(3-5), pp. 1023 1035.

Woo, W. T. (1985) "The Monetary Approach to Exchange Rate Determination Under Rational Expectations" Journal of International Economics, 18: 1-16.

Zakaria, Z., Hussin, Z. and Noordin, N. (2010). Financial Crisis of 1997/1998 in Malaysia: Causes, Impacts and Recovery Plans. 5(1).

Appendix

Diagnostic Checking

Heteroscedasticity

Heteroskedasticity Test: ARCH

F-statistic	2.266117	Prob. F(1,23)	0.1458
Obs*R-squared	2.242249	Prob. Chi-Square(1)	0.1343

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 07/30/20 Time: 18:01
Sample (adjusted): 1981 2018
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007511	0.003793	1.980292	0.0598
RESID^2(-1)	0.306492	0.203600	1.505363	0.1458

R-squared	0.089690	Mean dependent var	0.011651
Adjusted R-squared	0.050111	S.D. dependent var	0.013399
S.E. of regression	0.013059	Akaike info criterion	-5.762132
Sum squared resid	0.003922	Schwarz criterion	-5.664622
Log likelihood	74.02665	Hannan-Quinn criter.	-5.735087
F-statistic	2.266117	Durbin-Watson stat	2.046585
Prob(F-statistic)	0.145842		

Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

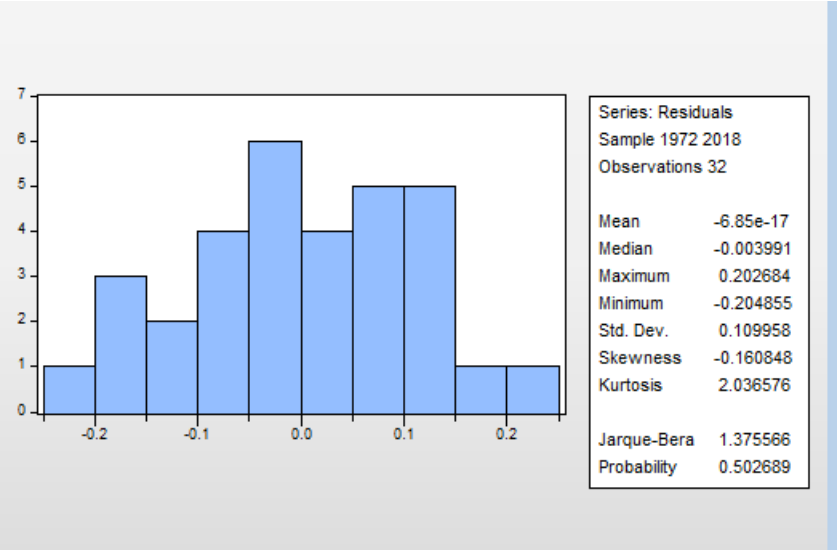
F-statistic	2.029445	Prob. F(2,23)	0.1543
Obs*R-squared	4.800067	Prob. Chi-Square(2)	0.0907

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 07/30/20 Time: 18:02
Sample: 1972 2018
Included observations: 32
Presample and interior missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINF	0.019289	0.024418	0.789957	0.4376
LNPS	0.008566	0.060183	0.142335	0.8881
LNRIR	0.013025	0.028119	0.463208	0.6476
LNX	0.002649	0.021830	0.121341	0.9045
LNFDI	-0.019798	0.066003	-0.299952	0.7669
LNFC	-0.006470	0.082189	-0.078720	0.9379
C	-0.084432	0.590693	-0.142937	0.8876
RESID(-1)	0.565706	0.242650	2.331366	0.0289
RESID(-2)	-0.374661	0.286348	-1.308410	0.2037

R-squared	0.150002	Mean dependent var	-6.85E-17
Adjusted R-squared	-0.145649	S.D. dependent var	0.109958
S.E. of regression	0.117693	Akaike info criterion	-1.209214
Sum squared resid	0.318588	Schwarz criterion	-0.796976
Log likelihood	28.34743	Hannan-Quinn criter.	-1.072569
F-statistic	0.507361	Durbin-Watson stat	1.942306
Prob(F-statistic)	0.838334		

Normality Test



Model Specification

Ramsey RESET Test
Equation: UNTITLED
Specification: LNFER LNINF LNPS LNRIR LNX LNFDI LNFC C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.148356	24	0.8833
F-statistic	0.022009	(1, 24)	0.8833
Likelihood ratio	0.029332	1	0.8640

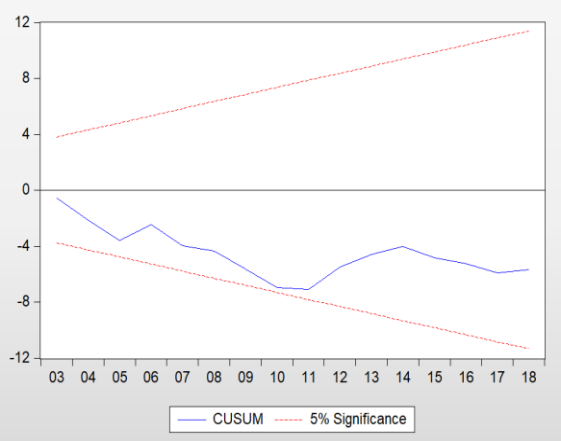
F-test summary:

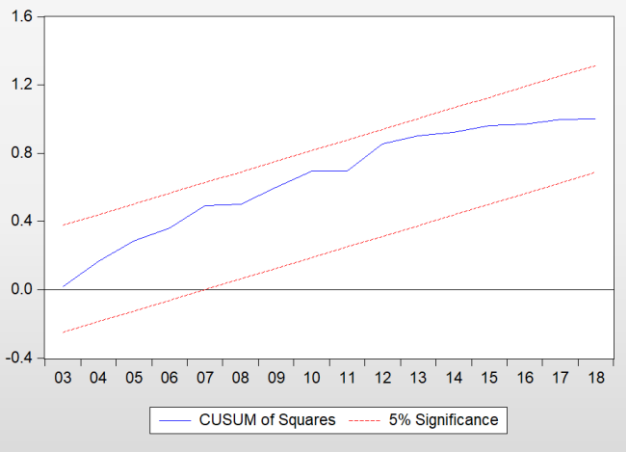
	Sum of Sq.	df	Mean Squares
Test SSR	0.000343	1	0.000343
Restricted SSR	0.374811	25	0.014992
Unrestricted SSR	0.374467	24	0.015603

LR test summary:

	Value
Restricted LogL	25.74709
Unrestricted LogL	25.76175

CUSUM and CUSUMSQ





Bound Test

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFDI	0.072601	0.092488	0.784972	0.4439
LNFC	0.383810	0.175940	2.181479	0.0444
LNPS	0.118652	0.141547	0.838254	0.4142
LNINF	0.001036	0.064822	0.015983	0.9874
LNRIR	-0.003476	0.041196	-0.084390	0.9338
LNX	0.118052	0.048274	2.445451	0.0264
C	-1.923906	1.425495	-1.349641	0.1959

EC = LNFER - (0.0726*LNFDI + 0.3838*LNFC + 0.1187*LNPS + 0.0010 *LNINF -0.0035*LNRIR + 0.1181*LNX -1.9239)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.177464	10%	1.99	2.94
k	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99
Actual Sample Size	45		Finite Sample: n=45	
		10%	2.188	3.254
		5%	2.591	3.766
		1%	3.54	4.931

Unit Root Test

(Level) Intercept (FER, INF, FDI, X, RIR, FC, PS)

Augmented Dickey-Fuller Unit Root Test on LNFER

Null Hypothesis: LNFER has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.737886	0.8271
Test critical values:	1% level	-3.574446	
	5% level	-2.923780	
	10% level	-2.599925	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFER)
Method: Least Squares
Date: 07/31/20 Time: 22:19
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFER(-1)	-0.039066	0.052943	-0.737886	0.4643
C	0.047829	0.057969	0.825076	0.4136

R-squared	0.011698	Mean dependent var	0.005755
Adjusted R-squared	-0.009787	S.D. dependent var	0.072029
S.E. of regression	0.072380	Akaike info criterion	-2.372988
Sum squared resid	0.240991	Schwarz criterion	-2.295021
Log likelihood	58.95172	Hannan-Quinn criter.	-2.343524
F-statistic	0.544475	Durbin-Watson stat	1.436270
Prob(F-statistic)	0.464332		

Augmented Dickey-Fuller Unit Root Test on LNFC

Null Hypothesis: LNFC has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.985556	0.0002
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFC)
Method: Least Squares
Date: 07/31/20 Time: 22:38
Sample (adjusted): 1972 2018
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFC(-1)	-0.842294	0.168947	-4.985556	0.0000
D(LNFC(-1))	0.254480	0.145792	1.745497	0.0879
C	0.089606	0.046104	1.943572	0.0584

R-squared	0.378734	Mean dependent var	0.000000
Adjusted R-squared	0.350494	S.D. dependent var	0.361158
S.E. of regression	0.291064	Akaike info criterion	0.431153
Sum squared resid	3.727599	Schwarz criterion	0.549248
Log likelihood	-7.132101	Hannan-Quinn criter.	0.475593
F-statistic	13.41154	Durbin-Watson stat	1.991680
Prob(F-statistic)	0.000028		

Augmented Dickey-Fuller Unit Root Test on LNFDI

Null Hypothesis: LNFDI has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.895414	0.0000
Test critical values:	1% level	-3.574446	
	5% level	-2.923780	
	10% level	-2.599925	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFDI)
Method: Least Squares
Date: 07/31/20 Time: 22:30
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFDI(-1)	-0.860951	0.146037	-5.895414	0.0000
C	1.002703	0.202346	4.955391	0.0000

R-squared	0.430382	Mean dependent var	-0.000368
Adjusted R-squared	0.417999	S.D. dependent var	0.994615
S.E. of regression	0.758781	Akaike info criterion	2.326568
Sum squared resid	26.48446	Schwarz criterion	2.404534
Log likelihood	-53.83763	Hannan-Quinn criter.	2.356031
F-statistic	34.75591	Durbin-Watson stat	1.985947
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on LNINF

Null Hypothesis: LNINF has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.050865	0.0000
Test critical values:	1% level	-3.574446	
	5% level	-2.923780	
	10% level	-2.599925	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNINF)
Method: Least Squares
Date: 07/31/20 Time: 22:27
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINF(-1)	-1.045511	0.148281	-7.050865	0.0000
C	1.136367	0.235336	4.828693	0.0000

R-squared	0.519405	Mean dependent var	-0.007079
Adjusted R-squared	0.508957	S.D. dependent var	1.686111
S.E. of regression	1.181532	Akaike info criterion	3.212275
Sum squared resid	64.21687	Schwarz criterion	3.290242
Log likelihood	-75.09461	Hannan-Quinn criter.	3.241739
F-statistic	49.71469	Durbin-Watson stat	1.982582
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on LNPS

Null Hypothesis: LNPS has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.625308	0.0087
Test critical values:	1% level	-3.574446	
	5% level	-2.923780	
	10% level	-2.599925	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNPS)
Method: Least Squares
Date: 07/31/20 Time: 22:39
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNPS(-1)	-0.444444	0.122595	-3.625308	0.0007
C	0.277778	0.096920	2.866058	0.0062

R-squared	0.222222	Mean dependent var	0.000000
Adjusted R-squared	0.205314	S.D. dependent var	0.461266
S.E. of regression	0.411196	Akaike info criterion	1.101280
Sum squared resid	7.777778	Schwarz criterion	1.179247
Log likelihood	-24.43072	Hannan-Quinn criter.	1.130744
F-statistic	13.14286	Durbin-Watson stat	2.214286
Prob(F-statistic)	0.000720		

Augmented Dickey-Fuller Unit Root Test on LNRIR

Null Hypothesis: LNRIR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.541935	0.0000
Test critical values:	1% level	-3.574446	
	5% level	-2.923780	
	10% level	-2.599925	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRIR)
Method: Least Squares
Date: 07/31/20 Time: 22:37
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRIR(-1)	-0.791003	0.142731	-5.541935	0.0000
C	0.923133	0.232472	3.970948	0.0002

R-squared	0.400363	Mean dependent var	-0.017631
Adjusted R-squared	0.387327	S.D. dependent var	1.405844
S.E. of regression	1.100402	Akaike info criterion	3.070003
Sum squared resid	55.70074	Schwarz criterion	3.147970
Log likelihood	-71.68007	Hannan-Quinn criter.	3.099467
F-statistic	30.71305	Durbin-Watson stat	2.049328
Prob(F-statistic)	0.000001		

Augmented Dickey-Fuller Unit Root Test on LNX

Null Hypothesis: LNX has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.824990	0.0623
Test critical values:	1% level	-3.574446	
	5% level	-2.923780	
	10% level	-2.599925	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNX)
Method: Least Squares
Date: 07/31/20 Time: 22:34
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNX(-1)	-0.036734	0.013003	-2.824990	0.0070
C	1.000245	0.318236	3.143095	0.0029

R-squared	0.147842	Mean dependent var	0.102959
Adjusted R-squared	0.129316	S.D. dependent var	0.146361
S.E. of regression	0.136570	Akaike info criterion	-1.103185
Sum squared resid	0.857963	Schwarz criterion	-1.025218
Log likelihood	28.47643	Hannan-Quinn criter.	-1.073721
F-statistic	7.980571	Durbin-Watson stat	1.825517
Prob(F-statistic)	0.006970		

(Level) Intercept and trend (FER, INF, FDI, X, RIR, FC, PS)

Augmented Dickey-Fuller Unit Root Test on LNFC

Null Hypothesis: LNFC has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.937907	0.0012
Test critical values:	1% level	-4.165756	
	5% level	-3.508508	
	10% level	-3.184230	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFC)
Method: Least Squares
Date: 07/31/20 Time: 22:46
Sample (adjusted): 1972 2018
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFC(-1)	-0.847536	0.171639	-4.937907	0.0000
D(LNFC(-1))	0.257887	0.147775	1.745135	0.0881
C	0.066589	0.090539	0.735469	0.4660
@TREND("1970")	0.000943	0.003181	0.296486	0.7683

R-squared	0.380001	Mean dependent var	0.000000
Adjusted R-squared	0.336745	S.D. dependent var	0.361158
S.E. of regression	0.294128	Akaike info criterion	0.471664
Sum squared resid	3.719994	Schwarz criterion	0.629124
Log likelihood	-7.084110	Hannan-Quinn criter.	0.530917
F-statistic	8.784985	Durbin-Watson stat	1.991994
Prob(F-statistic)	0.000117		

Augmented Dickey-Fuller Unit Root Test on LNFDI

Null Hypothesis: LNFDI has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.874079	0.0001
Test critical values:	1% level	-4.161144	
	5% level	-3.506374	
	10% level	-3.183002	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFDI)
Method: Least Squares
Date: 07/31/20 Time: 22:43
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFDI(-1)	-0.866074	0.147440	-5.874079	0.0000
C	1.117041	0.290065	3.851002	0.0004
@TREND("1970")	-0.004423	0.007982	-0.554177	0.5822

R-squared	0.434243	Mean dependent var	-0.000368
Adjusted R-squared	0.409099	S.D. dependent var	0.994615
S.E. of regression	0.764561	Akaike info criterion	2.361433
Sum squared resid	26.30494	Schwarz criterion	2.478383
Log likelihood	-53.67439	Hannan-Quinn criter.	2.405628
F-statistic	17.26975	Durbin-Watson stat	1.989774
Prob(F-statistic)	0.000003		

Augmented Dickey-Fuller Unit Root Test on LNFER

Null Hypothesis: LNFER has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.464096	0.0552
Test critical values:	1% level	-4.165756	
	5% level	-3.508508	
	10% level	-3.184230	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFER)
Method: Least Squares
Date: 07/31/20 Time: 22:40
Sample (adjusted): 1972 2018
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFER(-1)	-0.263849	0.076167	-3.464096	0.0012
D(LNFER(-1))	0.316957	0.136376	2.324139	0.0249
C	0.197205	0.063803	3.090829	0.0035
@TREND("1970")	0.003615	0.001099	3.288299	0.0020

R-squared	0.281602	Mean dependent var	0.005939
Adjusted R-squared	0.231481	S.D. dependent var	0.072796
S.E. of regression	0.063817	Akaike info criterion	-2.584336
Sum squared resid	0.175121	Schwarz criterion	-2.426876
Log likelihood	64.73189	Hannan-Quinn criter.	-2.525083
F-statistic	5.618463	Durbin-Watson stat	1.989204
Prob(F-statistic)	0.002430		

Augmented Dickey-Fuller Unit Root Test on LNINF

Null Hypothesis: LNINF has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.247971	0.0000
Test critical values:	1% level	-4.161144	
	5% level	-3.506374	
	10% level	-3.183002	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNINF)
Method: Least Squares
Date: 07/31/20 Time: 22:42
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINF(-1)	-1.071083	0.147777	-7.247971	0.0000
C	1.590860	0.395944	4.017886	0.0002
@TREND("1970")	-0.017409	0.012268	-1.419023	0.1628

R-squared	0.539989	Mean dependent var	-0.007079
Adjusted R-squared	0.519544	S.D. dependent var	1.686111
S.E. of regression	1.168726	Akaike info criterion	3.210167
Sum squared resid	61.46642	Schwarz criterion	3.327117
Log likelihood	-74.04401	Hannan-Quinn criter.	3.254363
F-statistic	26.41190	Durbin-Watson stat	2.017607
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on LNPS

Null Hypothesis: LNPS has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.810467	0.0244
Test critical values:	1% level	-4.161144	
	5% level	-3.506374	
	10% level	-3.183002	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNPS)
Method: Least Squares
Date: 07/31/20 Time: 22:47
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNPS(-1)	-0.513680	0.134808	-3.810467	0.0004
C	0.460343	0.179403	2.565970	0.0137
@TREND("1970")	-0.005685	0.004711	-1.206839	0.2338

R-squared	0.246606	Mean dependent var	0.000000
Adjusted R-squared	0.213122	S.D. dependent var	0.461266
S.E. of regression	0.409171	Akaike info criterion	1.111094
Sum squared resid	7.533936	Schwarz criterion	1.228044
Log likelihood	-23.66625	Hannan-Quinn criter.	1.155289
F-statistic	7.364868	Durbin-Watson stat	2.127197
Prob(F-statistic)	0.001710		

Augmented Dickey-Fuller Unit Root Test on LNRIR

Null Hypothesis: LNRIR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.715748	0.0001
Test critical values:	1% level	-4.161144	
	5% level	-3.506374	
	10% level	-3.183002	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRIR)
Method: Least Squares
Date: 07/31/20 Time: 22:45
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRIR(-1)	-0.842853	0.147462	-5.715748	0.0000
C	1.355400	0.409743	3.307928	0.0019
@TREND("1970")	-0.015127	0.011845	-1.277035	0.2081

R-squared	0.421334	Mean dependent var	-0.017631
Adjusted R-squared	0.395615	S.D. dependent var	1.405844
S.E. of regression	1.092934	Akaike info criterion	3.076070
Sum squared resid	53.75272	Schwarz criterion	3.193020
Log likelihood	-70.82569	Hannan-Quinn criter.	3.120266
F-statistic	16.38252	Durbin-Watson stat	2.011845
Prob(F-statistic)	0.000005		

Augmented Dickey-Fuller Unit Root Test on LNX

Null Hypothesis: LNX has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.142465	0.9107
Test critical values:	1% level	-4.161144	
	5% level	-3.506374	
	10% level	-3.183002	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNX)
Method: Least Squares
Date: 07/31/20 Time: 22:44
Sample (adjusted): 1971 2018
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNX(-1)	-0.064527	0.056480	-1.142465	0.2593
C	1.602507	1.232981	1.299702	0.2003
@TREND("1970")	0.003127	0.006180	0.505888	0.6154

R-squared	0.152661	Mean dependent var	0.102959
Adjusted R-squared	0.115001	S.D. dependent var	0.146361
S.E. of regression	0.137688	Akaike info criterion	-1.067189
Sum squared resid	0.853111	Schwarz criterion	-0.950239
Log likelihood	28.61254	Hannan-Quinn criter.	-1.022993
F-statistic	4.053701	Durbin-Watson stat	1.785618
Prob(F-statistic)	0.024060		

First difference, intercept (FER,INF,FDI, X, RIR, FC, PS)

Augmented Dickey-Fuller Unit Root Test on D(LNFC)

Null Hypothesis: D(LNFC) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.397788	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFC,2)
Method: Least Squares
Date: 07/31/20 Time: 22:57
Sample (adjusted): 1973 2018
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNFC(-1))	-1.600000	0.216281	-7.397788	0.0000
D(LNFC(-1),2)	0.371429	0.141589	2.623286	0.0120
C	0.000000	0.050421	0.000000	1.0000

R-squared	0.640816	Mean dependent var	0.000000
Adjusted R-squared	0.624110	S.D. dependent var	0.557773
S.E. of regression	0.341970	Akaike info criterion	0.754806
Sum squared resid	5.028571	Schwarz criterion	0.874066
Log likelihood	-14.36055	Hannan-Quinn criter.	0.799482
F-statistic	38.35795	Durbin-Watson stat	2.122403
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on D(LNFDI)

Null Hypothesis: D(LNFDI) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.785708	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFDI,2)
Method: Least Squares
Date: 07/31/20 Time: 22:53
Sample (adjusted): 1973 2018
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNFDI(-1))	-1.879099	0.241352	-7.785708	0.0000
D(LNFDI(-1),2)	0.338958	0.144089	2.352424	0.0233
C	0.008286	0.132106	0.062720	0.9503

R-squared	0.735303	Mean dependent var	-0.003581
Adjusted R-squared	0.722991	S.D. dependent var	1.702123
S.E. of regression	0.895855	Akaike info criterion	2.680918
Sum squared resid	34.50993	Schwarz criterion	2.800177
Log likelihood	-58.66110	Hannan-Quinn criter.	2.725593
F-statistic	59.72485	Durbin-Watson stat	2.140635
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on D(LNFER)

Null Hypothesis: D(LNFER) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.098771	0.0001
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFER,2)
Method: Least Squares
Date: 07/31/20 Time: 22:50
Sample (adjusted): 1972 2018
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNFER(-1))	-0.742355	0.145595	-5.098771	0.0000
C	0.004076	0.010434	0.390670	0.6979

R-squared	0.366175	Mean dependent var	-0.001293
Adjusted R-squared	0.352090	S.D. dependent var	0.088413
S.E. of regression	0.071166	Akaike info criterion	-2.405985
Sum squared resid	0.227906	Schwarz criterion	-2.327255
Log likelihood	58.54064	Hannan-Quinn criter.	-2.376358
F-statistic	25.99747	Durbin-Watson stat	1.889631
Prob(F-statistic)	0.000007		

Augmented Dickey-Fuller Unit Root Test on D(LNINF)

Null Hypothesis: D(LNINF) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.815313	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNINF,2)
Method: Least Squares
Date: 07/31/20 Time: 22:51
Sample (adjusted): 1973 2018
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNINF(-1))	-2.171907	0.246379	-8.815313	0.0000
D(LNINF(-1),2)	0.401522	0.140407	2.859701	0.0065
C	0.042587	0.198303	0.214757	0.8310

R-squared	0.809396	Mean dependent var	-0.013192
Adjusted R-squared	0.800531	S.D. dependent var	3.010435
S.E. of regression	1.344519	Akaike info criterion	3.492943
Sum squared resid	77.73246	Schwarz criterion	3.612203
Log likelihood	-77.33770	Hannan-Quinn criter.	3.537619
F-statistic	91.29950	Durbin-Watson stat	1.961338
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on D(LNPS)

Null Hypothesis: D(LNPS) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-10.13556	0.0000
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNPS,2)
Method: Least Squares
Date: 07/31/20 Time: 22:58
Sample (adjusted): 1972 2018
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNPS(-1))	-1.445498	0.142616	-10.13556	0.0000
C	-0.009479	0.062408	-0.151882	0.8800

R-squared	0.695389	Mean dependent var	0.021277
Adjusted R-squared	0.688620	S.D. dependent var	0.765829
S.E. of regression	0.427343	Akaike info criterion	1.179164
Sum squared resid	8.218009	Schwarz criterion	1.257894
Log likelihood	-25.71035	Hannan-Quinn criter.	1.208790
F-statistic	102.7295	Durbin-Watson stat	1.853400
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on D(LNRIR)

Null Hypothesis: D(LNRIR) has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.121146	0.0000
Test critical values:	1% level	-3.584743	
	5% level	-2.928142	
	10% level	-2.602225	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRIR,2)
Method: Least Squares
Date: 07/31/20 Time: 22:55
Sample (adjusted): 1974 2018
Included observations: 45 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNRIR(-1))	-2.558168	0.359235	-7.121146	0.0000
D(LNRIR(-1),2)	0.847347	0.267093	3.172481	0.0029
D(LNRIR(-2),2)	0.323862	0.144617	2.239448	0.0306
C	-0.027947	0.172226	-0.162267	0.8719

R-squared	0.791777	Mean dependent var	0.084890
Adjusted R-squared	0.776541	S.D. dependent var	2.437574
S.E. of regression	1.152276	Akaike info criterion	3.206043
Sum squared resid	54.43738	Schwarz criterion	3.366636
Log likelihood	-68.13598	Hannan-Quinn criter.	3.265911
F-statistic	51.96807	Durbin-Watson stat	2.009846
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on D(LNX)

Null Hypothesis: D(LNX) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.607800	0.0000
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNX,2)
Method: Least Squares
Date: 07/31/20 Time: 22:54
Sample (adjusted): 1972 2018
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNX(-1))	-0.814374	0.145222	-5.607800	0.0000
C	0.086547	0.025995	3.329395	0.0017

R-squared	0.411360	Mean dependent var	0.002623
Adjusted R-squared	0.398279	S.D. dependent var	0.187847
S.E. of regression	0.145714	Akaike info criterion	-0.972721
Sum squared resid	0.955466	Schwarz criterion	-0.893991
Log likelihood	24.85894	Hannan-Quinn criter.	-0.943094
F-statistic	31.44742	Durbin-Watson stat	1.931024
Prob(F-statistic)	0.000001		

First Difference, intercept and with trend

Augmented Dickey-Fuller Unit Root Test on D(LNFC)

Null Hypothesis: D(LNFC) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.321531	0.0000
Test critical values:	1% level	-4.170583	
	5% level	-3.510740	
	10% level	-3.185512	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFC,2)
Method: Least Squares
Date: 07/31/20 Time: 23:06
Sample (adjusted): 1973 2018
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNFC(-1))	-1.601976	0.218803	-7.321531	0.0000
D(LNFC(-1),2)	0.372417	0.143204	2.600608	0.0128
C	0.025193	0.110445	0.228105	0.8207
@TREND("1970")	-0.000988	0.003842	-0.257133	0.7983

R-squared	0.641381	Mean dependent var	0.000000
Adjusted R-squared	0.615765	S.D. dependent var	0.557773
S.E. of regression	0.345745	Akaike info criterion	0.796712
Sum squared resid	5.020668	Schwarz criterion	0.955724
Log likelihood	-14.32437	Hannan-Quinn criter.	0.856279
F-statistic	25.03863	Durbin-Watson stat	2.124103
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on D(LNFDI)

Null Hypothesis: D(LNFDI) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.702720	0.0000
Test critical values:	1% level	-4.170583	
	5% level	-3.510740	
	10% level	-3.185512	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFDI,2)
Method: Least Squares
Date: 07/31/20 Time: 23:02
Sample (adjusted): 1973 2018
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNFDI(-1))	-1.879850	0.244050	-7.702720	0.0000
D(LNFDI(-1),2)	0.339128	0.145690	2.327739	0.0248
C	0.071713	0.289265	0.247916	0.8054
@TREND("1970")	-0.002487	0.010061	-0.247205	0.8060

R-squared	0.735687	Mean dependent var	-0.003581
Adjusted R-squared	0.716808	S.D. dependent var	1.702123
S.E. of regression	0.905799	Akaike info criterion	2.722942
Sum squared resid	34.45979	Schwarz criterion	2.881954
Log likelihood	-58.62766	Hannan-Quinn criter.	2.782509
F-statistic	38.96756	Durbin-Watson stat	2.142625
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on D(LNFER)

Null Hypothesis: D(LNFER) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.152968	0.0006
Test critical values:	1% level	-4.165756	
	5% level	-3.508508	
	10% level	-3.184230	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFER,2)
Method: Least Squares
Date: 07/31/20 Time: 22:59
Sample (adjusted): 1972 2018
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNFER(-1))	-0.771722	0.149763	-5.152968	0.0000
C	-0.012968	0.022073	-0.587502	0.5599
@TREND("1970")	0.000690	0.000787	0.876892	0.3853

R-squared	0.377061	Mean dependent var	-0.001293
Adjusted R-squared	0.348746	S.D. dependent var	0.088413
S.E. of regression	0.071349	Akaike info criterion	-2.380757
Sum squared resid	0.223992	Schwarz criterion	-2.262662
Log likelihood	58.94778	Hannan-Quinn criter.	-2.336317
F-statistic	13.31646	Durbin-Watson stat	1.873142
Prob(F-statistic)	0.000030		

Augmented Dickey-Fuller Unit Root Test on D(LNINF)

Null Hypothesis: D(LNINF) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.852228	0.0000
Test critical values:	1% level	-4.170583	
	5% level	-3.510740	
	10% level	-3.185512	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNINF,2)
Method: Least Squares
Date: 07/31/20 Time: 23:01
Sample (adjusted): 1973 2018
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNINF(-1))	-2.186643	0.247016	-8.852228	0.0000
D(LNINF(-1),2)	0.409556	0.140748	2.909864	0.0058
C	0.413183	0.430527	0.959716	0.3427
@TREND("1970")	-0.014522	0.014972	-0.969978	0.3376

R-squared	0.813573	Mean dependent var	-0.013192
Adjusted R-squared	0.800256	S.D. dependent var	3.010435
S.E. of regression	1.345445	Akaike info criterion	3.514268
Sum squared resid	76.02930	Schwarz criterion	3.673280
Log likelihood	-76.82815	Hannan-Quinn criter.	3.573835
F-statistic	61.09624	Durbin-Watson stat	1.995002
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on D(LNPS)

Null Hypothesis: D(LNPS) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-10.02837	0.0000
Test critical values:	1% level	-4.165756	
	5% level	-3.508508	
	10% level	-3.184230	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNPS,2)
Method: Least Squares
Date: 07/31/20 Time: 23:07
Sample (adjusted): 1972 2018
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNPS(-1))	-1.444313	0.144023	-10.02837	0.0000
C	-0.053782	0.131965	-0.407548	0.6856
@TREND("1970")	0.001773	0.004641	0.382087	0.7042

R-squared	0.696397	Mean dependent var	0.021277
Adjusted R-squared	0.682596	S.D. dependent var	0.765829
S.E. of regression	0.431457	Akaike info criterion	1.218405
Sum squared resid	8.190833	Schwarz criterion	1.336499
Log likelihood	-25.63251	Hannan-Quinn criter.	1.262844
F-statistic	50.46295	Durbin-Watson stat	1.861285
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on D(LNRIR)

Null Hypothesis: D(LNRIR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.023742	0.0000
Test critical values:	1% level	-4.175640	
	5% level	-3.513075	
	10% level	-3.186854	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRIR,2)
Method: Least Squares
Date: 07/31/20 Time: 23:05
Sample (adjusted): 1974 2018
Included observations: 45 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNRIR(-1))	-2.557092	0.364064	-7.023742	0.0000
D(LNRIR(-1),2)	0.846419	0.270782	3.125835	0.0033
D(LNRIR(-2),2)	0.323409	0.146575	2.206438	0.0332
C	-0.005499	0.390262	-0.014089	0.9888
@TREND("1970")	-0.000862	0.013410	-0.064294	0.9491

R-squared	0.791798	Mean dependent var	0.084890
Adjusted R-squared	0.770978	S.D. dependent var	2.437574
S.E. of regression	1.166531	Akaike info criterion	3.250385
Sum squared resid	54.43176	Schwarz criterion	3.451125
Log likelihood	-68.13365	Hannan-Quinn criter.	3.325218
F-statistic	38.03038	Durbin-Watson stat	2.010542
Prob(F-statistic)	0.000000		

Augmented Dickey-Fuller Unit Root Test on D(LNX)

Null Hypothesis: D(LNX) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.514658	0.0000
Test critical values:	1% level	-4.165756	
	5% level	-3.508508	
	10% level	-3.184230	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNX,2)
Method: Least Squares
Date: 07/31/20 Time: 23:03
Sample (adjusted): 1972 2018
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNX(-1))	-0.956604	0.146839	-6.514658	0.0000
C	0.205391	0.051366	3.998537	0.0002
@TREND("1970")	-0.004167	0.001584	-2.630391	0.0117

R-squared	0.491346	Mean dependent var	0.002623
Adjusted R-squared	0.468225	S.D. dependent var	0.187847
S.E. of regression	0.136983	Akaike info criterion	-1.076213
Sum squared resid	0.825635	Schwarz criterion	-0.958119
Log likelihood	28.29101	Hannan-Quinn criter.	-1.031773
F-statistic	21.25137	Durbin-Watson stat	2.012251
Prob(F-statistic)	0.000000		