MONETARY POLICY DYNAMICS IMPACT ON FOREIGN DIRECT INVESTMENT IN MALAYSIA

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BY

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DECLARATION

We hereby declare that:

(1) This undergraduate FYP 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 FYP 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 FYP.

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ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
ARCH	Autoregressive Conditional Heteroskedasticity
ARDL	Autoregressive Distributed Lag
BNM	Bank Negara Malaysia
CUSUM	Cumulative Sum
CUSUMSQ	Cumulative Sum of Square
ECT	Error Correction Term
FDI	Foreign Direct Investment
FER	Foreign Exchange Rate
GDP	Gross Domestic Product
GST	Goods and Services Tax
IMF	International Monetary Fund
LM	Lagrange Multiple
MYR	Malaysian Ringgit

OLS   Ordinary Least Square

OMO   Open Market Operations

OPR   Overnight Policy Rate

PP   Phillips-Perron

RIR   Real Interest Rate

TAX   Taxation

TO   Trade Openness

UNEMP   Unemployment

VAT   Value Added Tax

PREFACE

This FYP is completed by a group of final year students from Bachelor of Finance (Honours), as this research is required from our university, Universiti Tunku Abdul Rahman (Kampar campus). This research is related to the monetary policy dynamics impact on the foreign direct investment inflow in Malaysia. We have employed the quantitative data analysis, from the period 1993 to 2022, consisted of 30 years. Based on the ARDL results, this research aimed to investigate the long-term impact of real interest rate, foreign exchange rate, taxation, trade openness and unemployment towards the attractiveness level of foreign direct investment inflow in Malaysia.

We hoped that this research can provide readers, policymakers or other related parties a better comprehensive and valuable insights about the factors that impact the foreign direct investment inflows in Malaysia, consider our research as reference for their further studies.

ABSTRACT

The objective of this project is to explore the monetary policy dynamics impact on foreign direct investment (FDI) in Malaysia. Five independent variables are employed in this project. The independent variables are real interest rate (RIR), foreign exchange rate (FER), taxation (TAX), trade openness (TO), and unemployment (UNEMP). Five of the independent variables are all crucial to examine the attractiveness level of foreign direct investment inflow in Malaysia. Time series analysis is utilized in this research and the data collection involved 30 years, from 1993 to 2022. Based on the data collected, the ARDL model is performed using Eviews. The ARDL explained the long run impact on the five independent variables towards foreign direct investment inflows in Malaysia. The regression model has been proven to be to be stationary through the unit root test. By conducting the Breusch-Godfrey serial correlation LM test, ARCH test, CUSUM and CUSUMSQ test, the model is confirmed to exclude autocorrelation, heteroscedasticity and unstable issues. The results of this research demonstrated that different factors bring different impact in attracting foreign direct investment. Real interest rate, foreign exchange rate and trade openness explained a negative correlation on the foreign direct investment. In brief, the findings and discussions of this project can act as a reference for investors, companies, policy makers and future researchers to gain valuable insights

CHAPTER 1: INTRODUCTION

1.0 Introduction

The objective for this research is to investigate the impact of monetary policy towards foreign direct investment (FDI) inflows in Malaysia from 1993 to 2022. The research background will be explained. Subsequently, the problem statement will be discussed. Next, the research objectives, questions and significant of study will be listed.

1.1 Research Background

Monetary policy is how the government handles money and keeps the economy in check (Daghr, 2020). It also involves using different methods to affect the amount of money moving around in the economy. Monetary policy has several goals for instance to boost the economy and keep the currency stable, to control how much money is created, to bring in enough foreign investment and to protect the value of the national currency and foreign exchange reserves (Murwani et al., 2019). There are three tools of monetary policy to implement monetary policy, which are open market operation, discount rate and reserve requirement. The Central Bank of Malaysia known as Bank Negara Malaysia (BNM), is responsible to maintain monetary system stable (Ali & Oseni, 2017). To ensure the economy grows, BNM uses interest rates to keep prices stable. The bank has its own Monetary Policy Committee (MPC), under the Central Bank of Malaysia Act 2009. It is responsible to control the policy interest rate in Malaysia, named as Overnight Policy Rate (OPR). During the COVID-19 pandemic in 2020, the Monetary Policy Committee decided to cut the OPR to 1.75% (Fischer, 2021). This aimed to help the economy recover in a lasting way. The decision came as a response to fall inflation, shrink economy, and rise unemployment (Fischer, 2021).

Foreign direct investment (FDI) has been one of the most dynamic forms of capital flows into the global economy in recent decades (George & Harandi, 2013). There has been increased variety of investments and trying to attract multinational enterprises (MNEs) between different economy sectors. Policy makers believe that FDI is useful in sustaining the development and growth of a nation over time as compared to other types of investment flows (Haudi et al., 2020). FDI is a major way to spread ideas within a host country in terms of infrastructure technology, managerial capabilities and a channel to convey new ideas to enable a host country to modify in their contexts. In addition, Ahmed and Ibrahim (2019) mentioned that developing countries such as Malaysia has reported a positive effect on their growth and development process by encouraging FDI. With FDI, it creates more benefits that outweigh the disadvantages such as raising the level of welfare and promoting the economic growth prospects in Malaysia.

In Southeast Asian, Malaysia has been the most prosperous in FDI activities, since Malaysia had set up various policy instrument to attract FDI inflow (United Nations, 2021). Malaysia has been top fifth in Asia for Foreign Direct Investment outflow and inflow. Over the last ten years, there have been two investment trends existed (George & Harandi, 2013). Firstly, there has been an increasingly diversified portfolios in varied economic segments. Secondly, additional capital spending has been shifted towards technology intensive and high value schemes within diverse industrials (George & Harandi, 2013). In Malysia, the government is seeking sources to attract more FDI since FDI can support the financial plans and reflect the economic health. By 1990, the phenomenal growth of global FDI had made FDI an important and dynamic component of development policy in both developing and developed countries (Kalam, 2018). Malaysia has formulated strategies to encourage the FDI inflows such as introduced Promotion of Investment Act in 1986 to allow a greater percentage foreign equity ownership in a company, which led to free trading concept in country (Kalam, 2018).

Furthermore, the GDP per capita in 2000 grew to four times its 1970 level due to expansion of foreign industry in Malaysia (Kalam, 2018). Rahman et al. (2019) stated that the manufacturing sector in Malaysia plays a crucial role in attracting a large share of FDI. The relocation of global companies to Malaysia has also drive the substantial FDI growth in the country. Companies from Taiwan, Japan, United States, and South Korea have moved operations to Malaysia to reduce production costs and take advantage of lower wages compared to their home countries (Haudi et al., 2020). According to the Department of Statistics Malaysia (2011), FDI in Malaysia rose from RM129 billion to RM270 billion between 2001 and 2009. The growth rate hit 109% in earlier years, while yearly growth numbers revealed that FDI went up by RM16.2 billion, which equals 6.4%. On the other hand, the nation's reinvested profits and equity funds made up the biggest share reaching about RM250.8 billion (Department of Statistics Malaysia, 2011).

FDI has a significant impact on the Malaysian economy. To boost economic growth, Malaysia needs to expand its production capacity, which increases its capital structure (Ma'in & Isa, 2020). FDI also helps to increase the exports in Malaysia. The Malaysian Ministry of Finance reported that manufactured exports made up 53.6% of total exports in 1990 (Kalam, 2018). FDI also brings technology transfer and creates jobs, reducing unemployment through economic expansion Andrei, (2018) claimed that FDI inflows into the industrial sector results a shifting from an agricultural to an industrial economy in Malaysia (Zhang, 2020). Total exports grew to 73.5% in 2002, thus encouraged career opportunities in manufacturing sectors. The controversy is that that FDI may bring negative effect on the economy. For instance, FDI may crowd out the domestic investment, subsequently making domestic investment hard to sustain and develop (Aust et al., 2020). Moreover, if over-supporting foreign investment, it may result in an injustice competition by allowing foreign entities to dominate the economy (Paul & Feliciano-Cestero, 2021). Hence, the competitive position of local investment will be threatened.
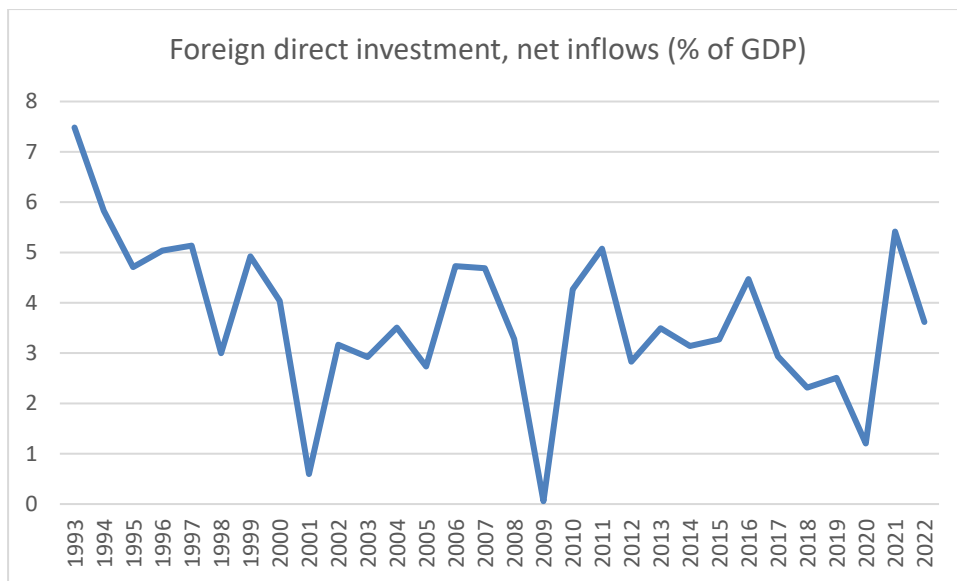
Figure 1.1.1: Net Inflows of Foreign Direct Investment in Malaysia from 1993 – 2022 (% of GDP$). Adapted fromThe World Bank, World Development Indicators (2024).

Based on the Figure 1.1.1, the FDI inflows in Malaysia experienced a significant decrease from the period 1993 to 2022. Especially in the period of 2001, 2009 and 2020. In 2009, the collapse of dot-com bubble has led to an economic downturn (Ushman, 2023). Malaysia suffered a reduction due to the global financial crisis that began in 2008 (Tham et al., 2018). In addition, due to the Covid-19 pandemic and movement restrictions on a global scale, the FDI in Malaysia endured a decrease in 2020. Therefore, it is essential to study the factors that affect the attractiveness of FDI, thus imply policies increase the FDI.

1.2 Problem Statement

Paul and Feliciano-Cestero (2021) stated that, in the modern globalization, many countries recognized that foreign direct investment is crucial for economic and business development in the long-term goal. Especially for the development countries such as Indonesia, Malaysia, Bangladesh and Pakistan, the employment

rate, opportunities, and infrastructure development can be stimulated by attracting the foreign direct investment (Haudi et al., 2020). According to George and Harandi (2013), investors have considered Malaysia as a targeted trading place in Southeast Asia for foreign direct investment. The Malaysia government has put an effort to drive the foreign direct investment. Based on the data recorded in 2022, Malaysia has the statistic of $36.9 billion in FDI, consists of 55.1 percent and 78.3 percent of the total investment included in sectors for services and manufacturing (Malaysia - United States Department of State, 2023).

However, there are some aspects to be aware of when undertaking the foreign direct investment. For instance, many studies investigate that interest rate has a great impact on FDI (Masri et al., 2022; Nguyen, 2023; Karahan & Bayır, 2022). The OPR in Malaysia will be reviewed in every two months, adjusted in basis points (Taderera, 2021). Higher interest rate refers to higher potential return. While a lower interest rate accompanies with lower cost in borrowing also can encourage FDI. Therefore, this study will fill in the gap, concentrate on how varying levels of interest rate (either high or low), will bring in more FDI inflows in Malaysia.

In addition, Halim (2023) mentioned that in 2022, the portfolio outflows increased by 25% from the fourth quarter due to the volatility of Ringgit. Foreign investors sold out their equities in Bursa Malaysia for 12 consecutive weeks. The fluctuations of Malaysian Ringgit were affected by frequent raised in interest rate by the U.S. federal Reserve (Halim, 2023). When the Malaysian Ringgit fluctuates significantly, investors find it harder to predict the future return, as the volatility of exchange rate can erode the profit of investment. If the Ringgit depreciates, foreign investors may experience a decline of return when they convert to home currency. Thus, we need study how the foreign exchange rate changes capture the FDI flows.

Apart from that, Malaysia reported more than 187,000 alumni remained unemployed in 2022, while 40.5% of graduates were underemployed in semi-professional and basic-skilled roles (Edwin , 2024). In 2023, 307,200 young Malaysians between 15 and 24 years old are unemployed, which indicates 10.6 percent of them were jobless (Edwin, 2024). For the bigger group of 15 to 30-year-olds was 6.4 percent, consisted of 432,100 young people were unemployed. Meanwhile, job creation slowed down in 202,3 created more hurdles for younger generation to seek a job position. Foreign investors take into consideration the productivity of labour in terms of costs and skills. When jobs are scarce, wages often stagnate. This may be attractive to some foreign investors because workers cost less. However, it will also lead to bigger issues such as low living standards and consumer demand (Edwin, 2024). These problems can negatively affect the long-term growth prospects for investors. Hence, this study will address how the level of unemployment affects the FDI in Malaysia.

Moreover, GOV.UK (2021) stated that trade to GDP in Malaysia stood at 147% in 2022 based on World Bank. It placed 27th in the 2023 IMD World Competitiveness Report. Malaysia also plays a crucial role in the global semiconductor supply chain. It has a 7% share of the global market, handles 13% of global chip assembly, testing and packaging, and supplies 20% of the US chip imports. It also leads in rubber glove production, with about 65% of the global market share. Although open trade brings in high imports, but the local businesses will struggle to compete with foreign products (GOV.UK, 2021). This can weaken the competitive advantages of domestic forms and make Malaysia less attractive to foreign direct investment. High trade openness also led to overdependence on imports and exports instead of investing long-term in local economy (GOV.UK, 2021). As consequent, it restricted the development of local industries and infrastructure that can benefit from stable foreign direct investment.

Furthermore, regulatory arbitrage exists in foreign direct investment when the multinational companies invest in countries with a more beneficial regulatory framework to optimize profit and minimize costs (Keita et al., 2023). Therefore,

Malaysia has employed policies such as double deduction, tax deduction and allowance to promote the inflow of FDI (Taha et al., 2018). Taha et al. (2018) mentioned that the tax framework in the 1980s and 1990s was the core factor that boosted the infrastructure of the manufacturing sector. Nevertheless, it may lead to tensions among countries if one believes that the counterparty is offering an injustice advantage with the regulations or policies employed (Sosnowski, 2020). As a result, it is essential for Malaysia to implement the regulatory system related to taxation wisely to enhance the global competitiveness and promote mutual friendship with foreign countries. There are few existing studies on how taxation affects FDI inflows (Alves, 2019; Shafiq et al., 2021; Soloman et al., 2015; Shahrudin et al., 2011; Eiya & Okaiwele, 2019). However, there is a lack of research on the value added tax (VAT) towards FDI inflows. The previous studies focus more on the type of corporate tax, made the research gap to occur. Therefore, this study will mainly focus on the VAT in Malaysia since manufacturers will transfer the VAT to consumers, making the price level increases. Consequently, higher price level may reduce the consumer demand, making the market less attractive in investments (Ojeka et al., 2021; Alves, 2019).

In short, there are limited researches on how varying interest rate and value added tax will capture the FDI in Malaysia. Hence, this project will be conducted to fill in the research gaps. The foreign direct investment in Malaysia serves as the response variable. Furthermore, real interest rate, foreign exchange rate, taxation, trade openness and unemployment as the independent variables to investigate the relationship with FDI. Through this research, it may stimulate the economic development in Malaysia, as they have a precise concept on the monetary policy dynamics impact towards foreign direct investment. After investigating the potential variables, it is believed that the government will take action on implementing a good regulatory framework on the financial market and ecosystem.

1.3 Research Objectives

1.3.1 General Objective

The general objective of this study is to examine the relationship between the monetary policy that impacts the Foreign Direct Investment (FDI) inflows in Malaysia from 1993 to 2022.

1.3.2 Specific Objectives

To fulfill the general objective, five specific objectives are constructed.

1) To examine whether there is a significant relationship between real interest rate and foreign direct investment inflows in Malaysia from 1993 to 2022.

2) To examine whether there is a significant relationship between foreign exchange rate and foreign direct investment inflows in Malaysia from 1993 to 2022.

3) To examine whether there is a significant relationship between taxation and foreign direct investment inflows in Malaysia from 1993 to 2022.

4) To examine whether there is a significant relationship between trade openness and foreign direct investment inflows in Malaysia from 1993 to 2022.

5) To examine whether there is a significant relationship between unemployment and foreign direct investment inflows in Malaysia from 1993 to 2022.

1.4 Research Questions

To clarify the aim of our research, the following research questions are formulated.

1) Is there a significant relationship between real interest rate and foreign direct investment inflows in Malaysia from 1993 to 2022?

2) Is there a significant relationship between foreign exchange rate and foreign direct investment inflows in Malaysia from 1993 to 2022?

3) Is there a significant relationship between taxation and foreign direct investment inflows in Malaysia from 1993 to 2022?

4) Is there a significant relationship between trade openness and foreign direct investment inflows in Malaysia from 1993 to 2022?

5) Is there a significant relationship between unemployment and foreign direct investment inflows in Malaysia from 1993 to 2022?

1.5 Significance of the Study

First, it is necessary to conduct this research because this research can effectively help investors improve their risk management. Currency risk is a concern for investors due to fluctuations in exchange rates, which are impacted by shifts in monetary policy. Furthermore, changes in interest rates brought about by monetary policy choices impact the cost of capital for foreign direct investment (FDI) projects. As a result, investors are prompted to think about interest rate risk mitigation techniques such as financing source diversification. Additionally, uncertainty about monetary policy measures in the future can cause market volatility, which affects investment choices. Through an evaluation of Malaysia's monetary policy framework's clarity and openness, investors may determine the degree of policy uncertainty and modify their investment portfolios correspondingly. Investors can modify their strategy by using sectoral analysis to help identify industries that are susceptible to changes in monetary policy. Investors can also make proactive

modifications to their investment selections by anticipating future policy moves through the analysis of policymakers' responses to economic data. Taking all factors into account, research on how Malaysia's monetary policy affects foreign direct investment (FDI) provides investors with ways to manage risks so that they can prepare to achieve their goals.

Secondly, the findings of this study can provide investors with valuable insights into how changes in monetary policy influence affect currency value. Investors can evaluate the Malaysian Ringgit's (MYR) appeal to foreign investors by examining the effects of monetary policy changes, such as interest rate adjustments or currency market interventions, on the currency's value about other currencies. Foreign investors' decision to invest in Malaysia may be influenced by fluctuations in the currency rate as they can have a direct effect on the expenses and profits of their investments. Furthermore, studies might look at how monetary policy decisions affect investors' perceptions of currency predictability and stability. Maintaining stability through clear and consistent monetary policies may boost investor confidence in the MYR and draw in foreign direct investment. Furthermore, knowing how monetary policy and exchange rate policy interact can help policymakers better control currency dynamics to meet economic goals and draw in foreign direct investment.

Thirdly, the findings of this study help economists to learn more about economic stability and growth. Macroeconomic stability is sustained by FDI-attracting, effective monetary policies that keep inflation, interest rates, and currency rates constant. Increasing FDI inflows provide capital to the economy, resulting in multiplier effects, job creation, and technical transfer. Improved productivity, competitiveness, and long-term economic prospects follow from this. Malaysia can foster economic stability and sustained growth by utilizing monetary policy to draw foreign direct investment, therefore establishing itself as a desirable investment destination in the international arena.

1.6 Conclusion

In conclusion, FDI is important for economic development in Malaysia. The research gaps are explained in the problem statement. Hence, this study develops to understand the monetary dynamic impacts on foreign direct investment in Malaysia. This study aims to explain a detail framework on the factors that encourage the attractiveness of FDI in Malaysia in the upcoming chapters.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

Chapter two covers the literature review about foreign direct investment, which is the dependent variable. Subsequently, the relationship of five independent variables, real interest rate, taxation, foreign exchange rate, trade openness and unemployment are explained. Lastly the theoretical framework will be mentioned in this chapter.

2.1 Review of Literature

2.1.1 Foreign Direct Investment (FDI)

Foreign Direct Investment (FDI) is the transaction and capital flows between an entity resident in an economy to another economy, with the aim of gaining a return from the projects (Nguyen, 2023; Masri et al., 2022; Hasan et al., 2020). FDI can be categorized to inflow and outflow, depends on which way the money moves. FDI flowing into a country happened when foreign money is directed to domestic businesses (Gao, 2021). While in contrast, outflows of FDI occurred when domestic funds are put into ventures abroad. Most of the studies will be investigated with the inwards FDI (Chen et al., 2020).

Nguyen (2023) stated that foreign direct investment is a crucial revenue for the government to cover the inadequate domestic equity and savings. For developing and emerging countries, FDI has various advantages towards economic development. They needed capital flow to boost and enhance the labour force, technology infrastructure, and production (Kellard et al., 2022). If a country encountered a lower domestic saving rate, the foreign savings is an opportunity

(Cavallo et al., 2017). Consequently, the economic development will be stable by obtaining more capital from the international market (Kellard et al., 2022).

In addition, the host country may also be benefited by the foreign direct investment (Le et al., 2022). This is due to FDI often accompanied with innovation, advanced technology infrastructure, good productivity, and expertise (Nguyen, 2023). Besides, FDI involved knowledge and technology exchange between domestic and foreign enterprises (Osabutey & Jackson, 2019). The local business gained new instruments and experiences that improved their productivity and efficiency level. The FDI also enhanced the capacity of domestic supplies to meet the export demand, thus boosting international trade (Le et al., 2022). As a result, the economic development in the host country will be benefited.

The role of monetary policy is an effective instrument in attracting the foreign direct investment (Karahan & Bayır, 2022). The Central Bank implemented expansionary and contractionary monetary policy to control money supply in the market (Albulescu & Ionescu, 2018). With the expansionary monetary policy, the interest rate decreased. Subsequently, the businesses raised the capital with lower cost of borrowing (Albulescu & Ionescu, 2018). Therefore, the monetary policy served as an effective tool to stimulate the economy, stabilized the prices and attract the FDI (Karahan & Bayır, 2022).

Majority of the studies mentioned that FDI brings a positive impact for the country's economic growth. However, some studies explained that FDI may also have negative aspects on the economy. For instance, FDI may crowd out the domestic investment, subsequently making domestic investment hard to sustain and develop (Aust et al., 2020). Moreover, if over-supporting foreign investment, it may result in an injustice competition by allowing foreign entities to dominate the economy

(Paul & Feliciano-Cestero, 2021). As a result, the competitive position of local investment will be threatened.

2.1.2 Real Interest Rate

Interest rate is one of the monetary policy instruments used by the Central Bank to maintain the price stability (Taderera, 2021). For the borrowers, the interest rate is the cost of borrowing. If the interest rate is high, the borrowers will have to pay back more money. While for the savers, the interest rate explained how much percentage the financial institutions will paid to the depositors as a compensation. For the foreign investors, interest rate is a main determinant to influence their decision on foreign direct investment (Bagaskara & Setyowati, 2023). Lots of researchers have looked into how interest rates affect foreign direct investment. They have studied the connection in both long periods and short timeframes.

Masri et al. (2022), Fazira and Cahyadin (2018), and Ajija and Fanani (2021) stated that there is a significant relationship between interest rate and foreign direct investment inflow in Malaysia. When the Central Bank employed expansionary monetary policy, the interest rate in financial market decreases, therefore the international capital will flow to host country (Nguyen, 2023). On the other hand, if the Central Bank exercised contractionary monetary policy, the interest rate increased, and attracted foreign direct investments (Nguyen, 2023). This is due to when the domestic interest rate increased, money supply circulating in the market decreased, thus led to an appreciation of the home currency and creating a discrepancy between the domestic and foreign currency rate (Masri et al., 2022). Investors that are seeking for high yield will be attracted to the higher interest rates.

While according to (Karahan & Bayır, 2022), a lower interest rate in the economy tends to attract the foreign direct investment. Owing to the lower financing cost in the investment, the investors are expecting to earn a higher profit from the lower

costs. For instance, the research in Nigeria has shown a lower interest rate in the country boosted foreign direct investment inflow (Okafor, 2012). Furthermore, the research in Musyoka and Ocharo (2018) also showed a negative and significant impact of interest rate on foreign direct investment in Kenya. Both researchers employed Ordinary Least Square (OLS) techniques to run the data. Although different studies have shown that both low and high interest rates will attract the foreign direct investment, the similarity is that the interest rate has a strong link to foreign direct investment.

However, there are studies that identified an insignificant relationship between interest rate and foreign direct investment. In the analysis of Iraq during 2004 to 2017, there is no significant effect towards the foreign direct investment (Hasan et al., 2020). Other researchers also found that interest rate was insignificant to be used as a determinant for foreign direct investment (Faroh and Shen, 2015). The reason may be due to the investors having considerations on other factors. For instance, if a country has instability in politics or economy, investors lost confidence although the interest rate return is high (Hasan et al., 2020). If the interest rate is too volatile, the investors are more likely to invest in countries with more stable rates. (Alnaa & Ahiakpor, 2020).

To sum up, there is a mixed result on the relationship between interest rate and foreign direct investment based on the existing literature. The mixed result may be due to other macroeconomic factors that influence the attractiveness of foreign direct investment. A lot of published research showed a strong link, but a handful of studies found no important connection regarding the impact of interest rate on FDI.

2.1.3 Foreign exchange rate

Foreign exchange rate influences the cost structure, profitability and risk profile of investments. Foreign investors analysed the relationship of exchange rate towards foreign direct investment (FDI) from different aspects such as exchange rate volatility, stability, potential yield and currency risk management (Wong, 2022). Exchange rate reflected the value of a currency against another. It has a direct impact related to the profit and cost of a portfolio or investment (Bahmani-Oskooee and Saha, 2016). Thus, creating different attractiveness towards FDI.

From the past studies, it was found that foreign exchange rate has a significant relationship in attracting the FDI inflows. For instance, in the country of Malaysia (Wong, 2022; Ahmad et al., 2015), Pakistan (Ellahi, 2011; Shafiq et al., 2021) and Norway (Boateng et al., 2015). The depreciation of exchange rate can bring effects to the FDI in either direction. When the exchange rate of home currency depreciated against the foreign currency, exports will be relatively cheaper (Bahmani-Oskooee and Saha, 2016). As a result, more-oriented FDI inflows of profit will be attracted to the host country. On the other hand, the import cost will be expensive, thus decline the profit of the current account in home country. Hence, when the foreign exchange rate appreciated against the home currency, the higher yield will naturally attract further FDI inflow. In the point of view of foreign investors, the production factors such as land, machinery, workers, and assets become cheaper with following the depreciation in host country (Shi, 2019). Consequently, encouraging foreign investors to invest and acquire more domestic assets when the capital is measured in foreign currency.

However, it is recognized that there in an insignificant relationship for foreign exchange rate in attracting the foreign direct investment in the developing country of Malaysia (Latif et al., 2010; Shahrudin et al., 2011). Moreover, Mulok et al. (2014) also investigate the relationship of two variables. Although in the short run, the

outcome is significant, but the long run stated a result of insignificant in the link between currency value and FDI.

The outcome of mixed results can be due to the exchange rate regime employed in the country. The most frequent regimes are fixed exchange rate and floating exchange rate. Countries with fixed or pegged exchange rate regimes may expose to dissimilar FDI stream as compared to the floating exchange rate (Shi, 2019). Both regimes have advantages and disadvantages depends on the economic situation and motive of the government. Investors will make their own decisions by overvalued or undervalued the currency movement over time based on different regimes (Shafiq et al., 2021).

In addition, the volatility of exchange rate tends to deter mixed results in FDI. When the volatility increased, it created uncertainty on the future return and costs (Boateng et al., 2015). In consequence, foreign investors may choose to not invest in that currency, resulting insignificant relationship However, some investors considered the fluctuations of the currency as an opportunity for speculation, therefore the foreign exchange rate will have a direct impact towards the FDI inflows (Boateng et al., 2015).

To conclude, the inconsistent results were found in the existing literature review. The reasons are due to the exchange rate regimes employed and the volatility of currency that alter the decisions of investors on FDI.

2.1.4 Taxation

Taxation is one of the elements in the economic environment that influence the Foreign Direct Investment (FDI). Different framework and effectiveness in taxation system can become an aspect to compete in attracting international capital and

modify the investment decisions (Musah et al., 2024). Taxation provided a guidance in determining the cost in a business, potential return of an investment and overall attractiveness of a nation as a target for FDI (Erokhin, 2023). Most of the literature reviews included numerous areas when examining how tax policies impact the decisions of foreign investors. For instance, corporate tax, tax incentives, goods and services tax (GST), and value added tax (VAT).

In the previous reviews, it was found that taxation has a significant in attracting the foreign direct investment inflows in developing countries such as Malaysia (Shahrudin et al., 2011; Soloman et al., 2015), Pakistan (Shafiq et al., 2021), and Ethiopia (Bora, 2013). Furthermore, the OECD countries which consists of United Kingdom, Poland, New Zealand, Spain Turkey, Finland and others (Alves, 2019; Abdioglu, 2016) also resulted the crucial relationship. Every study explained on how the empirical structure and theoretical models of tax policies influenced the FDI flows. It also highlighted the investment decisions of multinational corporations when emphasizing different tax regimes. Countries with lower corporate tax associated with an increase in the FDI inflows as lower tax rate can reduce the costs and generate more profit in the investment (Ojeka et al., 2021). Conversely, high corporate tax increased the operational cost in a company. Thus, reduced the attractiveness of FDI. On the other hand, manufacturers will normally pass the cost of VAT and GST to the consumer, influence the pricing (Alves, 2019). Greater amount of VAT or GST significantly impacted and reduced the FDI as cost structure of business has risen.

However, there are insignificant results in the relationship between taxation and foreign direct investment for the other papers. The petroleum profit tax and the custom and value added tax have founded insignificant in attracting the FDI in Nigeria (Eiya & Okaiwele, 2019). In addition, Ojeka et al. (2021) mentioned the study in sub-Saharan Africa, the corporate tax rates did not appear to have significant impact on the foreign direct analysis. In Africa, the tax concessions also resulted an insignificant relationship on FDI (Appiah-Kubi et al., 2021). The

relationship of corporate tax showed a weaker level of evidence since it statistically significant at the 10% level, did not reach the 5% significant level (Appiah-Kubi et al., 2021).

The mixed results can be caused by the types of taxation used in the research. For example, the taxation analyzed in Nigeria is value added tax and petroleum profit tax (Eiya & Okaiwele, 2019). While Ethiopia employed tax holiday to generate the outcome (Bora, 2013). Investors have difference preferences towards the types of taxes. It dependson the nature, scope and broader economic environment in the country. The complexity of tax regimes generates different outcome in each country.

To summarize, there are inconsistent results for the impact of taxation towards foreign direct investment by reviewing the existing literature. This might be caused by different types of taxes and their varying impacts on investment decisions.

2.1.5 Trade Openness

Trade openness explained the international trade in a country by involving imports and exports through reduction of trade barriers and tariffs. Since trade openness involved cross-border investments, it served as a factor towards the attractiveness of inflows in foreign direct investment (FDI). Nguyen (2022) stated that trade openness and FDI mutually reinforce each other in boosting the industrial development. Existing literature demonstrated that trade openness is advantageous for all nations regardless the size of a market (Hao, 2023).

From the existing literature reviews, there is found to be significant relationship between the trade openness and foreign direct investment (FDI). For example, the South Asia countries (Nguyen, 2022; Saleem et al., 2020), Asia countries (Hasli et al., 2015), OIC countries (Sajilan et al., 2019), Pakistan (Shafiq et al., 2021), and

China (Hao, 2023). It has been highlighted that nations with liberal trade policies tend to attract greater inflows of FDI by reducing barriers and increase market accessibility. This has been especially evident in most of the developing countries since trade openness stimulated economic growth by drawing crucial investment inflows to host country (Hasli et al., 2015). The country of China has led to rapid industrialization and became one of the fastest growing economies in the world by adopting trade openness strategy (Hao, 2023). This demonstrated the significant impact of trade openness in attracting substantial foreign investment. Besides, the study in Sazali et al. (2018) also mentioned a short run unidirectional relationship between trade openness and FDI in Malaysia. As a result, trade openness also contributed a wider economic development by facilitating technology transfer, creating foreign competition and reducing employment opportunities.

However, there is inconsistent results where the trade openness has insignificant relationship in attracting the FDI. Tsaurai (2015) identified that no long run relationship exists between trade openness and FDI in Zimbabwe. Also, Kolstad and Villanger (2008) founded that trade openness is not significant and negatively in analysing the FDI. This is because the industry sensitivity is different for each investor. Some of the industry that focused on export goods and services may be benefited more from the international trade (Hasanov, 2024). Whereas the import-competing companies may not encounter the same level of welfare. The increased competition from imports reduces profit margin in domestic manufacturers, making the investment less attractive for foreign investors (Hasanov, 2024).

Different methodology implied in the studies can also issue inconsistent results. Firstly, the autoregressive distributed lag is used in most of the literature reviews (Shafiq et al., 2021; Hao, 2023; Tsaurai 2015). Subsequently, the fixed and random effect models (Hasli et al., 2015; Sajilan et al., 2019). Also, the granger causality test (Saleem et al., 2020, Nyugen, 2022; Sazali et al., 2018).

In summary, there is conflict in examining the relationship between trade openness and foreign direct investment. The reasons are different level of industry sensitivity in perception of investors and methodology employed in different studies.

2.1.6 Unemployment

Unemployment represented one of the vital components in economic landscape that significantly impacted the foreign direct investment (FDI), subsequently stabilized the national economic and growth (Strat et al., 2015). The unemployment rate revealed the fitness in labour market and the dynamism of the economy. Based on previous study, unemployment and FDI interrelated in economic system, where each of them influencing and being influenced by other macroeconomic forces (Nguyen, 2022). By analysing the health in labour market, it can have significant implications towards the FDI, which constitutes a cross-border investment inflow from multinational enterprises or foreign entities to host country.

Mixed results were found from the previous researched examining the impact of unemployment towards foreign direct investment (FDI). From the previous studied, it was identified that unemployment has a significant impact on the FDI in ASEAN like Malaysia, and Thailand (Widia et al., 2019), South Asia (Nguyen, 2022), Indonesia (Lipsey et al., 2010), Ghana (Abdulai, 2022) and Singapore (Chellaraj et al., 2009). This aligned with various studies that impact of unemployment has correlation with FDI intentions. According to Demirkan and Platt (2011), human capital and education infrastructure are the vital characteristics that determined the employment level and consequently, attract FDI. With skilled workforce, and well-developed education system, it can lead to a lower unemployment rate in a country (Haudi, 2020). As a result, the country tends to be attractive to foreign investors in exploring reliable and proficient employment sector. In addition, based on the study in Strat et al. (2015), the unemployment rate is proved to has a positive influence FDI inflows for the cases Romania, Slovakia, and Czech Republic.

Yet, some of the researchers recognized that unemployment is not significant in attracting the foreign direct investment (FDI). Mkombe et al. (2020) stated a negative and insignificant effect on unemployment towards FDI in Southern African Development Community. Moreover, the country of Poland, Bulgaria, Latvia, and Cyprus discovered insignificant relation between unemployment rate and FDI inflows (Strat et al., 2015). Although in the study of ASEAN countries where Indonesia, Malaysia, Singapore and Thailand explained the relationship of two variables in long run; however, the short run results given are different. In short term, the unemployment rate has a negative impact on the four countries, and it is insignificant at the level of 5% (Widia et al., 2019).

The inconsistent of the results can be interpreted by investor perceptions. Investors have different expectations about the potential return and economic future. Some of the foreign investors indicated that high unemployment is associated with a mismatch between the skills of workforce and the demand in the market (Haudi, 2020; Demirkan and Platt, 2011). Thus, highly unemployment rate reduced the FDI inflows. Whereas certain investors hold a negative stance towards it. If they predicted the conditions of a country will be improved or has a good potential of gaining high yield, they may choose to invest despite high unemployment Mkombe et al. (2020).

Different statistical method implemented in different studies to investigate the relationship between unemployment and FDI inflows. First one, the long-term cointegration test was employed in most of the previous research (Widia et al., 2019; Abdulai, 2022; Nguyen, 2022). Next, the granger causality test and fixed effects techniques are implemented by Mkombe et al. (2020) and Strat et al. (2015) and Lipsey et al. (2010). Thirdly, Tobit model is applied in the Singapore research (Chellaraj et al., 2009).

To conclude, there is presence of conflicting findings due to the investors' perceptions and different statistical method. Majority of the exiting literature reported a significant relationship while only several analyses stated insignificant results regarding the impact of unemployment towards attractiveness of FDI.

2.2 Theoretical Framework

2.2.1 Capital Arbitrage Theory

Capital Arbitrage theory proposed that foreign direct investment (FDI) moved from countries with low profits to those with high profits (Udoh et al., 2019). This implied that capital is mobile between countries. This theory often linked to economic conditions and factors. Investors tried to maximize their profits by taking the advantage of price differences. If long-term interest rates and returns on capital are associated, then both portfolio investment and FDI should also experience parallel movements (Udoh et al., 2019). For instance, all countries have different level of interest rate, foreign exchange rate, taxation and trade policies. Investors can use the differences to create capital arbitrage (Hurst & Sutherland, 2024). Some countries implemented high interest rate while some having low interest rate. Foreign companies will seek their favorable rates based on the objectives, goals, returns and costs. Moreover, the taxation framework and currency value are dissimilar for every nation. Therefore, the FDI will flow to nation that provided a higher after-tax investment and stable currency which can increase the yields (Hurst & Sutherland, 2024). A weaker currency as compared to the competitors in global can also attract FDI as the cost and labour are cheaper when converting the money. Besides, nations that have fewer taxation regulations, trade restrictions and more open trade policies are more appealing for FDI, as they offered better access to markets and cut down on costs linked to tariffs and quotas. Open trade policies

helped to integrate into global supply chains making it beneficial for companies to invest in countries that back free trade (Udoh et al., 2019).

2.2.2 Mundell-Fleming model (Monetary)
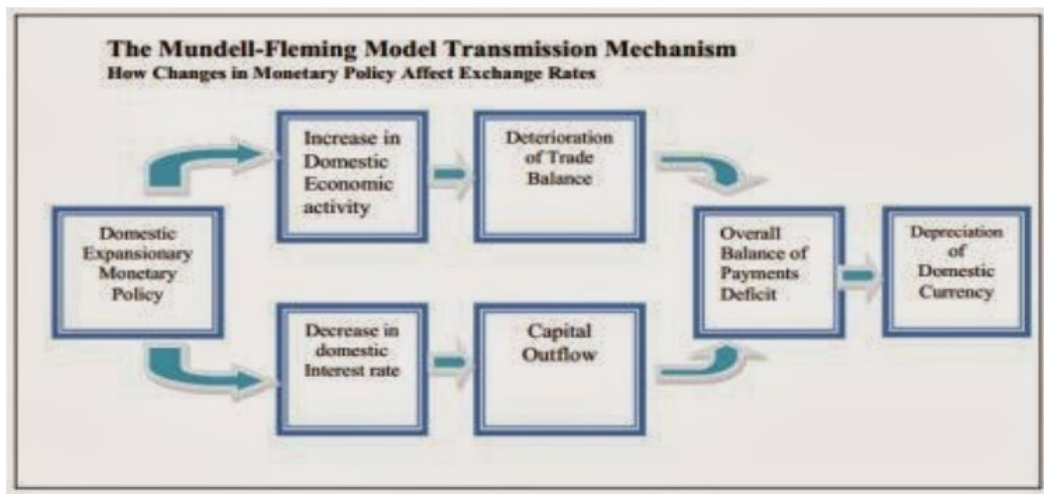
Figure 2.2.1: The Mundell-Flemimg Model. Adapted from Murwani et al. (2019)

Murwani et al. (2019) mnetioned the Mundell-Fleming model in an open economy, provided comprehensive on how macroeconomic policies work when foreign direct investment moved between countries. There are 5 assumptions in this model: 1) prices in the goods market do not change, 2) money can move between countries, 3) people assumes domestic and foreign bonds as the same thing, 4) exogenous interest rates (small country idea), 5) static predictions. When capital is more sensitive to changes in interest rates, it moves further when interest rates declined (Murwani et al., 2019). This means that if money can move across borders and people see domestic and foreign bonds as the same, investors will put their cash where they can earn more. When a country used monetary policy to cut interest rates, investors will pull their funds out of the country to find higher returns somewhere else. Moreover, the funds flowed out the market, making local currency worth less (Zibileanu, 2021). When the local currency depreciated, it makes goods from that country cheaper for people in other countries to purchase. This boosts

exports and helps the economy grow. Therefore, with floating exchange regimes, monetary policy leads to a weaker currency in domestic country, enhance the economy and increase the job opportunities (Zibileanu, 2021).

2.2.3 Skills upgrade through FDI with Advanced Technology (Interaction Term)

According to Hunya and Geishecker (2005), studies on global trade indicated that when big companies invest abroad, it can affect their skills of employment in two ways. First, skills may get worse. This happened when companies set up simple factories in places with cheap labour. They often hired overqualified people to do easy assembly jobs. Because these workers have no chance to use all their skills or get much training, they lost some of their abilities over time. Hence, increased the unemployment. The second possibility is that the skills may get better. This often happened when companies brought in new technology. Workers are required to acquire new ways to manage the works, skills and machines, which improved their skills.

There are examples provided in the country Hungary (Hunya & Geishecker, 2005). Many big foreign companies have started training programs there. IBM, Nokia, and Flextronics have opened their own training centres. When some companies first came to Hungary, they sent workers back to their home countries to train. For instance, Samsung trained Hungarian engineers in Korea. Tata Consultancy Services, an Indian company that just came to Hungary, planned to train its workers both in India and Hungary. Besides training their own people, some big companies like IBM also train local and foreign workers from other companies. Changes in Hungary showed how these the foreign direct investments can help to bring in new technologies, enhanced the labour environment, and decreased the unemployment rate. In return, the advanced technology can attract other to the domestic country. With FDI, foreign companies provide local workers a chance to do research, create new products, or enhance the production. By doing research and development, the

employment skills are improved, thus decreased the unemployment in a country (Hunya & Geishecker, 2005).

2.3 Framework for Variables
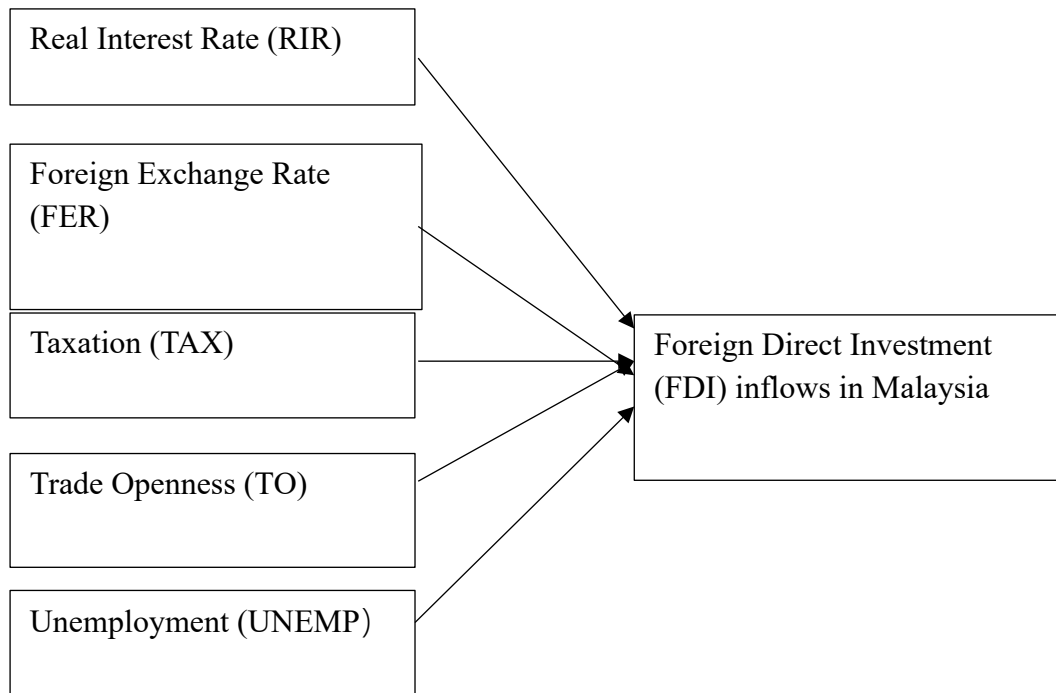
Figure 2.3.1: Framework for Variables

Figure 2.3.1 is the framework for variables that explained the foreign direct investment in Malaysia using the prior theoretical model. The five independent variables in this framework are real interest rate, foreign exchange rate, taxation, trade openness and unemployment. Most of the existing literatures provided a significantly affect in the relationship between independent variables and FDI.

2.4 Conclusion

To summarized, chapter two discussed on the attractiveness level of foreign direct investment (FDI) that have studied in existing literature. The independent variables are involved to examine their relationships towards the FDI. Furthermore, the theoretical frameworks in previous studies that linked the independent variables and FDI are explained.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

The key purpose of this research is to examine the relationship between the monetary policy dynamics impact on foreign direct investment (FDI). To achieve the objective, research methodology is explained in this chapter. The components consist of research design, data collection method, econometric model, unit root test, ARDL bound test and diagnosis checking.

3.1 Research Design

The layout in research existed in a structure consists of analysis and interpretation of data set (Sileyew, 2019). It is designed to address the research question or hypothesis effectively. In this research, quantitative data is applied as the research objectives emphasize on the connection between independent variable and dependent variables using historical data. The data collection, econometric framework and model will be discussed in the following parts.

Quantitative analysis generated the output through large and random sample findings and offered a deep comprehension of phenomenon in the theory context (Wright et al., 2016). Since the research focuses on time series analysis, quantitative data is efficient as it is straightforward, solid and unbiased (Wielenga, 2018). Therefore, it enhanced the reliability of findings by including time conditions and constraints as factors.

3.2 Data Collection Method

Based on the general objectives mentioned in Chapter 1, this project aimed to study the dynamic impact on foreign direct investment in Malaysia. Therefore, the independent variables observed are real interest rate (RIR), foreign exchange rate (FER), taxation (TAX), trade openness (TO), and unemployment rate (UNEMP). The observations of data are the past 30 years, starting from 1993 to 2022, in yearly frequency. All the variables are collected based on historical data, expressed in numerical terms.

In addition, the data implied in this research is secondary data. As compared with primary data, secondary data enabled us to collect the timeline from reliable resources even after many years. Therefore, our study is using time series data analytics to investigate the 30 years correlation between FDI and the explanatory variables. Throughout this study, all-time series data on the variables was sourced from the Refinitiv, World Bank online databases, and International Monetary Fund (IMF) online databases. As a premier repository of economic and financial indicators, the sources listed are considered a highly credible that applies rigorous processes in data collection and validation from national statistical authorities. Using data from this reputable multinational institution enhances confidence that the information utilized in the analysis is reliable and accurately reflects the true values.

Table 3.2.1

Data Collection

Variables	Proxy	Definitions	Data Source
Foreign Direct Investment (net inflows, % of GDP)	FDI	Individual or company made an investment in business that is located in another country.	World Bank Refinitiv
Real Interest Rate (%)	RIR	Adjusted for inflation, reflecting the yield for an investor, and costs of borrowings for borrower.	World Bank Refinitiv
Foreign Exchange Rate (LCU per US$, period average)	FER	The currency rate exchanged for another currency in international trading.	Refinitiv IMF
Taxation on goods and services (% value added of industry and services)	TAX	Taxes imposed by the government when purchasing the goods and services	Refinitiv World Bank
Trade Openness (Exports/Imports)	TO	The ratio of how a country is engaging in international trade.	Refinitiv

Unemployment (%)	UNEMP	Reflects the percentage of people that without employment but are actively seeking for work.	World Bank Refinitiv

3.3 Econometric Model

The econometric model is proposed to investigate the monetary policy dynamics impact towards foreign direct investment in Malaysia. The econometric model will be examine using E-views. Based on the discussion of hypothesis testing, the dependent variable which is the foreign direct investment (FDI) located on the left-hand side of equation. While for the independent variables such as real interest rate, foreign exchange rate, taxation on goods and services, trade openness and unemployment, they are located on the right-hand side of the equation. The model will be using time series data which is from period 1993 to 2022.

$$lnFDI_t = \beta_0 + \beta_1 ln\ RIR_t + \beta_2 ln\ FER_t + \beta_3 ln\ TAX_t + \beta_4 ln\ TO_t + \beta_5 ln\ UNEMP_t + \mu_t$$

Where,

FDI_t = Foreign Direct Investment

IR_t = Real Interest Rate (net inflows, % of GDP)

FER_t = Foreign Exchange Rate (LCU per US$, period average)

TAX_t = Taxation on goods and services (% value added of industry and services)

TO_t = Trade Openness (Exports/Imports)

$UNEMP_t$ = Unemployment (%)

3.4 Unit Root Test

Existence of unit root may be due to the non-stationary variables in the research model. In time series data, unit root test is often implied to assess the stationarity. Non-stationary indicates that the trend for determinants is unpredictable and fluctuating. While stationary explains that the trend is consistent and foreseeable. Cheng et al. (2015) stated that variables that are non-stationary do not impact the long-term evolution of a time series. This is due to the fact that the unpredictable independent and dependent variables are linked through either differencing or integrated trends. Hence, the unit root test should be performed through ADF and PP tests before running the ARDL model to ensure that the model excludes non-stationary determinants that may lead to an unbiased result in the findings.

3.4.1 Augmented Dickey-Fuller (ADF)

The Augmented Dickey-Fuller (ADF) test is one of the statistical hypothesis assessments to discover the existence of unit root test in a time series database. It is originated by Dickey and Fuller in 1979 (Otero & Baum, 2018). ADF test consists of null hypothesis of a unit root against an alternative hypothesis of stationarity, examining the process of time series transformation into stationarity thorough differencing.

The first step is exploring the AR (1) process to run the DF test, which is written as:

$$y_t = \emptyset y_{t-1} + \varepsilon_t$$

The model is formed below by subtracting the y_{t-1} in both side of equation to test whether $\emptyset = 1$:

$$y_t - y_{t-1} = (\emptyset - 1)\, y_{t-1} + \varepsilon_t$$

$$\Delta y_t = \delta y_{t-1} + \varepsilon_t$$

Where, $\delta = \emptyset - 1$

ADF allows a higher-order of AR dynamic which is not similar as the DF test, and the AR(p) is written as below:

$$\Delta y_t = \delta y_{t-1} + \Sigma_{i=1}^{p} \beta \Delta_{y_{t-I}} + \varepsilon_t$$

For the stationarity test in each regressor, the trend and intercept will be considered when generating ADF results. The intercept is examined, and the model is written as:

$$\Delta y_t = \propto + \delta y_{t-1} + \varepsilon_t$$

Where, $\propto$: the intercept in the AR

Next is the intercept and trend:

$$\Delta y_t = \propto + \delta y_{t-1} + \gamma_t + \varepsilon_t$$

Where, γ_{it}: the trend in AR model

Thus, the null hypothesis is formed in the ADF and AD test,
which is written as:

$$H_0: \delta = 0$$

The conventional t-ratio below will be employed to estimate the stationarity for each of the variables involved:

$$t_\delta = \frac{\hat{\delta}}{se(\hat{\delta})}$$

The $\hat{\delta}$ is the estimated coefficient of $\hat{\delta}$. $se(\hat{\delta})$ represents the standard error for the estimated coefficient in this study. When the t-ratio is lesser than the upper ADF critical value, or when the p-value is smaller than 10, 5, or 1 percent significance levels, we will reject the null hypothesis. There is sufficient evidence to conclude that all the variables have no unit root.

3.4.2 Phillips-Perron (PP)

Phillips-Perron have developed a more comprehensive theory of unit root non-stationarity. The test is similar to the ADF, but PP test incorporate an automatic correction to account for autocorrelation in the results (Newey & West, 1987). Generally, the PP test yields conclusions that align closely with the ADF test. Also, intercept and intercept and trend are considered in the PP test. PP test is suitable to be used in since this research has a small sample size.

The null hypothesis is written as:

$$H_0: \delta = 0$$

While for the t-statistic, it is dissimilar to the ADF, presented as:

$$\tilde{t}_\delta = t_\delta \left(\frac{\gamma_0}{f_0}\right)^{1/2} - \frac{T(f_0 - \gamma_0)(se(\hat{\delta}))}{2f_0^{1/2} s}$$

Where,

$\hat{\delta}$: estimated coefficient of δ,

$\tilde{t}_{\delta}$: t-ratio of δ

$se(\hat{\delta})$: estimated coefficient standard error

γ_0: consistent estimate of the error variance

f_0: residual spectrum at zero frequency

When the t-ratio is less compared to the upper critical value of ADF, where the p-value < 0.1, 0.05, or 0.01, we are rejecting the null hypothesis. There is sufficient evidence to conclude that all the variables have no unit root.

3.5 Autoregressive Distributed Lag (ARDL) Bound Test

The autoregressive distributed lag (ARDL) approach will be used to analyze the short-run and long-run relationships between FDI inflows and its determinants. The ARDL model is suitable when variables are stationary at level or first difference. It also provides unbiased long-run estimates irrespective of whether the variables are I(0) or I(1) (Johansen, 1988).

The general ARDL specification is:

$$\Delta y_t = \alpha_0 + \Sigma\alpha_i\Delta Y_{t-i} + \Sigma\beta_i X_{t-i} + \gamma 1 Y_{t-1} + \Sigma\gamma_i\Delta X_{t-i} + \mu_t$$

Where Y is the dependent variable (FDI inflows), X are the explanatory variables, α and β capture the short-run dynamics, γ shows the long-run multipliers, and μ is the error term.

The ARDL bounds testing approach will first examine the presence of a long-run relationship. If cointegration is found, the conditional ARDL long-run model will be estimated to analyze the impacts of each determinant on FDI inflows. The error

correction model will then be used to evaluate the short-run adjustment of deviations from the long-run equilibrium.

Together, the results from the ARDL bounds testing, long-run coefficients, and error correction model should provide insights into long-run factors influencing foreign investment in Malaysia over the 1993-2022 period. This study aims to aid policymakers understand determinants of FDI to help attract more foreign capital in the future.

The null hypothesis for ARDL is:

$$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$$

If the F-statistic is greater than the upper bond, I(1) critical value, we have sufficient evidence to conclude that there is a long run relationship in the model, and it contains cointegration.

3.6 Diagnosis Checking

3.6.1 Serial Correlation Test - Lagrange Multiple (LM)

Breusch-Godfrey serial correlation LM test is a useful tool in diagnosing model specifications related to serial correlation when considering lagged dependent variables. Serial correlation arises when consecutive observations show similar patterns in a series (Pesaran, 2020). It is cause by a specification bias such as omitted variables or incorrect functional form. Moreover, affects the reliability and interpretability of analytical findings. Positive serial correlation refers to the error term tends to have the same sign from one time period to next. Whereas negative serial correlation explains the error term tends to switch signs from negative to positive back again in consecutive observations (Lopes, 2021).

H₀: There is no serial correlation in the model

H₁: There is serial correlation in the model

Significance level: 5%

Decision Rule: Reject H₀ if the chi-square p-value smaller than 0.05. Otherwise, do not reject H₀.

Decision Making: Reject H₀ when the p-value is less than 0.05.

Conclusion: We have adequate proof to conclude that there is serial correlation in the model.

3.6.2 Heteroscedasticity Test - Autoregressive Conditional Heteroskedasticity (ARCH)

In this research, ARCH test is utilized to detect heteroskedasticity issue in the model. It is and effective tool for modelling financial time series characterized by volatility over time. If the model encountered heteroskedasticity, it is still unbiased and consistent. This is because homoskedasticity is not a requirement for unbiasedness. The main problem of facing heteroskedasticity is that the variance of the estimators is no longer minimum (Olvera & Zumbo, 2019). Consequently, the estimators are inefficient. By detecting the heteroskedasticity, it ensures the validity and reliable of time series analysis.

H₀: The model does not exhibit heteroskedasticity

H₁: The model exhibits heteroskedasticity

Significance level: 5%

Decision Rule: Reject H₀ if the chi-square p-value is smaller than 0.05. Otherwise, do not reject H₀.

Decision Making: Reject H_0 when the p-value is less than 0.05.

Conclusion: We have adequate proof to conclude that there is heteroskedasticity in the model.

3.6.3 Cumulative Sum (CUSUM) and Cumulative Sum of Square (CUSUMSQ)

CUSUM and CUSUMSQ examine the presence and stability of structure in the long relationship. It is sensitive in detecting gradual changes over a period (Bullock et al., 2020). The ARDL model is stable when the CUSUM and CUSUMSQ statistics fluctuate below the critical value corresponding to a significance level of 5% in the graph.

CUSUM test:

$$W_t = \sum_{r=k+1}^{t} \frac{\omega_r}{s}, t = k+1..., T$$

k: number of coefficients

ω: recursive residual

s: standard deviation of recursive residual

If the estimated coefficients remain consistent throughout the duration of this study, $W_t = 0$. Conversely,

If the estimated coefficients vary over the sample period, $W_t \neq 0$.

Variance of parameters is unstable if W_t exceeds the 95% critical bounds.

CUSUMSQ test:

$$S_t = \frac{(\sum_{r=k+1}^{t} \omega_r^2)}{(\sum_{r=k+1}^{T} \omega_r^2)}, t = k+1..., T$$

The expected value of S_t under hypothesis:

$$E(S_t) = \frac{(t-k)}{(T-k)}$$

From zero to at $t = k$ to unity at $t = T$.

The error variance is unstable if S_t exceeds the 95% critical bounds.

3.7 Conclusion

Briefly, chapter three mentioned the methodology employed in this research. This study is focus on secondary data and quantitative research. It focusses on the time series data by analyzing 30 years figures in the relationship between independent variables and FDI.

CHAPTER 4: RESEARCH RESULTS

4.0 Introduction

Throughout this chapter, the analysis of data is performed. Firstly, the unit root test is generated. Secondly, the ARDL bounds test and long run form are presented. Lastly, the diagnosis tests in checking the model is stable and unbiased.

4.1 Unit Root Test

Table 4.1.1

Augmented Dickey-Fuller (ADF) Test Results

| Variables | Augmented Dickey-Fuller (ADF) Test | | | |
| | Intercept | | Trend and Intercept | |
	Level	First Difference	Level	First Difference
FDI	-4.892064 (0.0005) ***	-6.652343 (0.0000) ***	-5.005170 (0.0019) ***	-6.704297 (0.0000) ***
RIR	-5.839329 (0.0000) ***	-7.041973 (0.0000) ***	-6.452477 (0.0001) ***	-6.908297 (0.0000) ***
FER	-1.525726 (0.5067)	-4.361997 (0.0019) ***	-2.185768 (0.4787)	-4.274741 (0.0112) **

TAX	-2.032530 (0.2721)	-5.162350 (0.0003) ***	-2.273097 (0.4344)	-4.331021 (0.0106) **
TO	-2.023580 (0.2757)	-5.059832 (0.0003) ***	-1.796448 (0.6803)	-5.371210 (0.0008) ***
UNEMP	-3.116221 (0.0364) **	-4.889273 (0.0005) ***	-3.644718 (0.0432) **	-4.787741 (0.0036) ***

*Significant at 10%, **Significant at 5%, ***Significant at 1%*

Table 4.1.2

Phillips-Perron (PP) Test

Variables	Phillips-Perron (PP) Test			
	Intercept		Trend and Intercept	
	Level	First Difference	Level	First Difference
FDI	-4.977345 (0.0004) ***	-4.977345 (0.0004) ***	-5.144411 (0.0014) ***	-21.92547 (0.0000) ***
RIR	-5.828493 (0.0000) ***	-14.19275 (0.0000) ***	-6.440749 (0.0001) ***	-11.77392 (0.0000) ***
FER	-1.631683 (0.4542)	-4.321155 (0.0021) ***	-1.947717 (0.6042)	-4.226538 (0.0125) **
TAX	-2.454830 (0.1365)	-6.455738 (0.0000) ***	-1.942103 (0.6071)	-8.395339 (0.0000) ***

| TO | -2.044253 (0.2674) | -5.059029 (0.0003) *** | -1.570804 (0.7797) | -5.897054 (0.0002) *** |
| UNEMP | -3.207454 (0.0298) ** | -6.341315 (0.0000) *** | -3.644718 (0.0432) ** | -6.360043 (0.0001) *** |

*Significant at 10%, **Significant at 5%, ***Significant at 1%*

Table 4.1.1 and 4.1.2 are the summarization outcomes of Unit Root Test through Augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP) test on each variable. The null hypothesis is that the variable contains a unit root (is non-stationary). The test was first run on the level of each variable for intercept and trend and intercept. We can see that FDI, real interest rate, and unemployment level rejected the null at the 1% level, indicating they are stationary at levels. Meanwhile, foreign exchange rate, taxes and trade openness their stationarity is unclear at levels.

The tests were also run on each variable's initial difference as it looked that some of the variables had unit roots at certain levels. At least the 5% level is reached by all variables in rejecting the null, and most of them do so at the very significant 1% level. This demonstrates that all variables became stationary (I(0)) when the first difference was taken, even if some were non-stationary at levels. They are therefore integrated of the first order, or I(1). An amalgamation of I(0) and I(1) variables is shown by the ADF and PP test. Because of this, the autoregressive distributed lag (ARDL) method works well for predicting the dynamics and long-term connections between these variables.

4.2 ARDL Bounds Tests and Long Run Form

Table 4.2.1

ARDL Bounds Tests and Long Run Form Outcomes

Bound Test		
Critical Value	**Lower Bound, I(0)**	**Upper Bound, I(1)**
1%	4.193	5.761
5%	2.910	4.193
10%	2.407	3.517
F-statistic	7.712789	
K	5	
Result	Cointegrated	

Long Run Relationship					
Variables	**RIR**	**FER**	**TAX**	**TO**	**UNEMP**
Coefficient	-0.165341	-0.911355	0.151941	-5.293383	-0.759380
	(0.0094)	(0.0390)	(0.3985)	(0.0382)	(0.1993)
	***	**		**	

*Significant at 10%, **Significant at 5%, ***Significant at 1%*

In the Table 4.2.1, the p-value is stated parentheses, and the lag length is employed by using suggestion through AIC. From the results above, it is clearly observed that the model is significant at 1% because the F-statistic (7.712789) is greater than the critical value for upper bound (5.761). Therefore, the null hypothesis is rejected at the significant level of 1% for the bound test. Moreover, there is a confirming presence of long run relationship between the FDI and its determinants as there is a cointegration result. The results of long run form indicate the cointegration between FDI and the independent variables (RIR, FER, TAX, TO and UNEMP). From the result above, real interest rate (RIR) negatively impacted the dependent, foreign direct investment (FDI) at significant level of 1%. This means that, when the interest rate increases by 1%, on average, the foreign direct investment will decrease by 0.165341%, ceteris paribus. Higher interest rates acted as deterrents by making business costs higher and labor market conditions less favorable. In addition, foreign exchange rate and trade openness negatively cointegrated the foreign direct investment at 5% significant level. When the foreign exchange rate increases by 1%, on average, foreign direct investment declined by 0.911355%, ceteris paribus. When foreign exchange rate increases by 1%, it is followed by appreciation of domestic currency. This makes the economy's exports expensive and foreign assets costly to acquire, lowering investment attractions. For trade openness, when trade openness increases by 1%, on average, the foreign direct investment will fall by 5.293383%, ceteris paribus. The result is in line with the country Romania (Mudiyanselage et al., 2021). In Romania, a higher degree of trade openness reduced the inflows of FDI due to the openness of economy might be inefficient as compares to the competing countries.

However, the other two independent variables, taxation and unemployment have resulted insignificant relationship. For taxation, the insignificant result is consistent with the existing literature review (Eiya & Okaiwele, 2019; Ojeka et al., 2021; Appiah-Kubi et al., 2021). The insignificant may be due to the type of taxation

chosen is the value added tax (VAT). VAT refers to the taxes imposed by government when a business sells their goods or services. Usually, manufacturers will transfer the tax to consumer, making the price level increases (Alves, 2019). However, VAT is only one aspect of the overall taxation that businesses must manage. In the view of foreign investors, VAT may be less important as compared to corporate tax, which has a more substantial impact on the investment decisions (Ojeka et al., 2021).

For unemployment, Mkombe et al. (2020) has also mentioned a negative and insignificant relationship, as well as the study in Strat et al. (2015). The insignificant may be due to decisions of investors. If foreign investors predict the conditions of a country will be improved or has a good potential of gaining high yield such as large market size or high technology infrastructure, they might choose to invest regardless the high unemployment rate (Mkombe et al.,2020). For instance, China has high unemployment due to large population but remains attractive to FDI since China has advanced technology absorption (Rong et al., 2020).

4.3 Diagnosis Tests

Table 4.3.1

Results of Diagnosis Tests

ECT (-1)	-0.268110 (0.0000) ***
LM (2)	1.415986 (0.1354)
LM (1)	0.715537 (0.3008)
ARCH (2)	1.140314 (0.3095)
ARCH (1)	0.576676 (0.5867)
CUSUM	Stable
CUSUMSQ	Stable

*Significant at 10%, **Significant at 5%, ***Significant at 1%

In the dianogsis test, two options of lag lengths are used is LM test and ARCH test which is suggested by running the AIC. The p-value is stated parentheses. In the error correction term, the p-value is 0.0000, significant at 1% and rejected null hypothesis. The error correction term is negative (-0.0000) and significant, confirming the convergence of FDI towards its long-run equilibrium following deviations. Approximately 26.81% of disequilibrium are corrected each year, signifying decent adjustment dynamics back to stability. Besides, the chi-square p-value in LM test with lag length of two (2) is 0.1354, which is more than the significant level of 5%. Also, the LM test with lag length of one (1) is 0.3008 Consequently, do not reject the null hypothesis and there is no autocorrelation in the model.

Furthermore, the ARCH test failed to reject null hypothesis. Therefore, there is sufficient evidence to conclude that there is no heteroscedasticity in the model since the p-value of Chi-square for ARCH test with lag length of two (2) is more than the significant level of 5% (0.3095 > 0.05). The p-value of Chi-square for ARCH test with lag length of one (1) is also more than the significant level of 5% (0.5867 > 0.05). It can be summed up that the model is unbiased and guaranteed the methodology can be used in the project. Also, the CUCUM and CUSUMSQ are employed in EViews and to perceive the stability of the data in the economic model. The Table 4.3.1 and Table 4.3.2 below showed the generated outcome for the related tests. In both CUSUM and CUSUMSQ, the trends are fluctuating in between the 5% significant level. Hence, we can confirm the model and data are stable. To sup up, the model has no autocorrelation, heteroscedasticity issues, and it is stable.
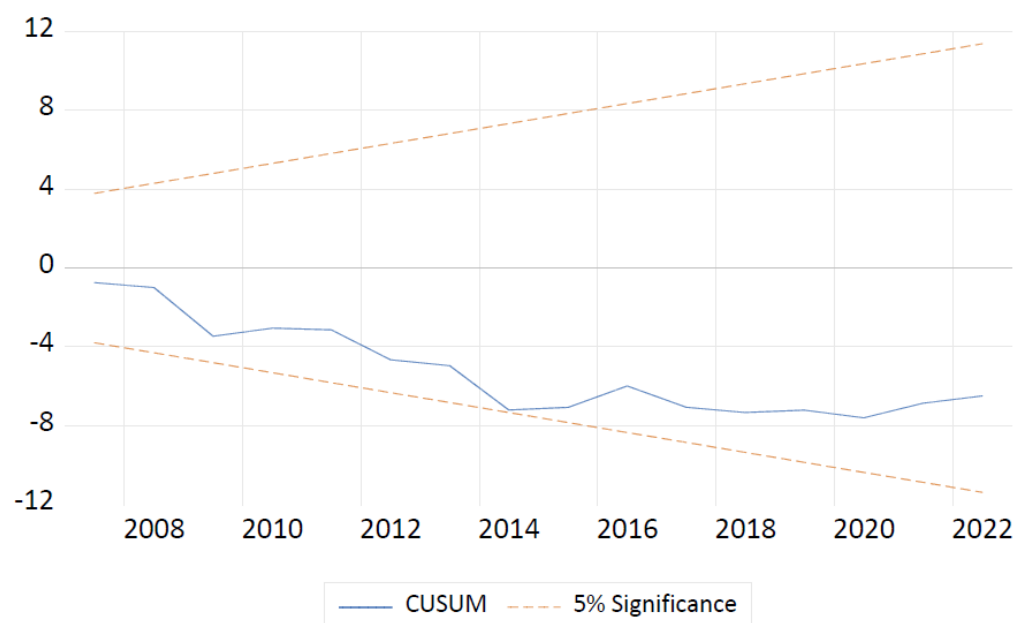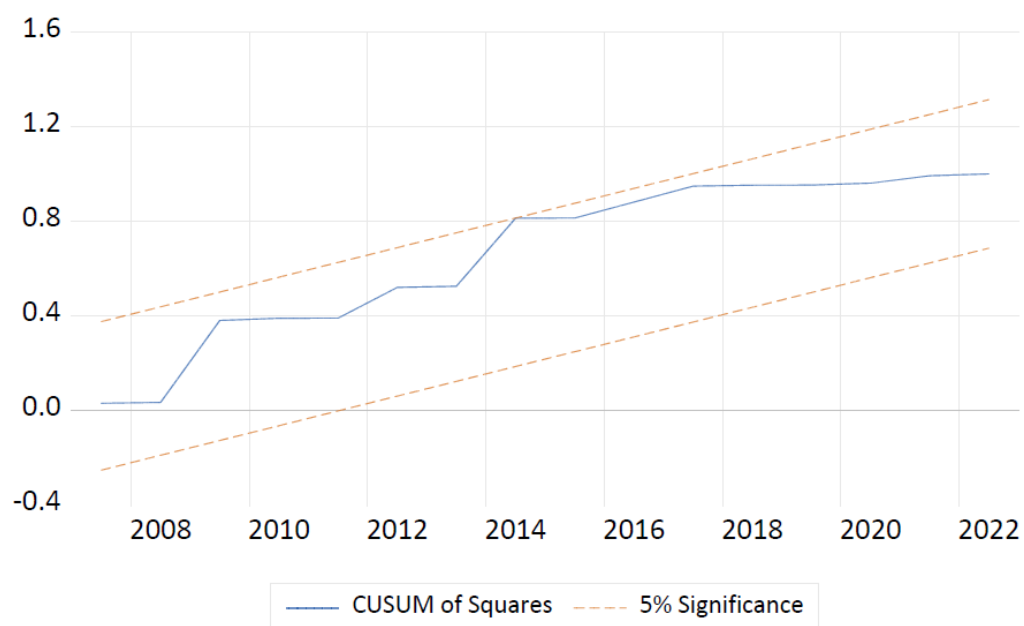
Table 4.3.1

Cumulative Sum

Table 4.3.2

Cumulative Sum of Square

4.4 Conclusion

Eviews is employed to generate the outcome of data analysis. It is found that most of the independent variables are significant in the long run. From the diagnosis tests, it is proved that the model has no autocorrelation, heteroscedasticity issues, and it is stable.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.0 Introduction

Along chapter five, some discussions of major findings are included form the results obtained in chapter four. Implications of study and limitations will be explained subsequently in addressing the issues encountered when running the model. Lastly, a logical suggestion will be provided for future research to better comprehend the relationship between independent variables and FDI.

5.1 Discussions on Major Findings

Throughout this study, we can draw a conclusion for all the variables involved based on the results obtained in chapter four by using ARDL model. Our results identified that there is a potential and significant long run relationship to explain the monetary policy dynamics impact on the foreign direct investment (FDI) income in Malaysia.

The first independent variable, real interest rate has a negative sign and significant relationship in attracting the FDI inflows. This is in agreement with the findings Karahan & Bayır (2022), Musyoka and Ocharo (2018) and Okafor (2012). High Interest rate accommodates with high yields and high costs. When the interest rate increases, it will increase the cost in financing. For the foreign manufacturing enterprises that considering setting up new plant in Malaysia, the high financing cost may outweigh the expected returns. As a result, reduce the attractiveness of FDI in Malaysia. Moreover, high interest rate associates with high costs of loans in a business. For the foreign investors, they will need to pay a higher expense for the operations, expansion activities and joint ventures. Consequently, the FDI becomes less attractive and reduce in Malaysia.

Secondly, the foreign exchange rate has a negative sign and significant long run relationship on FDI. The result is in line with the studies in Wong, (2022), Ahmad et al. (2015) and Shafiq et al (2021). When the exchange rate increases, it refers to an appreciation of MYR against foreign currency. When the Malaysian Ringgit appreciates, the costs for foreign investors to invest becomes relatively high. This is because foreign investors are required to sell more foreign currency to purchase the Malaysia Ringgit. Moreover, the costs of acquiring assets or products also become expensive. Therefore, with an increase in the exchange rate, it will reduce the inflows of FDI. Conversely, when the foreign exchange rate decreases, it will tend to attract more investments as the MYR depreciates, makes the exports and assets cheaper to acquire.

Thirdly, trade openness also has a negative coefficient and significant relationship towards FDI. Most of the past studies agree that with a greater level in trade openness, the investment attractions will be higher Nguyen (2022), Saleem et al. (2020), Hao (2023) and Sajilan et al. (2019). But for our study, it appears to have a negative correlation, which is in line in the case of Romania (Mudiyanselage et al., 2021). This is because the openness of economy in Malaysia is inefficient when competing with other countries. Foreign companies may turn their attention to places that give them a better opportunity to do business or quicker access to global markets. According to James (2022), Malaysia government has officially signed the trade agreement, Comprehensive and Progressive Agreement for Trans- Pacific Partnership (CPTPP) in 2018. However, the Parliament makes considerations and consultations for around 4 years to seek approval. As consequent, the competitive country such as Singapore that has adapt to this trade standards in early stage seen more efficient in economy openness. Also, the trade policy in Malaysia does not align with the primary interests of foreign investors. If the open trade only focuses on exports or commodities, but foreign investors are more interested on high-tech industries, FDI will result a decline even the trade volume increases (Mudiyanselage et al., 2021).

Subsequently, taxation has an insignificant relationship on FDI. The result is sync with Eiya & Okaiwele (2019), Ojeka et al. (2021) and Appiah-Kubi et al. (2021). This is because we choose the value added tax (VAT) as the indicator. VAT is only one of the aspects of the overall taxation that an enterprise must pay to government in Malaysia. Ojeka et al. (2021) pointed out that foreign investors focus more on the corporate tax, which has a greater dramatic effect as compared to VAT.

Lastly, unemployment does not exist any significant influence on the FDI inflows in Malaysia. This result is same with Mkombe et al. (2020) and Strat et al. (2015). The reason may be due to foreign investors has different predictions and expectations towards the economy in Malaysia. Unemployment is not the only factor that determines FDI, there are other macroeconomic that able to increase attractiveness of FDI. According to The Star (2024), although Malaysia suffers with high unemployment after the pandemic, Penang State still able to attract US $13 billion of FDI in semiconductor sector in the year 2023. The FDI exceeds the total of previous seven years combined. The reason able to attract FDI is due to Malaysia represents the world's sixth-largest exporters in semiconductor sector.

5.2 Implications of Study

Since our research focuses on the monetary dynamic impacts on foreign direct investment (FDI), the implications of study will be provided to emphasizes what actions can be taken to promote the attractiveness of FDI.

For real interest rate, it is found to have a significant impact on FDI. To improve the attractiveness of FDI, Central Bank, Bank Negara Malaysia (BNM) can employ the monetary policy tools to balance the economic growth and interest rate. The expansionary monetary policy has a direct impact on open market operations (OMO). With expansionary monetary policy, the Central Bank purchases government securities form the market. As a result, the excessive money injects in

the market, increases the reserves of commercial banks. With the extra reserves, the interest rate will be lowered, so the cost of financing or borrowing will subsequently reduce, making investment more attractive for foreigners. Besides, BNM introduced the overnight operating corridor to minimize the volatility of interest rate. According to BNM (2004), the corridor will be set at a ± 25 basis points within the overnight policy rate (OPR). With this tool, BNM able to manage the OPR effectively in short term, create a favourable condition to attract FDI.

Secondly, the foreign exchange rate, has a significant relationship with the FDI. Therefore, the government in Malaysia plays a significant role in stabilizing the exchange rate and reduce volatility. The exchange rate regime in Malaysia is freely floating exchange rate where the Malaysian Ringgit (MYR) is determined solely by market forces of demand and supply. The government in Malaysia can imply manage float exchange rate where the MYR still based on the market forces, but the government may intervene occasionally to prevent the rates from moving too much in a certain direction. For instance, the government can use the reserves to purchase foreign currencies. As a result, MYR weakens against foreign currency, making the cost of investment for foreigners and exports cheaper, subsequently attract more inflow for FDI. In addition, Universities or research institutions can conduct studies in analysing the historical and current trends in exchange rate. By understand its movement, Malaysia is able to examine how the changes in currency affect foreign investment decisions, thus formulate hedging strategies, trading and investment policies to improve the FDI.

Thirdly, the trade openness which is identified to has a significant impact towards FDI. To control the trade openness, government can put tariffs or other barriers on specific industries. This can protect domestic from being overwhelmed by imports from other countries and maintain a more balance environment where foreign investors still see opportunities by investing in local production. For instance, Malaysia can put tariffs on areas where local companies are weak against foreign rivals but keep openness in sectors where foreign direct investment plays a bigger

role in growth, such technology or banking. In addition, the government can implement trade deals that is balance between trade openness and drawing in foreign direct investment. These deals can offer incentives to foreign companies to invest in Malaysia rather than just selling goods to the country. For instance, trade deals can stipulate that foreign firms can gain market access only if they commit to invest domestically in a particular industry or region. By putting clauses in trade deals to boost FDI, Malaysia can attract foreign companies to set up businesses locally.

5.3 Limitations of the Study

There are several constraints in this research have been identified. Firstly, the timeline to accomplish this study restricts the depth of analysis and ability to conduct more extensive research. This research only covers foreign direct investment (FDI) inflows in Malaysia. The impact of these five independent variables can have wider effects beyond the scope of FDI inflows in a country. The impacts spills over into different aspects of economic activity, including domestic investment movements, capital flows, and overall economic conditions, thus contributing wider economic outcomes and deliberate business decisions. Furthermore, the economy is complex. FDI can in turn influence the independent variables. The two-way interactions should be considered. Hence, further studies are required.

Next, our study only focusses in examining the FDI inflows in Malaysia. Therefore, the findings are only valid and suitable in Malaysia. This research can serve as a reference for other countries. This is because different countries have varied economy conditions. The tax policies, trade agreements and exchange rate movements are dissimilar. Other countries may generate different outcomes when applying the independent variables. Consequently, our findings cannot fully represent the attractiveness of foreign direct investment inflows in other countries.

Additionally, our study examined five factors (real interest rate, foreign exchange rate, taxation, trade openness and unemployment) that will impact the foreign direct investment inflows in Malaysia. However, there are numerous macroeconomic factors that are not addressed also play roles in shaping the FDI. Therefore, future research on the additional factors is needed.

5.4 Recommendations for Future Research

There are some aspects of recommendations to cover the limitation and improve the upcoming studies. For the first recommendation, the dependent variable can be extended further. There are other dimensions rather than just focus on the FDI inflows in a country. For instance, FDI outflows, domestic investment inflows and outflows in a country. Moreover, future researchers may study the two-ways relationships between these factors and FDI. This may allow future studies to provide a more comprehensive understanding of the dynamics by exploring the reciprocal effects.

For the second recommendation, the future studies can expand the findings on other countries with similar factors to enhance the understanding. Insights derived from other nations' economic conditions through comparative analyses can provide relevant information as to the generalizability the findings. Drawing on international illustrations can also reflect how several economic environments affect the results and thus offers more perspectives to promote effective policies.

Lastly, future researchers can extend their studies by including additional macroeconomic factors. For instance, researchers can consider wages, inflation, gross domestic product, market size or political stability to examine the attractiveness of foreign direct investment inflows in a country. This can provide deeper insights in studying the level of attractiveness in foreign investments thus promote effective framework and tools.

5.5 Conclusion

The intention of the study, which are study the monetary dynamic impact on foreign direct investment in Malaysia is fulfilled. There is long run correlation exist connecting the controlled variables and dependent variable, FDI inflows. Real interest, foreign exchange rate and trade openness are discovered to be influential in clarifying the impact of FDI inflows. Eviews is employed to analyse the time series data from 1993 to 2022. With the findings, the implications are provided for government, universities and stakeholder. Besides, the limitations and recommendations are discussed for the subsequent researchers to examine more perspectives in their studies.

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