THE IMPACT OF MACROECONOMIC FACTORS ON FOREIGN LABOR FORCE IN MALAYSIA

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DECLARATION

We hereby declare that:

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

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

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

(4) The word count of this research report is __27041__.

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AIC	Akaike information criterion
AIDS	Acquired immune deficiency syndrome
ADF	Augmented Dickey-Fuller
ARCH	Autoregressive conditional heteroscedasticity
ARDL	Autoregressive distributed lag
COINTEQ	Co-integrated equation
CUSUM	Cumulative sum
CUSUMSQ	Cumulative sum squared
DOSM	Department of Statistics Malaysia
EPF	Employees Provident Fund
EURO	European Dollar
EXR	Exchange rate
FL	Foreign labor
GBP	Great Britain Pound
GDP	Gross Domestic Product
GDPPC	Gross Domestic Product per capita
GLMM	Gulf labor migration and market
GOV	Government policies
HIV	Human immunodeficiency virus
LCU	Local currency
LFPR	Labor force participation rate
LM	Lagrange Multiplier
LNEXR	Natural logarithm of exchange rate

LNGDPPC	Natural logarithm of GDP per capita
LNUNEMP	Natural logarithm of number of unemployed persons
MOHA	Ministry of Home Affairs
MoU	Memorandum of Understanding
MPI	Migration Policy Institute
OECD	Organization for economic co-operation and development
OLS	Ordinary Least Squares
PR	Permanent residence
PROB	Probability
RESET	Regression Equation Specification Error Test
RM	Ringgit Malaysia
SARS	Severe acute respiratory syndrome
SOCSO	Social security organization
SIC	Schwarz information criterion
U.K.	United Kingdom
UNEMP	Unemployment rate
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
U.S.	United States
USD	United States Dollar
1MDB	1Malaysia Development Berhad
'3D'	Dirty, dangerous, and difficult

PREFACE

As Malaysia continues to develop to achieve a high-income nation status, the need for foreign labor to fill up low-skilled occupations in several sectors of the economy grows too. Although the country needs foreign labor force in order to sustain its economic growth towards becoming a developed country, the presence of foreign workers in the country has brought about several benefits and harms to the country and its citizens. As a result, the foreign labor force is one of the most discussed and debated issues of the world. The importance to control the foreign labor force in a country, whether to restrict or to encourage the inflow of this group depending on the country's needs and situation, is one of the concerns that have to be addressed appropriately. This study aims to investigate the impact of macroeconomic variables on the inflow of foreign labor. By studying the effects of unemployment rate, depreciation and appreciation of exchange rate, economic growth and the implementation of labor policies on inflow of foreign labor force, it can ease policymakers and the government or any related parties to take appropriate measures to control the flow of this group of people in the near future.

ABSTRACT

Malaysia was recorded the country with the fourth largest number of foreign labor in 2016 whereby the number of foreign labor has been growing notably since the last decade. This study investigates how the change in macroeconomic factors affects the foreign labor force in Malaysia over the period of 1985 to 2016. The macroeconomic factors included in this study are exchange rate, unemployment rate, and Gross Domestic Product (GDP). Moreover, government policies implemented by the Malaysian government to restrict the inflow of foreign labor has also been taken into account as a dummy variable where 1 indicates that there are government policies implemented to limit the inflow of foreign labor while 0 indicates otherwise. The Autoregressive Distributed Lag (ARDL) approach is used to examine the long run as well as the short run impact of macroeconomic factors on foreign labor force in Malaysia. All the selected independent variables are found to significantly influence the inflow of foreign labor in Malaysia. Also, this study proved that unemployment rate as well as government policies negatively impact the foreign labor force in Malaysia in both short and long runs. On the other hand, GDP influences the inflow of foreign labor in Malaysia positively in the short run and vice versa in the long run. Exchange rate is found to negatively affect the foreign labor force in Malaysia in the short run and vice versa in the long run.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

This study aims to investigate the relationship between macroeconomic factors and the foreign labor force in Malaysia with selected variables of exchange rate (EXR), unemployment rate (UNEMP), gross domestic product (GDPPC), and lastly a dummy variable (GOV) of 1 which represents the implementation of government policies to restrict inflow of foreign labor and 0 which represents otherwise. The research background is first discussed in this introductory chapter by providing a general idea on foreign labor force which includes a general definition of foreign labor, the categories of foreign labor, the needs for foreign labor, as well as the pros and cons of foreign labor to a country or an economy. Following, the background of Malaysia's foreign labor force is discussed in details with regards to the relation with the chosen variables with the assistance of graphical and statistical analyses. Next, the current and significant issues in Malaysia are brought into discussion in forming the problem statement. Research questions and objectives of this study are developed as the goal of this paper. Lastly, hypotheses of this study together with the significance of study are presented in the final part of this section.

1.1 Definition

A foreign worker is someone who is hired to work in a country on a short term basis to which the person is not a citizen (Mohamed, Ramendran, & Yacob, 2012). In short, foreign labor refers to those working abroad from their home countries because of several reasons such as higher exchange rates and/or economic and political stability of the foreign country. Not only that, various foreign worker programs or systems have been developed and implemented in developing countries decades ago in order to supplement the workforce deficiency of a country.

1.2 Categories of Foreign Labor Force

Cain (1978) defined those in the labor force as someone who are aged 16 and over, are eligible for work and are working under a pay or a profit. In most of the countries around the world in this modern era, the labor force is usually made up of local and foreign workers due to the increasing need in manpower to sustain the economic growth. The local labor are defined as those who are originally born in the country, also known as citizens, and are currently working for the country whereas the foreign workforce refers to people who are working abroad instead of their own country due to several reasons such as higher foreign exchange rates and economic and political stability of the foreign country (Bureau of Labor Statistics, 2016). The foreign labor force can be divided into two categories based on their education levels and whether they are working legally or illegally. Karakul (2016) had once described that educated labor which more often using their mental skills are defined as "white collar workers" whereas workers who mainly depend on their physical skills are defined as "blue collar workers".

1.2.1 Educated Foreign Labor

Educated foreign labor can be defined as employees who are highly educated, work, and contribute in professional fields such as engineering, medical science, and architecture in countries outside their own (Batalova & Fix, 2008). Workers categorized under this sector are mostly focused on contributing their knowledge and mental skills in their jobs instead of using physical power or skills. Thus, educated foreign labor are mostly found in developing countries as they lack professional experts that can help them in further developing the economy. Karakul (2016) had stated that it is vital to maintain a strong educated labor force in the expansion of the country's welfare states and this greatly increases the economic growth of a country. In other words, developing countries should import highly educated foreign employees to their countries to act as lecturers or mentors to guide and instill knowledge in their citizens in order for the countries

to develop smoothly. For example, the Indonesian national football team hired a foreigner, Alfred Riedl, from Austria in 2005 to be the manager and to coach the players in the team to achieve victory as Alfred is formerly a well-known striker for the Austrian national football team (The Star Online, 2005).

1.2.2 Under-educated / Uneducated Foreign Labor

For labor categorized under the under-educated or uneducated foreign labor force, they are often referred to as foreigners employed who are either not educated or not highly educated. These labor are always found to be participating in menial works that do not require much professional skills or knowledge to complete such as rough works at construction sites, in servicing sectors, cleaning jobs and etc. whereby these jobs require them to use more of their physical powers (Porter, 2012; Clemens, 2013). Under-educated or uneducated foreign labor can most likely be found in developed countries because these are the places where sectors like construction, servicing, agriculture and cleaning face labor deficiencies due to the locals' perceptions. In developed countries, locals tend to think that menial works are low class jobs and do not want to pursue them since they are too highly educated to fill up the job spaces (Clemens, 2013). Thus, the government has to import foreign labor that are willing to contribute their physical skills in return for low wages to fill up these job gaps in order to meet the production needs in these sectors. For example, Malaysia has imported many foreign labor from Bangladesh over the years to meet the labor market needs in the construction sector because most of the Malaysians do not want to involve in this sector (Hamid, Singh, Yusof, & Abdullah, 2011).

1.2.3 Legal Foreign Labor

The legal foreign labor force refers to employees who work overseas instead of the country which they are a citizen of under legally permitted visa schemes. They are usually working through an agent who brings them over to another

country to get a job offer. For example, an agent who is hired by a Malaysia construction company goes to Bangladesh to interview and hire local residents who are willing to work overseas and bring them over and work in Malaysia under a licensed visa scheme approved by the Malaysian government (Hayakawa, 2010).

1.2.4 Illegal Foreign Labor

Similar to the legal foreign labor force, illegal foreign labor force are those who work overseas instead of the country which they are a citizen of, but without a legally permitted visa scheme. They usually travel by themselves and had to work under a worse environment than the legal foreign labor with low pays in return and usually are not allowed to reveal themselves in the streets because if they were caught by the local polices, they have to be send back to their own country and are blacklisted from the country from then onwards. Foreign employees working without a residential status that permits work under the Immigration Control Act (a work grant) are known as undocumented specialists. People who enlist unregistered labor, controlling or sending them to work for others all the time are at risk to be indicted for help of illicit work (Article 73-2, Paragraph [1]). Besides, illegal labor is subject to discipline itself (Article 70) and forced deportation (Article 24), however, the Minister of Justice can offer thought of circumstances during the procedure of extradition, and if exceptional authorization for living arrangement is in all actuality, the individual being referred to may remain in the country under the terms of the status of habitation they were recompensed (Article 50).

1.3 The Need for Foreign Labor

In many countries, foreign labor is an important part for spurting the growth of the economy. More than a century ago, millions of foreign employees have since

contributed in the development of well-established countries such as Singapore, China, Japan, the Gulf countries, and even the United States (Forteza & Rama, 2001). Foreign labor is said to be essential to increase the population, alleviate population ageing, sustain gross domestic product (GDP) and per capita GDP growth, meet common and particular shortages in labor supply and skills, and accommodate wage costs to maintain international competitiveness (Chia et al., 2004; Chia, 2011). For instance, the resource-poor Singapore attained vigorous economic growth after political independence in August 1965, through policies that emphasize on economic transparency and efficiency, human resource expansion, and healthy economic structures (Hugo & Young, 2008). Following the immense economic growth, Singapore faces labor shortages in many sectors which then led to the relaxation of restrictions on immigration as well as the import of foreign labor. Foreign labor is needed in Singapore for few causes; one of which is to expand the Singapore population beyond the size determined by a declining total fertility rate, to diminish the swift population aging and the consequent loss of societal dynamism and rising health care costs and to enlarge the labor supply and skills, so as not to strain economic growth and restructuring. Not only that, foreign labor is required to act as shield for cyclical demands for labor.

Besides that, foreign workers are needed when a country have too many unskilled workers. In Saudi, the issue of rising unskilled workers who are in need of training to be incorporated into the labor market has bring about the demand for foreign workers. The labor market needs to accommodate a huge number of workers annually, estimated to be around 300,000 (Alhamad, 2014), making up almost half the unemployed population of 622,533 (Central Department of Statistics, 2013). Foreign workers are required to join the market to enable firms to be more competitive in the international market and thus help the economy grow as a whole. Following that, companies expand and hire more employees which increase income as well as consumption.

Furthermore, there are rarely any industrialized countries that can retain high levels of economic growth for a prolonged period without being dependent on huge

populations of foreign workers. For example in the case of Japan, there is a need for foreign labor because of the demographic differences and the denial of increasingly wealthy and fairly-educated Japanese youngsters to carry out the '3D' (dirty, dangerous, and difficult) jobs (Connell, 1946; Cheng, 2003; Kim, 2004). This caused the local workforce inability to cope with the rising demand for unskilled labor (Bartram, 2000). Furthermore, negative demographic directions such as decreased fertility rates and speedy population aging, and the exhaustion of previous labor sources (women, the elderly, rural workers) also add up to the need for foreign workers (Tsuda, 2008). Not only that, foreign labor is required because of Japan's strong demand for cheap labor that can be dismissed at convenience.

Since the construction industry involves massive manpower, huge labor supplies are significant and have become the most expensive resource employed within the industry (Loosemore, Dainty, & Lingard, 2003; Jurgens, 2010). Foreign workers are also required in the industry because there were insufficient local workers who were willing to work in the industry during the period of rapid economic growth (Lee & Sivananthiran, 1996; Han, Park, Jin, Kim, & Seong, 2008). Many local citizens are unwilling to work in the construction industry because of the '3D' image which has long been linked with the construction industry (Castles & Miller, 1998). Moreover, the demand for labor has been continuously rising in the construction industry because of the growing rates of development (Serneels, 2007). Albeit increase in wage rates in all categories of workers due to the labor deficiency, the supply of labor failed to increase adequately to match demand (Sambasivan & Yau, 2007); hence the need for foreign employees.

It is also essential to study labor movements from a historical view. The entrance of foreign labor in the construction industry has lasted for a prolonged period and has been highly connected with colonialism. During the colonial period, it was calculated that there were around 15 million people being transferred from Africa as minions to fulfill the requirement for labor in the plantation sector in Caribbean and America (Stalker, 2004) while in the Middle East, the growth in labor migration was provoked by the oil ban in 1973 (Castles, 2000). As a result, the speedy expansion in the oil

market led to a spike in the rate of construction and in the large scale investment in the region (Wells, 1996). In Asia, construction has grown quickly and it has become a significant new place for foreign labor due to the economic growth in many Asian countries and the decline in birth rates beginning the mid-1980s. Meanwhile, labor deficiency befalls some of the countries like Japan, Singapore, Hong Kong, and Brunei; which led to South Korea being one of the major labor-importing countries to meet the shortage of labor in specific sectors (Lee, 1997).

In the decade following the end of the Vietnam War, political uncertainty, U.S. economic penalties, and other conditions, extensive poverty was fostered that fueled significant emigration. The *DoiMoi* reforms initiated in 1986 had led to the transition from socialist collectivized land holdings to a market economy which allowed individuals or entities to obtain long-term land leases. This gave exchange values to land (Kemper, Ha, & Klump, 2015). In 2001 Vietnam enacted the Law on Foreign Investment and signed the Agreement on Vietnam-U.S. Trade. These policies helped spur important foreign investments and inflow of foreign workers, and global economic interests invested heavily in Vietnam to capitalize on cheap labor and equipment (Huyen, 2015). As a result, cities developed economically with associated improvements in living conditions, such as education, health care, and higher wages. The new urban foreigners provide the human resource for the rapidly expanding manufacturing and service markets. Therefore, foreign workers are needed in Vietnam to improve its living conditions.

1.4 Benefits of hiring foreign labor

Previous study done by Hui and Hashmi (2007) implied that hiring foreign labor and productivity is positively related. Most of the foreign labor is already trained properly of skills and behaviors that match a company's requirement before being sent to work in other countries. This is time-effective and cost-effective such that a company does not need to spend money and time to provide certain training to the foreign workers. For example, Vietnamese are required to pass vocational skills, language trainings

and medical check-up. The Ministry of Labor, Invalids, and Social Affairs set the target of having a total of one million citizens working outside the country annually beginning 2015 and converting them from physical to skilled and qualified workers (PANO-Economy, 2007). Furthermore, hiring foreign labor is usually cheaper than hiring locals. Foreign labor has low requirement on payment. Reduction in labor costs can helps to boost profit and skilled workers can increase a company's productivity. In addition, foreign workers have high enthusiasm to work. They are willing to work hard and diligently in order to earn more income and some of them are seeking for eventual immigration status. On the other hand, foreign labor is ready to do jobs that local residents don't want to do. Local people less likely want to work for some dangerous and dirty job like construction workers especially those in well-developed countries. Even if a country is facing serious unemployment problem, there are still a numerous of vacancy unfilled. For example, Canada introduced Low-skilled Temporary Foreign Worker Program in year 2002 to recruit foreign labor to fill in the low-skilled or unskilled jobs in a range of different sectors (Fudge & MacPhail, 2009).

Besides, previous study by Serneels (2007) stated that foreign labor can help a country develop more quickly. The migration of skilled foreign labor could raise the expected returns on education and the country's economy could profit from such scenario such that highly skilled foreign employees are able to supplement the local human capital and innovation activities (Stark & Wang, 2002). Locals can always learn and understand more about other countries' culture and technologies, and knowledge and skills sharing can help each country to develop faster. Especially those high-skilled labor, they are highly educated and with solid working experience, helping a country to achieve higher in different sectors. For example, Oman is a country that allows foreign labor to work. In 2013, 1,498,277 (89%) of all foreign residents were employed and 184,927 (11%) were family dependents (GLMM, 2015). Foreign labor helped Oman to develop many new buildings like Grand Hyatt Muscat Hotel and contributed to the Omani firms, increasing their corporate income (Françoise, 2015).

Sending foreign labor not only benefits the host country but also the country of origin. This is because foreign workers send remittances back to their country of origin which can increase a country's income. According to International Business Times, there are more than 230 million people who were working outside their origin country in year 2013 to earn money and sent it back home. The World Bank (2013) estimates the worldwide foreign workers had sent remittance home total of $526 billion in year 2012. Those remittances can be the major income for poor countries like Tajikistan and India to drive their economic. In addition, some countries use these remittances as a tool to access to foreign exchange (Ratha, 2013).

1.5 Harms of hiring foreign labor

With the globalization process, the number of foreign labor increases from years to years. This contributed to the huge increase in the population of a country. Consequently, this causes inflation indirectly (Yoon, Kim, & Lee, 2014). They affect the demand in the economy as they need to buy food and need accommodation. When they purchase the goods and services, they slightly increase the prices of the goods. The most significant impact is the rise in housing prices. Singapore is one of the countries that with high housing prices that caused by inflow of foreign labor. The land is scarce and over-crowding problem drive up the commercial rent and housing prices (Siow, 2011).

Besides, previous studies by Grossman (1982) and Bauer (1997) implied that the hiring of foreign labor has impact on wages of the whole economy. Foreign labor is paid with lower wages; hence when the inflow of foreign labor increases, it depresses the real wages of local workers. However, it only affects the wages when the foreign labor has higher productivity than the locals. This is because the unit labor cost is lower when the productivity is high. Temporary workers' wage rate is lower that leads to a reduction of local workers' wages (Motiejunaite, 2007). Low wages of foreign labor also leads to the decrease in local employability because companies are more willing to hire a foreign worker than a local worker who is well-trained and whose wages is lower. Locals then

feel insecure even though the job opportunities of foreign labor are limited. As the unemployment rate increases, more local citizens choose to migrate to other developed countries to earn higher incomes. This causes a country to rely more on foreign workers to meet local labor demands (Sunderhaus, 2007).

Furthermore, study conducted by Kanapathy (2008) stated that foreign workers increase crime rates. According to the Singapore Police Force 2006 data, the number of foreigners arrested for crime amounted to 2758 in 2006 which is 14% of the total criminals arrested. There are more than 59% of the foreigners who were arrested for theft and other offences. According to Pillai (1995), the foreign workers also disturbed the social stability even though foreign workers are found to be less likely involved in criminal activities than locals. In addition, they are also a cause for the spread of diseases. There are some cases where diseases are brought from the countries of origin of foreign workers due to lack of screening procedures conducted by the local authorities when these foreigners pass through the borders of the local country. Diseases like malaria, tuberculosis and hepatitis can easily be spread to the public. What's more, infected workers seldom consult doctors because consultation fees can be costly and they do not have healthcare benefits and compensations provided by their employers. Female foreign labor engaged in prostitution is also exposed to higher possibilities of developing AIDS and HIV which are incurable diseases (Devadason, 2013).

In addition, the huge increase in foreign labor demand also provoked the start of an international issue which is the increase in illegal foreign labor entries. Foreign workers are always exploited by their employers and being treated unfairly. There are many employers who recruit foreign labor through a private agency. Some agencies required high charges and created false contract for non-existing job which causes the foreign workers become illegal (Hyoji, 2007). These illegal foreign workers are then involved in sexual exploitation, abuse and human trafficking (Wong & Saat, 2002).

1.6 Background of Study

Working abroad has been a popular choice for many people in recent years. This is because developing countries have been recruiting foreign workers to meet their needs in industrialization; and Malaysia is one of the most well-known developing countries in Asia. Ever since the independence of Malaysia in year 1957, Malaysia has been a successful developing country and according to its former Prime Minister Tun Dato' Sri Haji Abdullah bin Haji Ahmad (2014) Malaysia is forging ahead to become a developed nation in its own mode. Not only that, the expansion of the economic growth of Malaysia has further emerged after the introduction of Vision 2020 which aims to become a fully developed country. The developing of Malaysia could be observed by which the nation had transformed from a middle-income country to an upper-middle-income country with an average increase of more than 7% on annual basis for 25 years and above according to the World Bank (2016). According to Adi (2003), international labor migration has become an increasingly significant event and has contributed crucially in influencing the most developing countries in the past three decades.

Kind of Economic Activity	1971	1983	2000	2005	2010	2015
1. Agriculture, forestry and fishing	28.0	18.8	8.7	8.1	7.2	6.9
2. Mining and quarrying	6.3	11.6	11.4	13.8	7.0	7.5
3. Construction	4.2	6.1	4.1	2.8	2.9	4.2
4. Manufacturing	14.3	16.7	31.6	28.0	26.2	24.8
5. Services	43.6	45.0	48.7	46.1	55.4	55.4
6. Import duties	4.7	4.5	1.7	1.2	1.3	1.2
7. GDP at Purchaser's Prices	100.0	100.0	100.0	100.0	100.0	100.0

Source: Department of Statistics Malaysia

Table 1.1: GDP by kind of economic activity - percentage share of GDP.

Initially, the nation's GDP relies heavily on the exports of primary products for instance, palm oil, tin, timber and rubber to the industrialized countries. However, since 1970 the key sector in development has been a range of export-oriented

manufacturing industries such as textiles, electrical and electronic goods, rubber products, and etc., as proposed by the Economic History Association (2004). As shown in Table 1.1, manufacturing sector accounts for the second largest GDP share after services sector with an average of 30% share from year 2000 onwards. Although there was a slight decrease in the percentage share of GDP, the manufacturing sector remains the second largest sector accounting for the share of GDP up till the recent 2015. Nevertheless, both agriculture and manufacture sectors are labor-intensive that requires a huge amount of manpower in production in which there is labor shortage later on. Thus, Malaysia's foreign worker policy and procedures to control the flow of foreign workers are relaxed and this made getting an international working permit much easier than before.

According to The World Bank (2015), Malaysia consists of the fourth highest number of foreign workers and the seventh largest ratio of foreigners to total population in East Asia Pacific up to date. The figures are estimated to range between 2 to 4 million people and their regional distribution is highly imbalanced, in favor of Peninsular Malaysia. Recent figures show that there are about 1.8 million registered foreign employees, and the rest (about 1 to 2 million) are undocumented workers. Also, as shown in Figure 1.1, foreign labor is often employed in the construction, manufacturing and plantation sectors which are often categorized as physically demanding sectors.
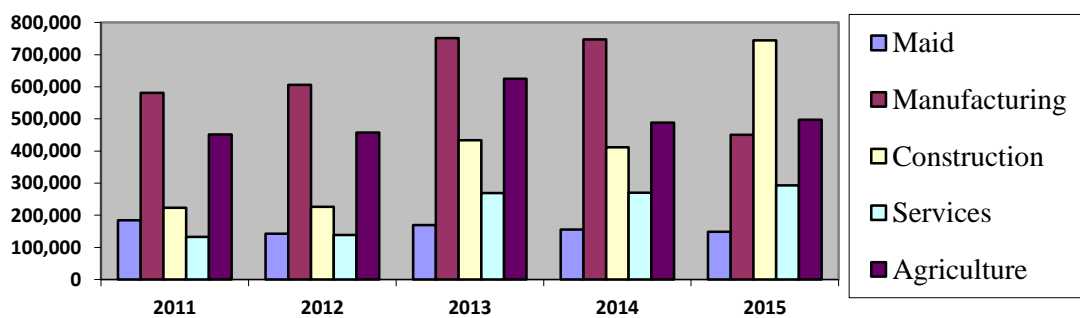
Source: Ministry of Home Affairs (MOHA)

Figure 1.1: Number of foreign workers in Malaysia by sector, 2011– 2015.

As shown in Figure 1.1, the construction sector recorded the greatest number of

foreign workers in 2015. The existence of foreign labor is one of the most crucial and discussed issues faced by the Malaysian construction market, as the increasingly popular 'Wet Trade' construction approach requires significant manpower. The Malaysian construction industry provides massive employment opportunities, accommodating almost 800,000 workers which represent 8% of the total workforce and 69% of these are foreign labors. Besides, Malaysia has continuously relied on foreign workers since the 1980s to retain its GDP. The withdrawal of native skilled workers in the construction industry has exhausted the pool of expertise that supply the traditional training system, which is common among the local Chinese, leaving Malaysia to highly depend on foreign workers (Narayanan & Lai, 2005). Moreover, one of the causes of labor shortage in the construction sector is due to the great amount of native workers who are hesitant to work in this industry because of the '3D' image which has long been connected with the construction industry (Castles & Miller, 1998).

Not only that, employers opt to hire foreign labor in times of labor deficiency instead of raising pays and upgrading the working environment to attract local workers (Narayanan & Lai, 2005) since their objective is to minimize the construction cost. Firms' competitiveness would be reduced if they have to bear higher wage payments in hiring local workers. Hence, local workers tend to be disadvantaged in the competition with foreigners for jobs, and the wage rate for local labors remained low (Shafii, Musa, & Ghazali, 2009) which could eventually lead to the emigration of local citizens, further pressuring the system and the country to heavily rely on foreigners to meet local labor demands (Sunderhaus, 2007).

While the needs as well as the evolvement on foreign labor force of Malaysia are identified, another question that comes to mind would be: 'Does the excessive number of foreign labor bring solely good or bad effects to Malaysia or the effect is two-edged?' There is no doubt that foreign workers have helped in Malaysia's development since they have filled the empty '3D' job positions and alleviate severe labor shortage to help in industrialization. Nevertheless, Abdul-Rahman, Wang, Wood, and Low (2012) have found that over-dependence on foreign workers brings

about long run negative impacts and severe social problems to the nation. First and foremost, while foreign workers are needed in making up the '3D' job vacancies, unskilled workers are often the employers' preference because of the low wages. These unskilled workers are more susceptible to recruitment and employment problems due to their less educated background as well as the way they are always conned by illicit agencies (Bakar, 2002; Kassim, 2005). At the time the proportion of illegal workers goes up, it also contributes to social and financial burden in which then led to the transit of costly and drastic policies of a nation (Becerra, Androff, & Ayon, 2012). Furthermore, Abdul-Rahman et al. (2012) have found that a large number of foreign workers are also prone to increase criminal cases in Malaysia by conducting structured interviews and surveys. It is suggested that unskilled workers who are always less educated commit most crimes since young (Freeman, 1996).

As the society started to notice the rising negative consequences created by surplus influx of foreign workers, companies and non-governmental organizations have come together and protested over a reported inflow of 1.5 million workers from Bangladesh over the next three years, where the government announced such was to meet the demands of industries. The local government has also announced that they may suspend the recruitment of foreign workers while it assesses gaps in the labor force. Also, this decision would enable the government to review the levy system for overseas workers in Malaysia, as stated by the Deputy Prime Minister Zahid Hamidi (Chong, 2016).

1.6.1 Unemployment Rate and Foreign Labor Force in Malaysia
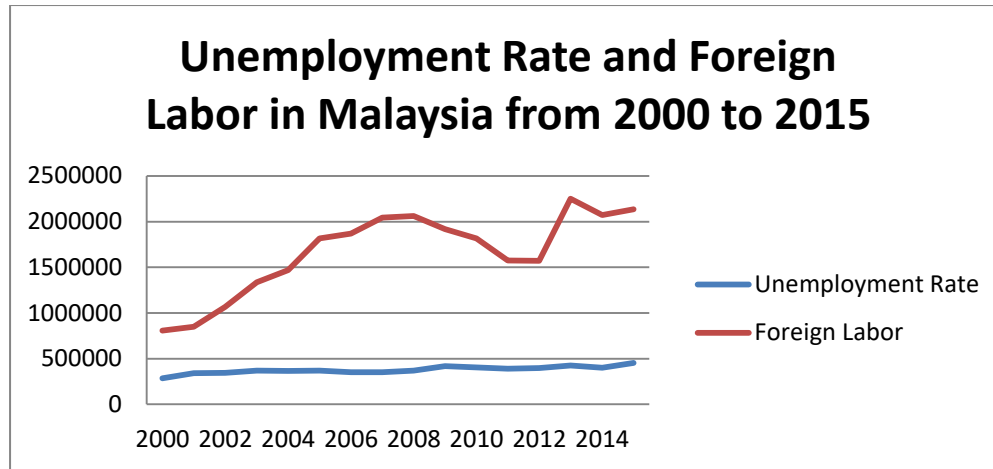
Source: Department of Statistics Malaysia (2016)

Figure 1.2: The unemployment rate and foreign labor force in Malaysia, 2000-2015.

Figure 1.2 above shows that the unemployment rate in Malaysia has been steadily increasing since years 2000 to 2008. Since the early 2000, the Malaysian economy grew significantly and many job opportunities were created in all the sectors especially in the agricultural, manufacturing, and construction sectors. Kanapathy (2008) indicated that unskilled and semi-skilled labor constitutes the largest component of foreigners in Malaysia. However, Malaysia faced severe insufficiency of local labor mainly in the manufacture and construction industries due to the swift economic growth. Due to labor deficiency, the government has imposed a few policies and regulations to manage the recruitment of foreign labor and to regulate the inflow of illicit foreign labor. One of which is the Foreign Worker Rationalization Programme that was created to authorize illegal workers with an annual levy. Besides that, the Memorandum of Understanding (MoUs) had been validated with various labor disseminating countries like Indonesia, Bangladesh, and Vietnam to authorize the legal employment of foreigners. Following these policies, there is a massive rise in the number of foreign labor in the country which flooded the market from 2000 to 2008, causing the unemployment rate to rise in the local labor market because the employment of foreign workers can help companies save costs due to the lower

scaled salaries. Friedberg and Hunt (1995) argued that the recruitment of foreign workers could have a negative effect in the reduction of employment rates as employers use foreigners to replace native workers in Malaysia.

The foreign employees were the first to be laid off during the global recession in 2009 to 2011 and this is one of the reasons why unemployment in Malaysia remained low and stable. The unemployment rate of local workers in Malaysia had decreased slightly since 2009 to 2011 because the Malaysian government stopped the hiring of foreign workers in manufacturing and made it clear that firms should terminate foreign labor first in order to decrease in the number of foreign worker that lead to lower competition for jobs which benefits the local workers (MPI, 2009). The World Bank (2009) noted that during the crisis, about 120,000 workers whereby majority of them were foreigners, were retrenched in the manufacturing sector. Therefore, the foreign labor force decreased from 2009 to 2011 and the unemployment rate remained stable. During 2012 to 2013, there was a huge increment in the foreign labor force in Malaysia due to the announcement of minimum wage levels in Malaysia. The minimal wage policy in Malaysia was an action to force the employers to increase the pay in 2012 and it is to be implemented in all scales. However the unemployment rate in Malaysia remained stable because local workers are still unwilling to work in the construction industry because of the '3D' image. Therefore, the employment of foreign workers for the '3D' job positions did not bring a large impact to the unemployment rate in Malaysia.

In 2013, Malaysia joined the league of nation implementing minimum wages. With the wisdom of Datuk Seri Najib Tun Razak, the Prime Minister of Malaysia, the government courageously and confidently implemented this policy. A 2009 government survey of about 1.3 million workers revealed that about 34 percent of Malaysian workers earned RM700.00 (about USD 225) or less, lower than Malaysia's poverty line income of RM800.00 (about USD 260) (Ibrahim & Said, 2015). This seemed to have led the Malaysian government to fix a minimum wage that all workers should be entitled to. This had caused the unemployment

rate in Malaysia to decrease since 2013 to 2014 since the minimum pay rule is applied to both foreign and local workers. This had eliminated the advantage of cost saving of hiring foreign workers. This also caused the foreign labor to decrease as the employer had to pay more for the foreign workers (Hector, 2013). Hence, both the unemployment rate and foreign labor in Malaysia had decreased from 2013 to 2014. From 2014 to 2015, the unemployment rate increased slightly as local workers could not withstand low incomes and the unfavorable surroundings and circumstances of employment as the foreign workers. Over the years as Malaysians become more educated and look for higher-skilled jobs, and as the labor market remains tight, foreign labor has occupied the openings in low- and mid-skilled jobs, which make up three quarters of all jobs in Malaysia (World Bank, 2015).

1.6.2 Exchange Rate and Foreign Labor Force in Malaysia
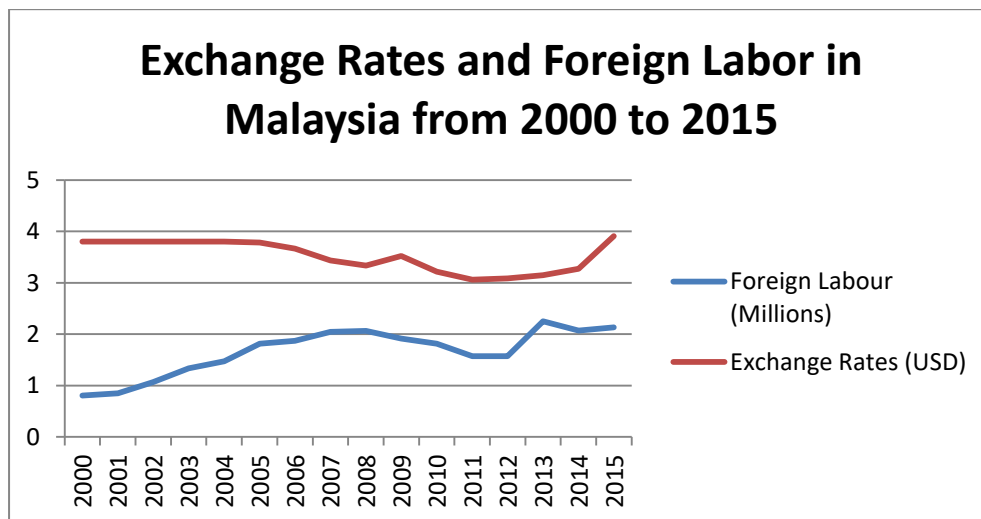
Source: Department of Statistics Malaysia

Figure 1.3: Exchange rates and foreign labor force in Malaysia, 2000-2015.

Figure 1.3 above shows the trend of exchange rates and foreign labor in Malaysia from years 2000 to 2015. It represents how much of Ringgit Malaysia (RM) in exchange for one unit of USD can affect the total foreign labor in Malaysia. According to Lee and Law (2013), the exchange rate between two currencies is

established based on the supply and demand for the two currencies whereas the demand and supply for currencies on the international markets are benchmarked by the international trade and investment.

As seen in the graph above, it can be seen clearly that from 2000 to 2004 the exchange rate remained the same at an average of RM3.80 per USD as a result of the Asian financial crisis which took place in 1997 to 1998. While the exchange rate remains constant, the total foreign labor in Malaysia has increased significantly from year 2000 to 2008. Nevertheless, after the global financial crisis striked again in 2008, the RM's value started to depreciate from an average of RM3.339 per USD to an average of RM3.533 per USD in 2009. In return, Malaysia started to decrease its total foreign labor and employed more local labor instead of foreign labor to increase its GDP. In the following years, the exchange rates appreciated and depreciated alternately but no significant changes are noted. Similarly, the number of foreign labor in Malaysia also changed with the appreciation and depreciation of the RM whereby when the RM per USD decreases (appreciates), the foreign workforce increases and when the RM per USD increases (depreciates), the foreign workforce decreases. This shows that there is an inverse relationship between these two variables. Based on Klein and Triest (2000), a panel data of the U.S. labor data (annual (1973-1993)) at the 4-digit industry level, a 1% appreciation of the exchange rate gives rise to 0.48 percentage point decrease in net employment, and a 1% depreciation increases net employment by 0.048 percentage point.

By the end of 2015, the Malaysian currency can be seen to have depreciated from an average of RM3.274 per USD in 2014 to an average of RM3.576 per USD in 2015. There are several reasons which might be related to the RM's value depreciation. Firstly, the supply has exceeded the demand in the oil market which led to the decrease in oil's value. As oil is one of Malaysia's primary sources of income, the declining cost of Brent unrefined petroleum by 38% from its June 2014 high had influenced the value of the currency. Moreover, the 1MDB monetary catastrophe in addition to the media reports that Malaysia's Prime

Minister, Datuk Seri Najib Tun Razak own records were included in the exchange of USD 700 million of 1MDB cash in July 2015, have brought about the decrease in value of the currency (Ho & Low, 2015).

1.6.3 Gross Domestic Product (GDP) and Foreign Labor Force in Malaysia
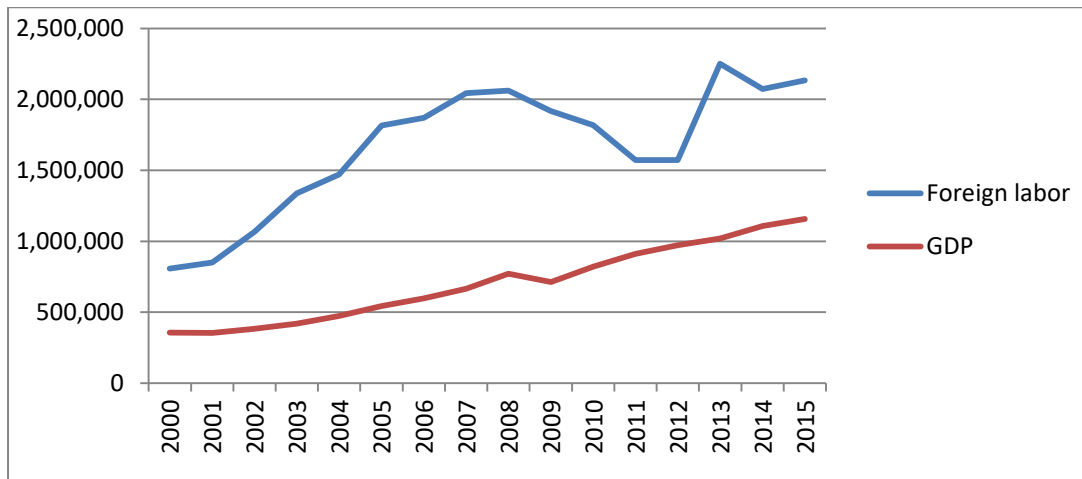
Source: Economic Planning Unit, Malaysia

Figure 1.4: GDP and foreign labor force in Malaysia, 2000-2015.

Figure 1.4 shows the growing trend of GDP and increasing number of foreign labor force. GDP is one of the indicators to measure the economic growth. It represents the monetary value of final goods and services that is produced in a country in given period of time. From the graph above, it can be noted that GDP and foreign labor is positively related. For example, the primary impact of migration of the Eastern European to the United Kingdom is a rise in productivity (Portes & French, 2005). Green et al. (2007) found that foreign labor contributed significantly to the West Midlands economy in the U.K., which is contributing to 5% of the regional output. The number of foreign labor has increased since year 2000 but started to drop from tear 2008 to year 2012. This is due to the policies implemented by the government which prohibited the employment of Bangladeshi workers because of the issues arising from agents in 2007. Furthermore, the Malaysian government froze the allotment of new permits for labor outsourcing companies in year 2009 and the major reason that

contributed to the decrease in number of foreign employees is due to the freeze on labor importation to the manufacturing sector.

The highest GDP per capita achieved by Malaysia is in year 2013, which is RM1,106,580. The growth of GDP is considered stable throughout year 2000 to year 2015. The GDP increases by RM0.54 for every 1 person increase in number of foreign labor during the period from 2000 to 2015. The Malaysia economy has performed better whereby the economic growth in year 2012 is 5.6%, higher than the expected growth, 5.1% in year 2011. Even though the number of foreign labor decrease drastically from 1,817,871 in year 2010 to 1,573,561 in year 2011, the GDP of Malaysia is still increasing. This is due to the strong domestic demand, where the consumption and investment spending is high. On the other hand, it is observed that the GDP decreased in year 2009 although the number of foreign labor increased. This is due to the significant impact of weak external environment on the domestic demand.
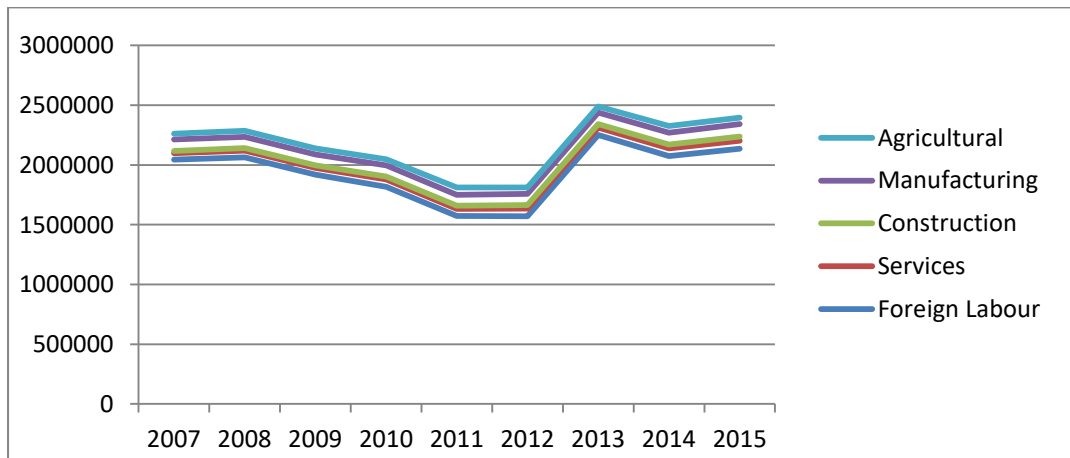
Source: Department of Statistics Malaysia

Figure 1.5: Productivitiy levels in different sectors and number of foreign workers in Malaysia, 2007-2015.

From Figure 1.5 above, it can be noted clearly that the higher the number of foreign workers, the higher the productivity. When the output increases, the GDP of Malaysia increases too. Every 10% increase in low-skilled foreign labor

results in 1.1% increase in real GDP (Ahsan et al., 2014). This is because the low-skilled or unskilled foreign labor is paid with low wages, thus reducing the production and labor cost and increasing the output. Consequently, the export of goods and services increases. The inflow of low-skilled foreign labor could enhance productivity (Gorg & Hanley, 2003). According to Kangesniemi et al. (2007), the productivity of foreign workers is generally higher than that of local workers in United Kingdom. In Malaysia, it is observed that the reliance on foreign workers can increase the output and productivity. From the graph above, it can also be noted that the changes of foreign workers have significant impact on the manufacturing, construction and services sectors. The productivity in manufacturing, construction and services changes in the same trend with the changes in number of foreign workers. Agriculture do not have the direct relationship with the number of foreign workers is because of most of the participants in agriculture sector is local labor.

Fukase and Emiko (2014) argued that the impact of the foreign workers on the productivity depends on the skill level and educational level. Skilled foreign labor contributed more significantly to the manufacturing sector in Malaysia (Abdul-Rahman et al., 2012). The highly-educated or skilled foreign labor and local labor are complement while the unskilled foreign labor is the substitute for local labor.

1.6.4 Government Policies and Foreign Labor Force in Malaysia

Malaysia as a developing country has brought in many foreign workers from countries around the world to meet its labor market demands. Although Malaysia has long been a country of demand and supply of labor, international labor migration started receiving national interest only since the mid-1980s, when its reliance on the territorial labor market for low-skilled workers increased at a groundbreaking rate (Kanapathy, 2001). Over the years, the number of foreigners gaining employment as well as obtaining Permanent Residence (PR) and residing in the country has been steadily increasing. While the rise in foreign workers in

the country can help the country meet productivity needs and sustain economic growth, there may also be a few negative impacts to the country and its people. For instance, foreign workers might occupy too many job opportunities replacing the local citizens and increase the unemployment rate of the locals in Malaysia. Besides that, there are many foreigners that entered and are working in the country illegally which increases the crime rate and endanger local citizens (Kanapathy, 2008). These call for the need of government policies to control the employment and movements of foreign workers in and out of the country to protect the rights of Malaysians. According to Abdul-Rahman et al. (2012), as a nation with scattered population, Malaysia started to rely on the regional labor market to a great degree to sustain its immense growth and with uninterrupted high growth the foreign workforce grew uncontrollably, necessitating state intervention to regulate their inflow. Thus since the late 1980s, the government has enforced numerous policies related to foreign labor which can be seen in Table 1.2.

Year introduced	Policy/Regulations
1985-1986	-Signing of the MoU between Malaysia and the Philippines – for domestic workers; Permission given for employers to recruit workers from Bangladesh and Thailand for the plantation and construction sectors.
1990	-Freeze on labor importation from Indonesia.
1991	-Introduction of an annual foreign-worker levy, which varies by sector and skill category (general, semi-skilled and unskilled). Agriculture (RM360, RM540 and RM720); Construction (RM420, RM600 and RM900); Manufacturing (RM420, RM600 and RM900); Services (RM360, RM540 and RM720). -Launching of Ops Nyah I (Operation Expunge I - to stop illegal infiltration). -Launching of Ops Nyah II (Operation Expunge II - to weed out illegal foreign workers).
1992	-Permission given for employers to recruit workers from Indonesia, Thailand, Philippines, Bangladesh and Pakistan for manufacturing and services sectors.
1995	-All levies increased by 100% except for agriculture and domestic service. It was raised to RM1200 for construction and manufacturing and RM720 for services.

1996	-Freeze on the importation of skilled and unskilled labor except for critical sectors in manufacturing and recreation/tourist industries.
1998	-Ban on the renewal of work permits for the services sector lifted. -Ban on new recruitment lifted and 120,000 new work permits are approved for foreign workers in plantation and construction sectors.
1999	-Levies are lowered for all categories (from RM1500 to RM1200), except domestic workers. New hiring of mostly Indonesian workers.
2001	-Maximum limit of temporary work pass limited from 5 years to 3 years. -Ban on intake of Bangladeshis due to clashes with locals.
2003	-Freeze on hiring of foreign workers from SARS related countries. -Signing of the MoU between Malaysia and China. -Signing of the MoU between Malaysia and Vietnam.
2005	-Signing of the MoU between Malaysia and Pakistan. -Levies are revised: RM1200 (RM960) for manufacturing and construction in Peninsular (East Malaysia); RM540 for plantations; and RM1800 (RM1440) for non-domestic services in Peninsular (East Malaysia).
2006	-Signing of the MoU between Malaysia and Indonesia – Malaysian employers are asked to pay RM2,415 to a local agent while the domestic worker has to pay her Indonesia-based agent RM1,228.
2007	-Major operation to round up an estimated 500,000 irregular foreigners. -Ban on the recruitment of Bangladeshi workers because of problems arising from agents (both recruiting agencies in their home country and outsourcing companies in Malaysia).
2009	-Freeze on the issuance of new licenses for labor outsourcing companies. -Freeze on labor importation to the manufacturing sector.
2011	-Compulsory medical insurance policy for foreign workers (excluding domestic maids) effective from January 2011 onwards with annual premium of RM120 per worker.

Source: *Kanapathy (2004); Devadason & Chan (2014)*

Table 1.2: Policies/regulations implemented by the Malaysian government, 1985-2011.
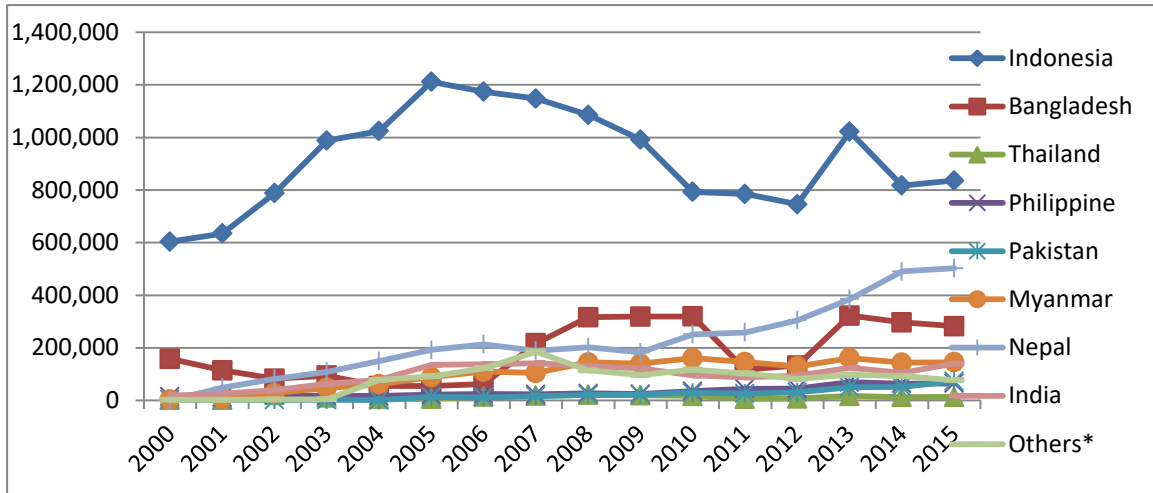
Source: Ministry of Home Affairs (2015)

Figure 1.6: The number of foreign workers by origin in Malaysia, 2000-2015.

Based on Table 1.2 and Figure 1.6 above, it can be seen clearly that from 2000 to 2001, the number of foreign workers employed in Malaysia has increased slightly. This may be due to the decrease in levy imposed on the employment of foreigners from RM1500.00 to RM1200.00 implemented in the year 1999. Besides, since 1999, there are more hiring of Indonesian workers which led to the increase in foreign workers from 2000 to 2001. Next, the number of foreign workers in Malaysia continued to grow tremendously from 2001 to 2003 despite the decrease in number of Bangladeshis employed. The decrease in number of Bangladeshis employed is due to the ban on intake of Bangladeshis following clashes with locals implemented by the government to control the country's social security. Besides that, the government also reduced the maximum limit for temporary work passes from 5 years to 3 years. Despite these two actions taken, the number of foreign workers continued to rise.

Although there is still a rise in foreigners employed in the country in the year 2003, it can be observed that the increase is slightly lower as compared to previous years especially workers from Indonesia, India, Philippines and etc. Such is the result from the signing of the MoU between Malaysia and China as

well as Vietnam to regulate the in-migration. Moreover, Malaysia also issued a ban on the recruitment of workers from SARS related countries. Moving on, Malaysia also signed the MoU with Pakistan and Indonesia in 2005 and 2006 respectively to regulate the number of workers employed from their country. Levies for manufacturing, construction, plantation and non-domestic services sectors both in Peninsular and the East Malaysia are also revised. Nevertheless, the total foreign workers in the country continued to grow immensely.

From 2006 to 2008, the number of foreign employees in the country has increased astronomically. From 2000 up to 2015, 2008 recorded the second highest number of foreign workers in the country. In spite of the government's actions to undertake a major operation to round down the number of illegal workers in the country and issuing a ban on the recruitment of Bangladeshi workers due to problems arising with agents, the number still hiked up. Fortunately, there is an obvious drop in the number of foreign employees in the country in 2009 due to the 2008 Global Financial Crisis which upturned the fondness towards foreigners as policymakers froze their intake in manufacturing amidst the rising number of company shutting down and ensuing job layoffs (Devadason & Chan, 2014).

Following that, in 2009 the Malaysian government froze the issuance of new licenses for labor outsourcing companies and also announced the freeze on labor importation to the manufacturing sector which led to the decrease in number of foreign labor. Furthermore, in 2011 the government came up with a new policy such that it is compulsory for each and every one of the foreign workers (excluding domestic maids) to have a medical insurance policy with an annual premium of RM120.00 per worker (Devadason & Chan, 2014). This might be one of the reasons that caused the further decline in number of foreign employees in the country because this policy imposes a heavy burden for the foreigners. Despite that, the diminishing of foreign workers in Malaysia persisted only until 2012 when the numbers surged to a total of more than 200,000 of foreign labor

which is the highest number recorded among 2000 to 2015.

Apart from the changes in the recruitment process, frequent import bans were implemented to decrease the acceptance of foreign workers. However, these measures were generally for a short period of time, not lasting for more than a year. Retrenchments and expatriations of legal workers following any economic recessions were often inverted right after employers lamented about issues of labor shortages (Devadason & Chan, 2014). Besides, in some cases the government had resorted to motivating the re-migration of illegal workers as an instantaneous measure to relieve labor deficits. It appears at the outset that the major problems are the lack of a complete and wide-ranging foreign worker policy and weak governance structures (Kaur, 2010). According to Devadason and Chan (2014), there seems to be turmoil in the current administration of foreign workers given the fragile regulatory framework, the insufficiency of cooperation of the various stakeholders that pursue their own interests, and finally the contrasting views over labor market needs.

1.7 Problem Statement

As stated by the World Bank (2015), Malaysia was recorded the country with the fourth largest number of foreign workers after Hong Kong, Thailand and Australia, and also the seventh highest ratio of foreigners to total population in East Asia following Macao, Brunei, Singapore, Hong Kong, Australia and New Zealand. Malaysia as a developing country is very much in need of foreign labor to meet labor market demands especially in the agriculture, construction and manufacturing sectors. This is due to the employers' unwillingness to raise wages and improve working conditions to attract local workers but instead opt to further minimize the firms' costs by hiring foreign workers which costs less during labor shortages. Henceforth, the topic regarding foreign labor is one of the most discussed issues in Malaysia with the ban in recruitment of new foreign labor as well as the hike in foreign worker levy implemented in the beginning of 2016. While the Malaysian government has decided

to freeze the intake of more foreign labor into the country, this may bring about a few effects for instance, the country is now severely short on manpower in a few major sectors of the country. This may lead to productivity inefficiency and companies are unable to meet the demands of consumers in the affected sectors. While this may benefit the local workers in a way there are more job opportunities for them and the problem of labor shortage can be solved given that the locals are willing to take up the job offers, it may also harm the Malaysian economy if locals turned out unwilling to seize the job offers and the empty '3D' job positions remains empty (Castles & Miller, 1998; Cheng, 2003; Kim, 2004). Other than that, the increase in foreign worker levy is a major concern for employers because it came at a time when business costs are high and the impending hike in minimum wages which will be enforced in the coming 2018 (Amarthalingam, 2017). This might lead to the employers becoming more unwilling to hire local workers due to higher wages and decided to look for illegal foreign workers which can affect the country's social security (Kanapathy, 2008; Pook, 2016). Moving on, Malaysia must also meet several conditions in order to attract foreign workers to the country. Identifying the various factors influencing the inflow and outflow of foreign workers in Malaysia is thus essential in order for the government to tailor policies to help promote the Malaysian labor market.

1.8 Research Questions

1. How does unemployment rate affect the foreign labor force in Malaysia?
2. How does gross domestic product (GDP) affect the foreign labor force of Malaysia?
3. How do exchange rates affect the foreign labor force in Malaysia?
4. How do government policies implemented affect the foreign work force in Malaysia?

1.9 Research Objectives

(5) To investigate the impact of unemployment rates on foreign labor force in Malaysia.

(6) To investigate the impact of Gross Domestic Product (GDP) on foreign work force of Malaysia.

(7) To investigate the impact of exchange rates on foreign labor force of Malaysia.

(8) To investigate the impact of implementation of government policies on foreign labor force of Malaysia.

1.10 Significance of study

There are limited empirical researches done to study the impact of macroeconomic factors on the inflow of foreign labor in Malaysia. Instead, most of them focus on discussing how foreign labor force affects macroeconomic factors in Malaysia. Besides, previous researches mostly studied on the relationship between foreign labor force and the macroeconomic variables with a targeted population that is relatively wide and general that included both developing and developed countries such as Europe, Mexico and Bangladesh. This study provides a more precise analysis of the impact of macroeconomic factors on the foreign labor force on Malaysia which is a developing country and demands mostly low-skilled foreign labor. The inclusion of the implementation of government policies as a dummy variable in the study framework is also a plus. There are only few previous researches (Kaur, 2004; Abdul-Rahman et al., 2012; Devadason & Chan, 2014) that studied the consequences of the implementation of government policies and the inflow of foreign labor in Malaysia statistically as most of which are discussed theoretically. By studying the relationship of these two variables statistically, it can provide guidance and reference to local and foreign policymakers when considering the types of policy to be implemented depending on the needs of their country. This research also includes a more thorough

discussion of how exchange rates can directly influence the inflow of foreign labor into Malaysia. Moreover, the impacts of the macroeconomic variables on the foreign labor force in both the long and short terms are discussed.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This first section of this chapter focuses on the reviews of theories and concepts that are developed earlier in determining the relationship between the dependent and independent variables of this paper. Besides, the second section includes the empirical studies drawn from previous researches to discuss the impact of each independent variable on the chosen dependent variable. Also, the proposed theoretical framework, hypothesis statements relating the variables as well as gap of study are also presented in the latter sections of this chapter.

2.1 Review of theories and concepts

2.1.1 Buffer Theory

To investigate the relationship between foreign labor force and macroeconomic factors, macro-level migration theories are in favor for the discussion. One of those that can be used to explain the impact of macroeconomic factors on foreign labor force is the buffer theory. It is a theory that emerged in Western Europe in the years after World War II and was applied to justify the guest-worker episode in Europe during the 1950s and 1960s. Buffer theory states that a versatile allowance of foreign workers can act as a buffer during crises, which is, foreign labor leaves during economic recessions and thereby freeing vacancies for the domestic population (Bohning, 1972; 1974; Kuhn, 1978; Dobson, Latham, & Salt, 2009). Putting into simpler words, it also means that foreign labor migrates to a country that is experiencing high economic growth to fill job vacancies that cannot be filled (Beets & Willekens, 2009). During the peak of economy,

more jobs vacancies are provided due to the expansion and development of a country and thus, unemployment rate declines and even full employment would be possible. This then causes the domestic workers of the country to incline more and more towards jobs that are socially more desirable and leaving the others unoccupied (Bohning, 1974). As a result, foreign labor is then attracted into the country to fill up those remaining jobs, frequently those least rewarding and dirtiest jobs that could not attract domestic workers.

During an economic downturn, massive returns of foreign labor to their countries of origin was observed by the International Labor Organization (n.d.) as affected by the financial economic crisis in the third quarter of 2008. Orozco (2009) suggested that it might be due to several reasons such as worsening work and living conditions, lower earnings, and difficulties in finding job as a foreign labor. Nevertheless, to ensure the flexibility of foreign labor, the foreign worker inflow and stock must be easily manipulated and legally disposable (Kuhn, 1978). Furthermore, Bohning (1974) describes foreign labor as a "conjunctural shock absorber" in the buffer theory in which he proposed that the "temporary immigration" of foreign labor, where they have temporary contracts and do not wish or are not permitted to settle, is crucial in the operation of the buffer mechanism (Beets & Willekens, 2009). This is because of the flexibility and benefits associated with foreign labor depending on the turnover.

Since economic recession undoubtedly brings about job loss and raise the unemployment rate of a country (Bell & Blanchflower, 2010; Levine, 2013), government may implement policies to protect the employment of its citizens. According to the International Labor Organization (n.d.), countries of destination responds to rising unemployment rate of domestic workers by tightening conditions for new admissions as well as encouraging voluntary return of foreign labor, and lastly, stepping up efforts to address irregular migration. These actions are taken in order to 'export' the unemployment and

helping the indigenous population to remain in work (Dobson et al., 2009).

To sum it up, the buffer theory indicates that a growing economic (raising GDP), may affect the inflow of foreign workers positively (Karemera, Oguledo, & Davis, 2000; Jennissen, 2002; Hanson, 2008) due to the increased availability of job vacancies resulted from economic expansions. Also, the government may intervene the inflows of foreign labor by using several controls with the relevance of buffer theory (Dobson et al., 2009). Besides, unemployment rate influences the influx of foreign labor negatively since competition for scarce jobs intensifies and foreign labor may lose the ability in getting a job. Such relationship fits to the empirical studies where most of the studies clarified that local unemployment rate reduces the number of foreign labor force (Winkelman & Zimmerman, 1993; Dustmann, Fabbri, & Preston, 2003). However, according to the studies done by Dobson et al. (2009), buffer theory on its own offers an unsound basis for analyzing the net migration flow since, unemployment and economic growth are not the only factors influencing migration patterns. Also, it is unclear yet whether foreign labor would go home or stay during recessions (Constant & Massey, 2002; Beets & Willekens, 2009). This is because as long as they benefit from wages, education, living standards and work conditions in the host country as compared to those of their home country, they would probably stay even after the temporary contract ends. This violates the assumption of the buffer theory which indicates that foreign labor returns home when the economy of a country contracts, thereby freeing up jobs for the local population.

2.1.2 Neo-classical theory

Another macroeconomic theory about international migration of labor is the Neo-classical theory that is developed by Harris and Todaro in 1970. It is one of the best-known and oldest approaches in discussing the determinants of international migration. This theory shows that income differentials and

probabilities to find a job given the cost of migration are the main factors of a migration decision (Lewis, 1954; Ranis & Fei, 1961; Harris & Todaro, 1970). Prior to migrating, a foreign labor considers both monetary and non-monetary benefits as well as the costs of migration. Thus, a person decides to migrate if the value of benefits of migration is higher than the costs associated (Oush, 2014). Under the neo-classical theory, geographical imbalance between demand and supply of labor is the main driven force of international migration of workers. Further explained by Massey et al. (1993), it is said that while the supply of labor is elastic, but if the labor is paid low wages, workers tend to migrate to a high-wage country; whereas Brooks (2014) explained that Gross Domestic Product (GDP) measures the total income of everyone in the economy, countries possess a higher GDP indicates that the standard of living, well-being and income level in that particular country are higher compared with countries with a lower GDP.

Not only that, countries with high demand on labor supply usually have higher average wages, while countries with low demand on labor supply have lower average wages. As a result, such wage differential triggers the flow of labor from low-wage country to the high-wage country (Massey et al., 1993; Hanson, 2008). To maximize income, remittance generation has become a powerful incentive for labor-sending countries in determining the destination countries of out-migration too. Therefore, an exchange rate plays a vital role to labor in selecting the destination countries. Since low-wage country usually possess a weaker currency and lower real price level, a higher exchange rate of destination countries against home countries allows a greater amount of remittances to be translated back to their home countries (Yang, 2008; Baas & Melzer, 2012; Keita, 2014). Also, neo-classical theory emphasizes that the job opportunities in destination countries also affect the inflow of foreign labor (Borjas, 1990; Mitze & Reinkowski, 2010). The relationship is defined as while the probability to get a job in the destination countries increases, the net flow of foreign labor to that country also increases. On the contrary, it means

that increase in the unemployment rate in the destination country has negative effects on the bilateral net migration from labor-sending country.

As a conclusion, neo-classical theory provides similar theoretical findings of the positive relationship between GDP and foreign labor migration as well as the inverse relationship of unemployment rate and foreign labor migration. Nevertheless, in the neo-classical theory, it emphasizes on the income maximization as the purpose of migrating and thus, an exchange rate comes into consideration in terms of remittance transfer. This means that a country with higher exchange rate against home country is attractive (Yang, 2008; Keita, 2014). On the other hand, the assumptions of the neo-classical approach could be challenged particularly in the context of developing countries. This is due to the fact that in most developing countries, the first migration is not necessarily voluntary whereby many factors like poverty, civil conflict, and restraining state policies play a significant role (UNESCAP, 2007).

2.1.3 Push-and-Pull model

It is a migration theory extended from the neo-classical theory which continued to emphasize on the economic context of international migration (Bauer & Zimmerman, 1999). According to Massey et al. (1993) and Reniers (1999), the augmentation of the push and pull model is based on the idea that the neo-classical theory of migration in general failed to portray why some in a certain country choose to migrate while others do not. The push and pull model is categorized as a micro-level theory which tries to focus on investigating and analyzing migration decisions from an individual's perspective such as a person's passion and expectations (Wickramasinghe & Wimalaratana, 2016). The push factors are factors that cause a person to be discontented with one's present locale and forces he/she to leave the home country (Kurekova, 2011; King, 2012; Thet, 2014). The common push factors are usually poverty, high unemployment, poor economic environments, lack of

chances for evolution, political repression, exhaustion of natural resources and natural calamities that occur in the labor-sending country (Mayda, 2009; King, 2012). For example, a person might be forced to migrate to work abroad in order to seek for higher income to support his/her family in the home country. The reason might be due to the introduction of capital intensive technologies of production into the agricultural industry and the mechanization of certain processes which directly decrease the labor requirement in rural areas and as a result, pushing the foreigners towards a more developed country with greater job opportunities (Thet, 2014).

On the other hand, pull factors are largely a mirror-image of push factors (Kurekova, 2011; Shrestha, 2016). Haas (2007) has further explained this by illustrating an example of which foreigners are lured to big cities or to foreign countries because of the high wage (pull), implicitly or explicitly made in relation to an apparent low wage (push) at the home county. Pull factors are those operating from the place or country of destination such as higher income, higher education, better working conditions, job prospects, good environmental and living conditions and welfare systems (King, 2012; Thet, 2014). The push and pull factors exist because of the uneven development of rural and urban areas and it has caused a large number of labor flows between the two countries. Such relationship is proven in the studies done by Shrestha (2016) where results showed that an increase in demand for foreign labor, reflected by an increase in foreigners' income, bring about a rise in migration by making it more favorable.

In a nutshell, the push and pull model concluded that the demand and supply relationship of labor is based on the labor-sending as well as the labor-receiving's perspective. However, this model gives limited heuristic value in explaining the determinants of migrating since both push and pull factors are generally two sides of the same coin which together they provide the perception of difference between 'here' and 'there'. Not only that, Haas (2007)

criticized the push and pull model for unrealistically viewing migration as a cost-benefit calculation by individuals while ignoring the structural constraints.

2.1.4 The Dual Labor Market theory

The Dual Labor Market theory is a macroeconomic-level of migration theory introduced by Michael J. Piore (Thieme, 2006; Olejarova, 2007). This theory is against the push and pull model in a way it opposes the viewing of migration as a consequence of decisions made by individuals. It proposed that the flow of labor is the result of intrinsic labor demands of industrialized societies at present (Massey et al., 1993; Porumbescu, 2015). Michael (1979) also argued that the permanent demand from industrialized and developed countries at present to facilitate their development progress is the cause of international migration. In other words, the demand of labor in those countries act as the pull factors and international migration takes place due to these pull factors seen in receiving-countries rather than the push factors seen in sending-countries (Jennisen, 2004; Wickramasinghe & Wimalaratana, 2016). As the dual labor market theory claims that international migration is caused mainly by pull factors in the developed labor-receiving countries, such pull factors refer to the essential and unavoidable needs expected to be fulfilled by foreign workers in those particular countries.

According to this theory, labor markets in these countries are distinguished into primary or secondary segments based on their natures (Jennisen, 2004). The primary segment, which is also known as the high-wage level sector, is characterized by capital-intensive production methods and predominantly high-skilled labor whereas the secondary segment, or low-wage level sector, is characterized by labor-intensive methods of production and predominantly low-skilled labor (Jennisen 2004; Olejarova, 2007). Specifically, the theory assumes that international labor migration stems from labor demands in the

low-wage segment where low-skilled labor is needed. Additionally, Michael (1979) and Massey et al. (1993) provided several other explanations such as general labor shortages, the need to fill the unwanted jobs in the bottom of the job hierarchy, and low-wage level segments of a dual labor market. As a result, labor migrates to a country that consists of strong pulling factors.

In short, although the dual labor market theory does not clash with the mostly-applied neo-classical theory, it is in contrast with the idea of a demand-driven nature as the main factor of international migration (Wickramasinghe & Wimalaratana, 2016). Moreover, several researchers (Stark & Bloom, 1985; Prakash, 2009) argued that dual labor market theory itself is not sufficient since the decision to become a foreign labor cannot be explained only at the level of individual workers; instead, wider social entities have to be taken into consideration too. Lastly, Kurekova (2011) proposed that this theory excludes various immigration rates in countries where similar economic structures and statuses are observed.

2.2 Reviews of Empirical Studies/Methodologies

2.2.1 The impact of GDP per capita on foreign labor

Most of the earlier studies pointed out that GDP per capita affects the number of foreign labor positively and significantly. This means that countries with a higher GDP usually have higher net international migration (Taylor, 2006; Mayda, 2009; Dobson et al., 2009; Agbola & Acupan, 2010). These studies claimed that migration and development are related to one another whereby development affects migration and migration affects development of the country. Kim (2010) has further explained this by pointing out the fact that foreign population usually have low average income and is expecting to earn higher return in a rapid growing country. Moreover, Djafar and Hassan (2012) proposed that high GDP and high demand for low-skilled labor in Malaysia

has contributed to high supply and inflow of Indonesian foreign workers to Malaysia. Not only that, Jennisen (2002) has used time regression model in her study to study the impacts of economic determinants on net international migration in Western Europe in the period of 1960 to 1998. In her study, it is also proven that GDP per capita has a positive impact on the net international migration. Besides, a pooled cross sectional time series analysis was conducted by Jennisen (2002) for country specific analysis of all Western European countries. This methodology has more observations and includes all possible additional data from differences between countries. There is no strong evidence to support that the GDP per capita has a positive effect on country's net international migration, but such results is insignificant.

In addition, Ullah et al. (2012) used the gravity model to examine the panel data of emigrants from Bangladesh to 23 countries during years 1995 to 2009. The push-and-pull theory stated that there is a set of push and pull factors affecting the immigration and one of the main push factors is the difference in income levels of the labor importing countries. This is supported by Karemera, Oguledo, and Davis (2000) whereby their study concluded that income in United States of America and Canada had positive effect on the international labor migration by utilizing the covariance model. According to Diacon and Maha (2014), as the GDP per capita of a country increases, the income or wage level of a country increases. This can be explained by the statement made by Massey at al. (1993), a country with high GDP incur more productivity output that has to be supported by labor production. Thus, it reflects relative higher demand of labor and while demand exceeds supply, it provides a rate of return which considered as high by international standards, thereby attracting the flow of foreign labor.

On the other hand, Bauer and Zimmermann (1999) have observed a slightly different result from the above discussion and mentioned that the predictions made by the positive relationship between GDP per capita and foreign labor

flow have had mixed success in explaining and predicting migration across a variety of regions. They further illustrated that wage differential were statistically significant predictors of migration in the positive directions only about half the time whereby sometimes the differential seemed to produce the opposite of the expected effect. Next, in the study of Jennisen (2004) which also reveal that GDP per capita has a significant and positive impact on international net migration, she also identified that foreign labor may have more than one migration motive; yet, the real migration motive may not be known. Such statement is consistent with the studies carried out by Dobson et al. (2009) and Wickramasinghe and Wimalaratana (2016), which claimed that economic growth may not be the only factor driving international migration, there are also factors relating to social, legal, political cultural and other phenomena. Although so, the positive impact of GDP per capita on the net international migration of a country can still be concluded based on the majority of studies.

2.2.2 The impact of exchange rate on foreign labor

According to Narayanan and Lai (2005), foreign labors are willing to accept lower wages and poorer working conditions than local citizens even though the jobs performed are similar. A higher exchange rate against their home currency is believed to be one of the reasons attracting foreign workers. This is supported by Ku (2008) and Orozco (2009), stating that due to the discrepancies in living expenses between countries, if the sum of money delivered home for the family can be turned into a sufficient favorable amount of expending, a foreigner may on his/her own accord take on real wages or living standards in the targeted country that are worse than those in one's own country. Such statement holds in the case of temporary migration of labor from low- to high- income countries. The real price level in the home country is always lower than the destination country and that the foreign labors optimize their expending mix across borders by delivering payments to their

families left behind (Hanson, 2008; World Bank, 2016). Low-income countries, in general, possess weaker currency compared to higher income countries. The amount of salary earned in foreign country can thus be converted into a larger amount of money to their home country due to the lower value of their home currency. As proposed by Yang (2008) in the case of Philippines, depreciation of Philippine peso against the home currency of the foreign worker leads to increases in household remittances received from overseas while a huge number of households in developing countries rely on the financial support from family members working abroad.

Aside from that, Pillai (1998) and Keita (2014) found similar results suggesting that currency depreciation and exchange rate differentials may bring divergent impacts on labor movement in the region and the correlation between exchange rate and foreign labor flow is a priori, theoretically ambivalent. The first researcher indicated foreign labor is 'sticky', which is being less elastic to economic forces, and continuing to flow even after the initial economic motive such as interest rates or profit rates for movement has fallen. Keita (2014) has used a balanced data set of 165 origin countries, 31 destination countries over the period 1995 to 2011 to examine the overall effect of real exchange rate fluctuation on migration flow. The researcher found that there is a negative relationship between migration flow and the exchange rate of the destination country against origin country while high migration cost is associated. The justification behind is that moving to OECD countries requires huge financial fees, and those 165 origin countries chosen in the dataset consists of both developing and emerging countries. Thus, foreign labors from poor countries may be very responsive to changes of amount of the destination-country currency they can get for their assets. In contrary, under the research done by Mishra and Spilimbergo (2011), the results are obtained for two different groups which are developed countries and developing countries. It shows that there is positive effect between the exchange rate of the destination country against the home currency and the

number of migration flows for developing countries. This relationship can be applied where migration costs are very low as in the case of highly integrated countries. In this research, the test is done by categorizing whether the origins are developing or developed countries while the destination country is set to be the United States which is a highly integrated country.

In fact, the real rate of exchange affects the migration decision in various ways. First of all, a given country's exchange rate may mirror the current economic conditions; one of the key factors of international migration. Second, the expected income to foreign labor in terms of money transferred back to their origins. As a result, a depreciation of real exchange rate of the home currency with respect to the currency of the destination country increases the expected value of remittances and thereby increasing the attractiveness of migration. This relationship is backed-up by the deviation of purchasing power parity from the real price levels in poor countries that tend to be lower than in rich ones (Ku, 2008). This means that a Ringgit Malaysia, if transfigured to Bangladeshi Taka at the market rate of exchange and used in Bangladesh, can obtain twice or more than twice as much as what it affords in Malaysia. Therefore, citizens from poorer countries may choose to migrate to higher income level countries to earn salary and use the remittance to translate into a desirable amount of money to support the family left behind in the home country, given that the exchange rate abroad is higher than the home currency. Bodvarsson and Van den Berg (2013) also supported that when foreign workers choose their destination country, their primary purpose is to maximize utility by choosing the location that offers the highest net income (high exchange rate and low migration cost). Moreover, it is clear that the real exchange rate is the key determinant influencing migration decision as remittances play a significant role in determining the worker's utility gained from migration (OECD, 2006). There is also evidence that real rates of exchange affects illicit migration from Mexico to the USA (Hanson & Spilimbergo, 1999) and aggregate emigration towards highly desegregated

OECD countries (Mishra & Spilimbergo, 2011).

In conclusion, there is mixed results reasoning the interrelation between real exchange rates and international migration. The discrepancy of results may be due to the different development stages of destination country and the different migration costs due to the migration control that varies among countries.

2.2.3 The impact of unemployment rate on foreign labor

The relationship between unemployment and net international migration is negative and substantially strong (Winkelman & Zimmerman, 1993; Dobson et al., 2009). When unemployment rate rises in a country, the government may intervene to reduce the influx of foreign labor. For example, the government of Spain has announced a programme in which they offered advanced payment of unemployment benefits to foreign workers if work and residential cards are handed in and that they leave and do not return within three years (Beets & Willekens, 2009). Beets and Willekens (2009) also agreed that times of recession and high unemployment create pressure for restrictive immigration legislation supported or initiated by trade unions. Moreover, Dustmann, Fabbri, and Preston (2003) used data from the United Kingdom Labor Force Survey and found minor negative effect of local employment on immigration of foreign workers which is statistically significant.

Also, Aqeel (2015) said that the unemployment in the destination country discourages inflow of foreign labor. Pope and Withers (1993) examined the long-run relationship between immigration of foreign labor and unemployment for the Australian economy. They tried to find out whether domestic workers and foreign workers take away jobs from each other using the sticky wage theory. According to the main finding of the study, the increasing unemployment in Australia, historically, prevented the increase of

migration of foreign labor to the country. Finally, Christofides, Clerides, Hadjiyiannis, and Michael (2007) estimated the relationship between the employment of local workers in each sector of the Cypriot economy and probability of employment of foreign labor. According to the evaluations, the rise in number of local workers increased the chances of the recruitment of foreign workers in the service sector. This is due to the Labor Demand Theory that stated demand for labor increases market wages and more workers enter the market. Based on this theory, the decrease in unemployment rate can not only increase the supply of labor but also the demand for labor (Hall, 1991). In other sectors, an increase in the number of local workers increases the probability of the employment of foreign workers especially in the secondary sector such as manufacturing and construction.

In contrast, Karemera et al. (2000) have obtained mixed evidences between the relationship of unemployment rate and international migration flow. The unemployment rate in the US is significant at negative 5% while in Canada, it shows an unexpected positive sign and is insignificant. Not only that, Venturini and Villosio (2002) used the Italian Labor Force Survey for the period of 1994 to 1997 and found that the employment of youth domestic employees had an inverse effect on the recruitment of foreign workers and in the manufacturing sector. However, in the remaining categories, the effects are relatively small and sometimes positive. Besides, Chang (2003) used data on Australia and through an economic theory showed that skilled foreign workers, contrary to the unskilled, do not have inverse relation with domestic workers. This is because the Australian government aimed at promoting the migration of skilled workers to the country to increase the country's economic growth. Other than that, Card (2001) used the International Competition economic theory and found that unemployment of unskilled workers in Miami and Los Angeles caused an increase in immigration of foreign labors.

In general, the relation between changes in unemployment and migration across countries is complex and variable (White, 1986; Borjas, 1995). This is due to the difficulty in estimating the size and nature of the domestic employment impact on foreign labor since the results fluctuate over time where foreign labor can develop new skills and gain experience in the domestic labor market. On the other hand, existing empirical studies in the United States done by Borjas (1995) concluded that there is insufficient evidence of a negative impact for local employment on immigration of foreign workers. Similarly in Germany, Kim (2010) proposed that unemployment rate in destination country do not cause the return movement of foreign labor.

2.2.4 The impact of government policies on foreign labor

Hui and Hashmi (2007) had previously conducted a research on the government policy implication based on the relationship of foreign labor and economic growth. They used panel data to compare the productivity performance of Singapore's economy and a few selected OECD countries for year 1980 to year 2000. The comparison suggested that the Singapore economy can improve its productivity performance by reducing the number of foreign labor to sustain the targeted economic growth of the economy. This study had concluded that there are a few policies that can be implemented by the government to reduce the reliance on foreign labor. By determining the effect on labor supply of an increase in labor force participation rate (LFPR) of the older generation, Hui and Hashmi (2007) found out that increasing LFPR of the elderly can significantly reduce the demand for foreign labor. Moreover, when government policymakers reduce the GDP growth rate, it is possible to lower the dependence on foreign labor after studying the effect of changes in targeted growth rate on demand of foreign labor.

Besides, Low (1995) conducted a research to investigate the relationship between government implemented foreign worker policies and the foreign

labor workforce in the case of Singapore and evidence concluded that there is a significant relationship between these two variables. Singapore has always had an open door policy when it comes to the employment of trained, qualified and professional foreign workers. Before 1968, Singapore only resorted to permitting qualified and professional workers and no untrained workers were allowed into the country; however in the early 1970s, policies on foreign workers began to relax as the policymakers realize a wholly Singapore workforce became unrealistic. As the policies loosen, foreign labor grew in number with 72,590 non-resident workers in 1970 and 119,483 in 1980, respectively (Low, 1995). Since 1982, the government of Singapore started imposing the foreign worker levy that is to be paid on a monthly basis which was increased periodically to constraint demand to make sure salaries of foreign employees reflect labor market circumstances and not just the marginal cost of employing them (Low, Toh, & Wong, 1989; Pang, 1992). Later in the 1992, a two-tier levy was imposed whereby a lower rate for the skilled employees and a higher rate for the unskilled to distinguish which type of workers are more favorable and encouraged in the country. There is also a managed rotating pool of foreigners using temporary grants to stay in the country and in year 1991, the government of Singapore liberalized the utilization of foreign workers in the services sector to enable more Singapore women to get a job. All of these are measures taken by the Singapore government officials to manage the entrance of foreign labor into the country in which a stricter policy is to limit the inflow of foreigners and a loose policy to encourage more of them. By the nature and target, these foreign worker policies are top-down and imposed upon the market based on some collective paternalistic views of what is best (Low, 1995).

On top of that, Devadason and Chan (2014) had studied the regulations that shaped the inflow of foreign labor to Malaysia by investigating the distribution of foreign workers to each sector respectively. Since 1992, the foreign labor force in Malaysia mainly constitutes of foreigners originating

from Indonesia after the government gave the official permission of their recruitment in the manufacturing industry. The local government then introduced a new policy for caning and deportation of illegal workers in year 2002, causing the flow of foreign labor from Indonesia to fall drastically. However, a reviewed policy made by the Malaysian government to reduce the magnitude of labor from any nationality had led to a broader pool of foreign labor of other countries in the Malaysian labor market. This study concluded that the government policy has a significant effect on the inflow of foreign labor, depending on the objectives of the government on whether to encourage or restrict the inflow of foreign labor into the country.
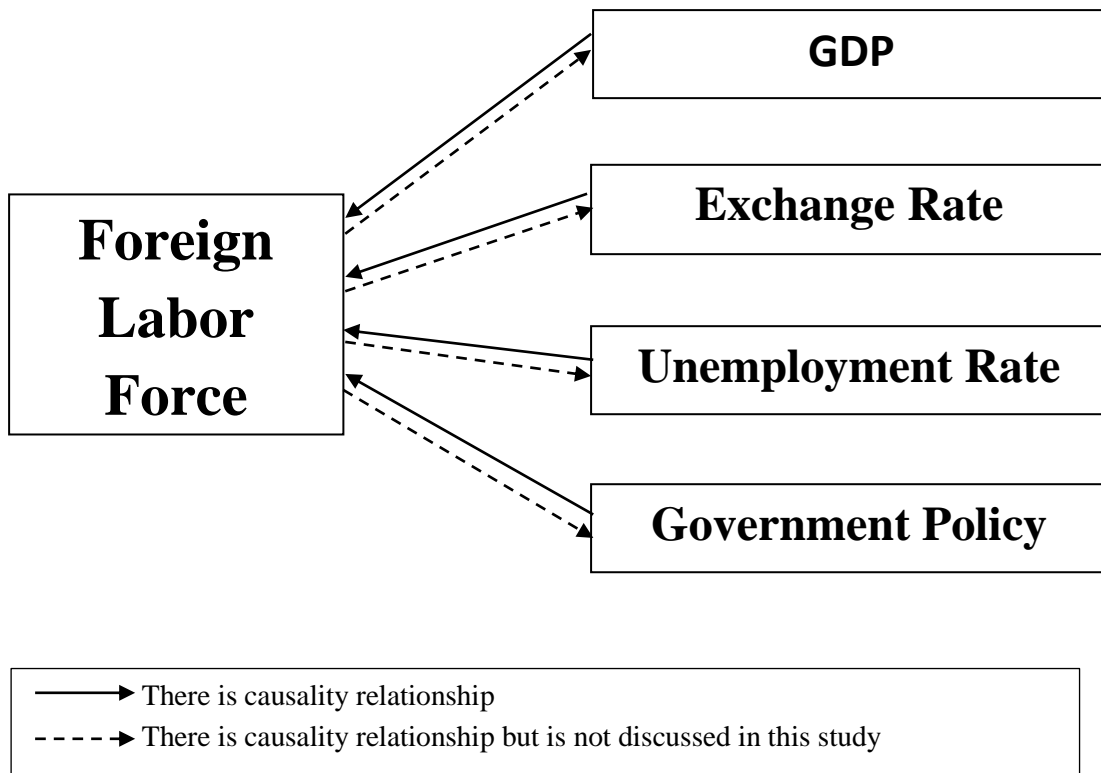
2.3 Proposed Theoretical Framework

Figure 2.1 Proposed theoretical framework

Based on the research questions, background of study and the discussion of literature reviews between the dependent variable, Foreign Labor Force and each of the independent variables which are GDP, Exchange Rate, Unemployment Rate and Government Policy, the above theoretical framework can be developed.

As suggested in the buffer theory as well as the neo-classical theory, majorities of the researches who have examined the determinants of international migration have agreed that GDP has a positive effect on the foreign labor force. Foreign labor seeks to migrate to countries that show a higher GDP since a high GDP implicates greater productivity which attracts the inflow of foreign labor in order to fulfill the demand of labor in several sectors. Also, a country with a higher GDP often reflects a higher wage level in that particular country and thereby attracting the influx of foreign labor from a lower GDP and wage level country. Although the relationship between foreign labor force and GDP is bilateral, the impact of foreign labor on GDP is not discussed in this study.

Next, there is also a positive relationship between exchange rate and foreign labor force, which is, a higher exchange rate of a given country has a greater number of foreign workers. This statement is supported by Ku (2008) and Yang (2008), stating that foreign labor usually migrate from low-income countries to high-income countries due to the differences of price level, discrepancies of standard of living, and the value of currency between the labor sending countries and receiving countries, whereby low-income countries tend to have lower exchange rate against others. Also, a higher exchange rate allows remittances to be translated into a larger amount which is the core objective of labor working abroad. However, the research done by Keita (2014) showed that there is negative relationship between exchange rate and foreign labor force in the case where migration costs are expensive and the foreign labor might not have enough capital to work in a country with a high exchange rate country. In the case of Malaysia, the migration cost is relatively low and affordable as compared with higher income countries such as United States and Australia. Thus, a positive relationship between real exchange rate and foreign labor force is expected in

this study. Even though the foreign labor force in a country can impact the exchange rate of a country too due to the increased remittances sent back to the origin countries, such is not reviewed and discussed in this study.

On the other hand, based on the theories discussed in the prior section, both neo-classical and buffer theories indicate that a rise in a country's unemployment rate reflects a decline in the flowing of foreign labor. However, several researchers claimed that the relationship between unemployment rate and foreign labor force is rather ambiguous (White, 1986; Borjas, 1995) since Karemera et al. (2000) and Chang (2003) have discovered a positive relationship between them. The inconsistent results are believed to be caused by different skills of labor demanded in a country and whether the country is a developing or developed country. In developing countries, the rise in unemployment rate brings negative effect to the influx of foreign labor because local labor are willing to accept less favorable jobs in the fear of economic recession. Besides, when unemployment rate rises, government intervention would also be involved to control the inflow of foreign workers to prevent them from taking away the job from domestic labors which may allow capital outflow and cause economic slowdown. Since Malaysia is still under the development process and the labor it demanded are mostly low-skilled, an inverse relationship of unemployment rate on foreign labor force is proposed. In general, foreign labor affects the unemployment rate of a country, too. However, the effect of foreign labor force on a country's unemployment rate is not discussed in this study.

Lastly, government policies also carry a significant effect to the flow of foreign labor. If restrictive policies are announced and imposed on the inflow of foreign labor, either by raising the cost of migrating, increasing the tax implied to foreign workers, or through direct quota that cut off or reduce the number of foreign workers, these restrictions definitely influences the inflow of foreign workers negatively, and vice versa. The policies and controls implemented have a direct relationship to foreign labor but the effect varies accordingly to the needs and situation of the country. The foreign labor force also influences the government policies implemented in a country.

If there is a heavy inflow of foreign labor and consequently harm is caused to the society or that the country no longer needs foreign workers in the country, the government imposes policies to restrict the entrance of foreign workers. On the other hand, if there is labor shortage in the country and the country needs foreign aid to meet productivity demands, the government implements loose or beneficial policies to attract foreign labor into the country (Devadason & Chan, 2014). Nevertheless, the influence of foreign labor force on a country's government policy decision is not discussed in this study.

2.4 Hypotheses Formulation

1) There is positive relationship between GDP and foreign labor force.

2) There is positive relationship between exchange rate and foreign labor force.

3) There is negative relationship between unemployment rate and foreign labor force.

4) There is negative relationship between government policies and foreign labor force.

2.5 Finding the Gaps

There are several studies that investigated the effect of how real exchange rate would affect the transfer of foreign labors' remittance and the role of remittance in developing their home countries and supporting their family left behind (OECD, 2006; Manum & Nath, 2010). Those studies focus on the relationship of exchange rate and level of remittance; yet, there is lack of studies that directly investigate how exchange rate of a country would affect a foreign worker's decision in choosing his/her destination country to work for. Thus, this study would fill in the gap by using time series data to obtain the long- and short- run relationship between exchange rate and foreign labor force specifically in Malaysia which is a highly integrated developing country with lower migration cost associated. In terms of unemployment rate, previous studies (Winkelman & Zimmerman, 1993; Borjas, 1995; Dustman et

al., 2003) concluded different results since the targeted population is relatively wide and general. Research papers of Borjas are highly influential in the study of migration. However, it has been observed that his model does not fit the data on developing countries. This study aims to eliminate the gap by focusing on Malaysia which is a developing country that requires more low-skilled labors in manufacturing and constructing sectors. Furthermore, previous researches done to study how government policies can affect the inflow of foreign labor into a country (Kaur, 2004; Chia, 2011; Chia, 2013) are mostly in theoretical forms and no empirical tests were carried out to examine the real effect. Also, Kurekova (2011) criticized the neo-classical theory that it ignores the consequences of migration on sending and receiving countries as well as the importance of politics and policies for the process. Thus, this research aims to fill this gap by including government policies as a dummy variable to determine the short and long run effect of the implementation of government policies on the inflow of foreign labor into Malaysia which is a country with high dependency on foreign labor.

2.6 Conclusion

Among the four theories discussed above, the neo-classical and buffer theories best fit the study framework of this research. The reason being, with the connection of these theories, all the independent variables can be related with the dependent variable, foreign labor force. Not only that, the buffer and neo-classical theories are useful in providing better theoretical guidance to investigate the movement of foreign labor given the impact of changes on macroeconomic variables. Also, the neo-classical and buffer theories are classified as macro-level migration theories (Massey et al., 1993) whereby a macro-level theory involves the discussion of economic migration from an aggregate point of view.

On the contrary, the push and pull model is rejected because the model focuses on analyzing migration decision on micro-levels where migration is based on decisions made by individual 'rational measures' who weigh the advantages and disadvantages

of moving relative to staying in a country (King, 2012). Therefore, the push and pull model is relatively irrelevant to reason the macroeconomic factors used in this study. The dual labor market theory is also insufficient to explain the study model because the estimation using this theory is somehow inconclusive. This theory excludes push factors like unemployment rate, low wage, and other adverse conditions in the labor-sending country, as discussed by Arango (2000) where the researcher further pointed out that the dual labor market theory neglects many labor who move out from their origin country due to personal desires, rather than to solely benefit from employment abroad.

CHAPTER 3: METHODOLOGY

3.0 Introduction

Time series regression is used to study the impact of the macroeconomic variables on the inflow of foreign labor in Malaysia. A mathematical model is developed to study and analyze the data. Benefits of using the time series model include the ability to analyze the trend of flows of foreign labor in Malaysia over the past 30 years and the identification of whether an event or an implementation of policy can lead to a change in the foreign labor force in Malaysia. Besides, all the testing methodologies used are discussed in this chapter.

3.1 Data Description

The foreign labor dataset is collected from the Department of Statistics Malaysia while the data for other manipulated variables are extracted from various databases such as The World Bank, IE Economics, and FX Top. The dataset used in this research is from year 1986 to year 2015 which comprises of 30 observations.

Table 3.1 Summary of Variable and Data Sources

Variables	Proxy	Unit Measurement	Data Sources
Foreign Labor Force	FL	% of total labor in Malaysia	Department of Statistic Malaysia (DOSM)
Gross Domestic Product	GDPPC	Per capita (Current LCU)	World Bank
Unemployment Rate	UNEMP	Number of unemployed persons	IE Economics
Exchange Rate	EXR	GBP (£)	FX Top
Government Policies	GOV	Dummy variable where 1=government policy implemented to restrict foreign labor inflow; and 0=otherwise	Asian Migration Atlas

3.1.1 Dependent Variable and Measurement

3.1.1.1 Number of Foreign Labor in Malaysia

Foreign labor is those who are not citizens but are worked in a country on a short term basis (Mohamed, Ramendran, & Yacob, 2012). Foreign labor can be defined as those working abroad from their home countries because of several reasons. Foreign labor is one of the crucial macroeconomic issues in Malaysia commonly discussed because foreign labor brings about various benefits and harms. Data of foreign labor in Malaysia was collected from the Department of Statistics Malaysia, measured in percentage of total foreign labor in Malaysia.

3.1.2 Variables and Measurements

3.1.2.1 Unemployment Rate

The unemployed is referred to those who are available for work and are seeking for jobs but currently unable to find a job. According to Griffiths, Harrison, and Macartney (2007), unemployment rate is the key indicator to measure the economic health. It is a critical issue especially in developing countries where a high unemployment rate indicates weak economic performance. On the other hand, a fall in unemployment rate leads to a rise in the demand of labor (Hall, 1991). Unemployment rate is used to study its long run relationship with the number of foreign labor in Malaysia. The data of unemployment is measured in number of unemployed persons, adapted from the IE Economics database.

3.1.2.2 Gross Domestic Product

Gross Domestic Product (GDP) is the monetary value of final goods and services manufactured in a country within a period of time (Callen, 2008). It measures all the output generated within a country. GDP is a significant economic indicator because it can explain the size and performance of an economy. Thus, GDP has been widely used to measure the performance of an economy. This study adopted GDP per capita expressed in current local currency as the proxy for economic growth. As compared to GDP, GDP per capita is a better indicator as it has taken into account the country's population whereby it is derived using gross domestic product per capita of a country divided by its population. An increase in population leads to a rise in GDP; therefore, without taking population into account the result is less accurate. The GDP per capita is thus the most suitable indicator for measuring the economic growth. The data of GDP per capita is retrieved from the World Bank online database.

3.1.2.3 Exchange Rate

Exchange rate is expressed in nominal currency per Great Britain Pound (£). This study measures exchange rate using Great Britain Pound (GBP) instead of United States Dollar (USD) and European Dollar (EURO) because there are problems obtaining the results if the other two currencies are in use. After carrying out the tests using either the USD or EURO, there are problems found from the results computed. Hence, this study adopts the GBP because it is the most commonly traded currency in Malaysia after the USD and EURO; there are also no problems found from the test results computed as compared to the other two currencies. According to Huang, Pang, and Tang (2013), an appreciation in Canadian dollars has significant effects on the employment in Canada. In addition, Revenga (1992) showed that exchange rate affect wages significantly while Branson and Love (1988) proved that exchange rate had significant implications on employment across the manufacturing industries. Thus, it can be assumed that exchange rate indirectly affects the number of foreign labor in a country. The data of exchange rate is retrieved from an online database known as FX Top.

3.1.2.4 Policy Implication

Government policy implication is the only dummy variable in this study. Government has implemented some regulations to control the inflow of foreign labor. "1" is indicated in the variable if there are government policies implemented to limit the inflow of foreign labor in that year while "0" is indicated for the variable if there is no government policies implemented to restrict the inflow of foreign labor into a country. Data of government policy implications is extracted from the Asian Migration Atlas as well as press releases and publications.

3.2 Econometric Model

This study proposes an empirical model to estimate the changes in number of foreign labor in Malaysia with the changes in unemployment rate, GDP per capita, exchange rate and government policy implications. The functional form is specified as below:

Number of Foreign Labor = f (Unemployment rate, GDP per capita, Exchange rate,

Policy Implications)   (3.1)

FL   = f (lnUNEMP, lnGDPPC, lnEXR, GOV)   **(3.2)**

The model is converted into a natural logarithm form in order to reduce the skewness of the data. Since the GDPPC is expressed in the local currency, RM, unemployment is measured by the total unemployed persons in the country and EXR is measured in Great Britain Pound (GBP), natural logarithms are able to convert the data into smaller scales. The GOV variable does not need to be converted into the logarithm form because it is a dummy variable, leaving it as a beta coefficient is more accurate during interpretation. The foreign labor force is expressed in percentage hence there is no need to convert the variable into logarithm form.

3.3 Econometric Techniques

In this study, the Autoregressive Distributed Lag (ARDL) approach is used to investigate the long run relationship between foreign labor force and the macroeconomic factors in Malaysia. Prior to conducting the test, the stationarity of the time series data must first be checked. As proposed by Shrestha and Chowdhury (2005), if the traditional way to conduct regression analysis is applied to a non-stationary time series data, it brings about spurious results. Thus, the unit root test is performed in this study for stationarity checking.

3.3.1 Unit Root Test

Time series data can be stationary or non-stationary and its stationarity can strongly influence the series' behavior and properties. Many financial and economic time series such as exchange rate, asset prices and the macroeconomic aggregate indicators like real GDP show trending behavior or non-stationarity in the mean (Zivot & Wang, 2013). Using the unit root test allows the determination of a given time series whether it is consistent or not. The main purpose of running the unit root test is to prevent spurious results where a regression of one on the other may give a high R^2 even if the two are entirely unrelated. Subsequently, according to Gurajati and Porter (2009), standard assumptions for asymptotic analysis are violated and thus making t-ratios and p-values to be invalid due to the fact that it does not follow the t-distribution. Not only that, standard error of the estimated parameter may be biased and inefficient, which give rise to misleading conclusions. Running unit root test allows the identification of whether the selected time series data is stationary or non-stationary and if the data is non-stationary, which type of non-stationarity is it. Moreover, as proposed by Zivot and Wang (2013), unit root test helps in finding out which trend removal should be used if the data is trending, which is either first differencing or time-trend regression. While first differencing should be applied for I~(1) time series, time-trend regression is more appropriate for trend stationary I~(0) time series. It is important to do trend removing process because this study can then use all of the methodologies developed for stationary time series to build a model, or to otherwise analyze series. Last but not least, if the selected variables in this study are I~(1), then co-integration techniques can be employed to model these long-run relations. Taking several considerations into account, the Augmented Dickey-Fuller (ADF) unit root test is adopted to confirm the stationarity of the selected variables.

3.3.1.1 Augmented Dickey-Fuller (ADF)

The Augmented Dickey-Fuller (ADF) is one of the available unit root tests to check whether all of the selected variables have achieved stationarity. It was proposed by Dickey and Fuller in the year 1984 which is actually the augmented version of the original Dickey-Fuller test proposed in year 1979. The ADF test is frequently used by researchers simply due to the fact that it is capable to test a larger and more complex time series data as compared to the Phillips-Perron test which is only applicable for data of smaller sample sizes (Im, Pesaran, & Shin, 2003). First to test stationarity in level form, the intercept with trend is chosen. If the probability of the tested form obtained is less than 0.05, the time series data is stationary; thus, no further unit root test is required and the data is considered as $I \sim (0)$. However, if the obtained probability exceeds 0.05, the first difference unit root test is carried out instead selecting only the intercept to de-trend the time series. Similarly, if the probability of the tested form obtained is less than 0.05, de-trending is successful and now the time series is said to be stationary, and vice versa. At this point, the time series data is considered as following the order of $I \sim (1)$. The statistic in the ADF test is a negative number where the more negative the figure is, the stronger the rejection of the null hypothesis. Besides, the t-statistic results from the ADF tests can be used to justify stationarity at given levels of significance.

The hypothesis statement is:

H_0: All variables are non-station and contain unit root
H_1: All variable are station and do not contain unit root

Null hypothesis is rejected if the p-value is lower than the significance level and thus there is sufficient evidence to conclude that all variables are stationary.

After all variables are proved to be following time series of either I~(0) or I~(1), studies can be further conducted using normal methodologies and the possibility of getting spurious results as discussed in section 3.3.1 can be eliminated.

3.3.2 Autoregressive Distributed Lag (ARDL) Model

The Autoregressive Distributed Lag (ARDL) model was developed by Pesaran et al. (2001) to investigate the long run relationship and dynamic interactions among the variables. This model can be estimated using the bound testing co-integration procedure. This study chooses to adopt this model because the procedure for bound testing is simple. As compared to the model developed by Johansen and Juselius (1990) and Engle and Granger (1987), the ARDL bound test allows the co-integration relationship to be estimated using the OLS method once the lag order of the model is identified. ADRL does not require all variables to be integrated in the same order and it can be applied when the variables are integrated as I~(1), I~(0) or fractionally integrated. Thus, unit root test is not required unlike the Johansen and Juselius test. Besides, ARDL bound test is more efficient in examining small and finite sample data sizes. By using the ARDL bound test, the unbiased estimates of the long run model can be obtained (Harris & Sollies, 2005). Furthermore, according to Royfaizal (2009), the ARDL model includes both the lags of the endogenous and exogenous variables to investigate the short run relationship directly and the long run relationship indirectly. Ordinary Least Square (OLS) method can be used to obtain the short run and long run parameters with appropriate lag length, regardless whether the independent variable is exogenous (Duarte & Holden, 2001).

Chan and Lau (2004) had proposed an augmented ARDL model as below:

$$\phi(L,p)\, y_t = \sum_{i=1}^{k} \beta i\, (L,q_i) x_{it} + \delta' w_t + \mu_t \qquad (3.3)$$

Where $\phi\,(L, p) = 1 - \phi_1 L - \phi_2\,L - \ldots - \phi_p L^p$ (3.4)

$\beta i\,(L, qi) = 1 - \beta_{i1} L - \beta_{i2}\,L^2 - \ldots - \beta_{iq}\,L^{qi}$, for i = 1,2,…,k   (3.5)

This study has specified the unrestricted error correction model as followed:

$$\Delta FL = \alpha_0 + \sum_{i=1}^{k} \alpha_1 \Delta FL_{t-i} - \sum_{i=0}^{k} \alpha_2 \Delta UNEM_{t-i} + \sum_{i=0}^{k} \alpha_3 \Delta \ln GDPPC_{t-i} +$$
$$\sum_{i=0}^{k} \alpha_4 \Delta \ln EXR_{t-i} - \alpha_5 \Delta DUM_{t-i} + \delta_1 FL_{t-1} + \delta_2 UNEM_{t-1} +$$
$$\delta_3 \ln GDPPC_{t-1} + \delta_4 \ln EXR_{t-1} + \delta_5 POLICY_{t-1} + \mu_t$$
(3.6)

where   FL = number of foreign labor in Malaysia.

     UNEMP = unemployment rate (%)

     GDPPC = GDP per capita (current LCU)

     EXR = exchange rate (in USD)

     GOV = Government policy implicated

The null hypothesis of non-existence of the long run relationship can be tested as:

$H_0 = \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5$

$H_1 \neq \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5$

The set of critical values provided by Pesaran et al. (1996) are adopted in this study, an upper bound calculated on the variables that are I~(0) and a lower bound on the basis that they are I~(1). If the F-statistics exceeds the upper

critical value, the study should reject the null hypothesis; if the F-statistics is smaller than the lower critical value, the study should not reject the null hypothesis. There is a long run relationship between the variables if the null hypothesis is rejected and there is no long run relationship between the variables if the null hypothesis is not rejected. No conclusion can be made if the F-statistics falls within the upper and lower bound critical value until the unit root tests is carried out to determine the integration order of the variables before the ARDL approach is conducted (Pesaran, 1997).

3.4 Diagnostic Checking

It is essential to carry out appropriate model diagnostics after fitting a regression model to check how well the assumptions of multiple linear regressions are satisfied before performing further inference. If there is any violation to the basic assumptions, subsequent inferential procedures may be invalid and thus resulting in incorrect conclusions (Ullah & Giles, 1998). This is because the results would be considered as biased, inconsistent, and inefficient if econometrics problems such as autocorrelation, model misspecification, heteroscedasticity and non-normality of error terms arise in the model. As a result, diagnostic checking is important to ensure that the conclusion drawn from this study is reliable.

3.4.1 Jarque Bera Normality Test

To identify the normality of error terms in a model, the Jarque-Bera test which was developed by Jarque and Bera is used. According to Mantalos (2010), the Jarque-Bera test is the most widely used method to test for the normality of distribution of residuals underlying the sample. In a Jarque-Bera test, the null hypothesis is to be constructed as the error terms are normally distributed while the alternative hypothesis is written as the error terms are not normally distributed. Also, the JB statistic has an asymptotic chi-square distribution

with two degrees of freedom. The null hypothesis is rejected when p-value of chi-square is less than the significance level at 1%, 5%, or 10% (Gurajati & Porter, 2010).

3.4.2 Ramsey RESET Test

As suggested by Gujarati and Porter (2010), the problem of functional form misspecification would arise from a multiple regression model when the model does not properly account for the relationship between the dependent and observed independent variables. Therefore, Ramsey RESET test could be employed to detect if there are any neglected nonlinearities in the model which can cause irrelevant variables to create inaccurate interpretations. The null hypothesis of Ramsey RESET test is indicated as there is no model misspecification error while the alternative hypothesis is indicated as there is model misspecification error. Then, the null hypothesis is rejected if the p-value of F-statistic is less than the given significance level of 1%, 5% or 10% (Gujarati & Porter, 2010).

3.4.3 Breusch-Godfrey Serial Correlation LM Test

The Breusch-Godfrey serial correlation LM test is used to detect the existence of serial correlation problem within the model. Serial correlation most likely occurs in time-series studies when the error terms associated with a given time period are carried over into future time periods (Williams, 2015). The LM test is chosen over the Durbin-Watson and Durbin h-tests simply because it is better in identifying serial correlation not only of the first order but of higher orders as well, as stated by Gau and Stadtherr (2002). Under null hypothesis testing, the null hypothesis is fixed as the model is free from autocorrelation while the alternative hypothesis is fixed as the model is present with autocorrelation. The null hypothesis is rejected if the p-value of chi-square is less than given significance level of 1%, 5%, or 10%. Furthermore, optimal

lag length is chosen based on the AIC and SIC criterion.

3.4.4. Autoregressive Conditional Heteroscedasticity (ARCH) Test

Heteroscedasticity is a problem that occurs when the error terms differ across the observations, which means that the variances of the error terms are not constant. With the presence of Heteroscedasticity, OLS model is consistent but inefficient. The weighted least squares method can be used to re-estimate the model if Heteroscedasticity problem exists and a new set of estimates parameters is produced.

The ARCH test is carried out to detect the Heteroscedasticity problem. This test is only applicable to time series data models and is carried out based on the independent variable. The estimated model and auxiliary model of the ARCH test are as followed:

Estimated Model

$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + u_i$

Auxiliary Model

$\varepsilon, t = p_0 + p_1 1, t-1 + \ldots + p_p p, t-p + v_t$

Hypothesis statement is shown as below:

H_0: There is no heteroscedasticity problem in the model.

H_1: There is heteroscedasticity problem in the model.

In conclusion, if the p-value is more than 0.01, do not reject H_0 whereas if p-value is smaller than 0.01, H_0 should be rejected.

3.4.5. CUSUM and CUSUMSQ

The CUSUM and CUSUMSQ test was developed by Brown, Durbin, and Evans (1975) to test for parameter stability using the sum of recursive residuals. CUSUM test is based on the first observations and plotted against the break point. It is more appropriate to identify the systematic changes in the regression coefficients. On the other hand, the CUSUMSQ test is carried out using the same process as the CUSUM test, but is more appropriate to use when departure from the constancy of the regression coefficients happens occasionally. If the points of the CUSUM and CUSUMSQ plot within the range of the straight line at 5% of significant level, it indicates that the parameters are stable.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

In this chapter, the results of the relationship between foreign labor force and the four macroeconomic factors which are unemployment rate, exchange rate, gross domestic product (GDP) per capita and government policies, in Malaysia during the long run are presented.

4.1 Unit root test

Table 4.1 illustrates the results of the Augmented Dickey-Fuller unit root test for the dependent variable, foreign labor, and three macroeconomic factors which are unemployment rate, exchange rate and GDP per capita of Malaysia. The results indicate that the variables are stationary either at level form or at first difference level form. As shown in the table, foreign labor is stationary at first difference with the selection of intercept. As for the unemployment rate variable, it is found that the variable is stationary at level form when intercept with trend is selected whereas GDP per capita and exchange rate are both stationary at first difference level form when only the intercept is included. For variables that achieved stationarity at level form, they follow the integrated order of I~(0) whereby variables that achieved stationarity at first difference level form follow the integrated order of I~(1). One of the variables which is the implementation of government policies to restrict the inflow of foreign labor is not tested because it is included in the model as a dummy variable which is stationary by nature.

Table 4.1 Results of the Augmented Dickey-Fuller unit root test for the dependent and independent variables

Variables	ADF	
	Level Form	First difference
	Trend and Intercept	Intercept
FL	-2.028289	-5.183006***
UNEMP	-3.859396**	-3.143532**
GDPPC	-2.190333	-6.114306***
EXR	-2.575796	-3.667382**
Remarks : *** , ** and * referring to the rejection of null hypothesis at significance level 1 % , 5 % and 10 % respectively		

4.2 Diagnostic Checking

Table 4.2 Results of diagnostic checking for Model 3.6

| Diagnostic Testing	t-statistic/F-statistic	P-value	Conclusion
Jarque-Bera normality test	0.111231	0.945903	Normally distributed
Serial Correlation LM test	17.94516	0.0013***	There is autocorrelation.
ARCH test	4.158315	0.3850	There is no heteroscedasticity.
Ramsey RESET test	0.066467	0.7987	There is no model misspecification error.
Remarks: ***, ** and * refer to the rejection of the null hypothesis at significance level 1%, 5% and 10% respectively.			

To ensure that model 3.6 developed earlier is free from econometric problems, several diagnostic tests have been carried out. One of the tests used is the Jarque-Bera test to check the normality of the model. Results indicate that the error terms of the model are normally distributed (p-value= 0.945903 > α= 0.05). Another diagnostic test used is the Breusch-Godfrey serial correlation LM test. However, results proved that there is autocorrelation problem in the model (p-value= 0.0013 < α= 0.05). Such may be due to the small sample size used in this study framework because if the sample size is not large enough, results computed using the Lagrange Multiplier (LM) may be inaccurate and insignificant (Marks, 1962; Gau, 2002). The ARCH test is also carried out and results indicate that there is no heteroscedasticity problem in the model (p-value= 0.3850 > α= 0.05). Other than that, the Ramsey RESET test is also performed and the outcome shows that there is no model misspecification error (p-value= 0.7987 > α= 0.05).
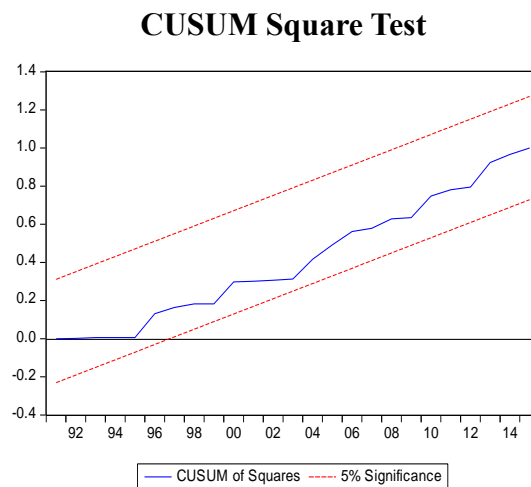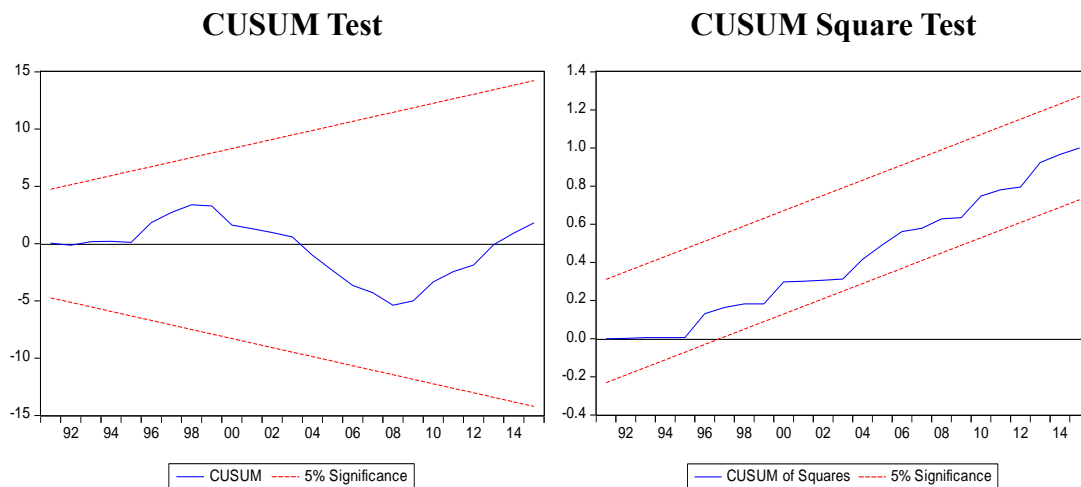
Figure 4.1

Figure 4.2

Figures 4.1 and 4.2 represent the results of the Cumulative Sum (CUSUM) test and Cumulative Sum Squared (CUSUMSQ) test. As shown above, the points of CUSUM and CUSUMSQ fall within the range of the straight line at 5% significance level. Hence, it indicates that the parameters are stable.

4.3 Bound Test for Co-integration

The Autoregressive Distributed Lag (ARDL) bound test is carried out to investigate the long run relationship among the variables. There is a long run relationship if the F-statistics is greater than the upper critical value bound whereas there is no long run relationship among the variables if the F-statistics is smaller than the lower critical value bound. No conclusion can be made if the F-statistics falls within the upper critical value bound and lower critical value bound. At 10% significance level proposed by Pesaran et al. (2001), the lower critical value following I~(0) is 3.02 and the upper critical value following I~(1) is 3.51. While at the 5% significance level, the lower critical value following I~(0) is 3.63 and the upper critical value following I~(1) is 4.16.

Table 4.3 Result of Bound Test for Co-integration (Foreign Labor)

	Optimal Lag Length	F-statistics	Conclusion
F_{FL} (FL/LNUNEMP, LNGDPPC, LNEXR, GOV)	(2,4,3,2)	9.513167***	Co-integration
Remarks: ***, ** and * refer to the rejection of the null hypothesis at significance level 1%, 5% and 10% respectively.			

4.4 Long Run Effect of Macroeconomic Variables on Foreign Labor

Table 4.4 Estimated long run coefficients using the ARDL approach

Variable	Coefficient	Standard Error	t-Statistic (Prob.)
LNUNEMP	-8.574308	3.246057	-2.641453 (0.0247)**
LNGDPPC	8.938382	1.439281	6.210310 (0.0001)***
LNEXR	-7.533409	2.043429	-3.686650 (0.0042)***
GOV	-1.700407	0.652269	-2.606910 (0.0262)**
Remarks: ***, ** and * referring to the rejection of null hypothesis at significance level 1%, 5% and 10% respectively.			

Table 4.5 Estimated short run coefficient using the ARDL approach

Variable	Coefficient	Standard Error	t-Statistic (Prob.)
D(LNUNEMP(-1))	-10.270767	4.325294	-2.374582 (0.0390)**
D(LNGDPPC)	-18.370411	7.201296	-2.550987 (0.0288)**
D(LNEXR(-1))	8.855314	2.647272	3.345072 (0.0074)***
D(GOV)	-1.464941	0.516269	-2.837552 (0.0176)**
CointEq(-1)	-0.861524	0.173170	-4.975013 (0.0006)***
Remarks: ***, ** and * referring to the rejection of null hypothesis at significance level 1%, 5% and 10% respectively.			

4.4.1 The impact of Unemployment on Foreign Labor

Does LNUNEMP impact FL in the long run?

Table 4.4 above represents the relationship between unemployment and the foreign labor force in Malaysia. The result shows that there is a significant relationship between foreign labor and unemployment at 5% significance level. The coefficient of UNEMP is significant with p-value=0.0247 at

significance level of 5% and 10% for k=1. This means that for every 1% increase in total unemployment, the foreign labor force decreases by 8.574308% on average in the long run. Thus, results proved that there is negative relationship between foreign labor force and total unemployment in Malaysia.

Similar to the prior findings of Sharma and Sharma (1989), Dustmann, Fabbri, and Preston (2003) and Aqeel (2015), unemployment leads to a decrease in the inflow of foreign labor. This can be applied in the case of Malaysia whereby it is aiming to reduce the number of foreign workers to prevent the country from reaching a high unemployment rate. Based on the Eleventh Malaysia Plan by the Economic Planning Unit (2016), the country aims to achieve full employment by 2020 and the unemployment rate of Malaysia is currently recorded at 3.5% in April of 2017. The Eleventh Malaysia Plan also addressed concerns that continued reliance on foreign labor can impact the final push to become a high income country by 2020 whereby there is belief that low skilled workers may hinder technological progress (World Bank, 2015). In order to reduce the dependency of Malaysian employers on foreign workers, the Malaysian government had put a stop on outsourcing companies whereby their main income comes from the recruitment of foreign workers (Devadason & Chan, 2014). Besides, it is also recommended that Malaysia improve in the management of foreign workers in a way that takes into account the needs of industry and the welfare of foreign workers (World Bank, 2015).

Other than that, Card (2001) came up with a similar conclusion where he stated that the unemployment in a country may have a negative relationship with its foreign labor force due to the labor demand function. Employers may get different marginal revenue products from foreign labor since it costs employers less to hire foreign labor compared to local labor for the same job. As more and more employers opt for foreign labor, this in turn leads to the substitution of local labor by foreign workers. Therefore, when the Malaysia

local unemployment rate increases, government protects the local employees by restricting the number of foreign labor entries to create more job opportunities for the local male and female labor force. According to Chang (2002), a country needs to consider appropriate policies on foreign labor and the economic tendency of the world. By considering the current ambiguity of world economic recovery and the high unemployment rate, the country's Council of Labor Affairs ought to keep a cautious policy on the level of foreign labor as foreign labor can affect a country's unemployment rate. When a country's local unemployment rate increases, the country's policies on foreign labor inflow have to be tighten in order to overcome the unemployment issue. Therefore, an increase in unemployment rate leads to the decrease in foreign labor.

Does LNUNEMP affect FL in the short run?

Results from table 4.5 above illustrate the relationship between unemployment rate and foreign labor force in Malaysia in the short run. The coefficient of CointEq(-1) obtained is -0.861524(<1.00) and the p-value is 0.0006(<0.01) which supports the idea of a co-integrating and statistically significant relationship between unemployment rate and foreign labor force in Malaysia. The coefficient of D(LNUNEMP(-1)) is significant with p-value=0.0390 at significance level of 5% and 10% respectively. This means that for every 1% increase in unemployment rate, the foreign labor force decreases by 10.270767% on average. Therefore, this indicates that there is a negative relationship between the inflow of foreign labor and unemployment rate in Malaysia in the short run.

According to Lee (1992), more foreign workers bring about higher dismissal of local labor since foreign workers are the substitutes or job robbers of local labor. This can be seen from the evidence that the unemployment rate of Malaysia in the recent years since 2000 had increased to a record of 3.5% in

2017 alongside the decrease in number of foreign workers in Malaysia. This indicates that as Malaysia's unemployment rate rises, there are less foreign workers who come to Malaysia to work as the probability of getting a job in the country is low as compared to a country with a low unemployment rate. This is because a high unemployment rate denotes that a high number of local citizens are unable to find a job and the competition is high; hence foreign labor chooses not to migrate and work in the country because it is difficult to obtain a job position. According to Chang (2002), the Council of Labor Affairs of a country can impose a non-increasing number of foreign workers' policy to prevent a further escalation of the unemployment rate. This means that when a country's unemployment rate is increasing, the country can implement a policy which reduces the foreign labor inflow into the county. This is hence consistent with the short term results from the table above.

Even though there are previous studies to support the findings of this study, previous studies by Lewis (1954) and Kindleberger (1967) suggested an altogether different theory stating that when the unemployment rate is high in a country, the government should increase the flow of foreign labor. This is because the increase in foreign labor leads to an increase in the returns to scale in firms, stimulating the economic growth and therefore increase the number of jobs available for local natives. As a result, the unemployment rate of the country can in turn be reduced which is a positive impact for the country. Besides, the relationship between foreign labor force and unemployment rate critically depends on whether and to what extent domestic workers' skills are complements or substitutes to the skills of foreign labor (Borjas, 1995). If a country's domestic workers are mainly high-skilled and the economy is a closed one, the increase in unemployment may lead to an increase in foreign labor inflow. This is because the increase in the total number of low-skilled foreign workers in the domestic market complements the local high-skilled labor and thereby reducing the unemployment rate of the country (Moore & Ranjan, 2005). It can thus be concluded that a country with high

unemployment rate can also have a high inflow of foreign labor.

4.4.2 The impact of GDP per capita on Foreign Labor

Does LNGDPPC affect FL in the long run?

Table 4.4 above illustrates the relationship between GDP and foreign labor in Malaysia. The result shows that there is a significant relationship between foreign labor and GDP at 1% significance level in the long run. The coefficient of GDP is significant with p-value=0.0001 at significance level of 1%, 5% and 10%. This means that for every 1% increase in GDP, the foreign labor force in Malaysia increases by 8.938382% on average. Therefore, this indicates that there is a positive relationship between foreign labor and GDP in the long run.

The results support the previous findings proven by majority of the researchers (Jennisen, 2002; Mayda, 2009; Dobson et al., 2009; Agbola & Acupan, 2010; Djafar & Hassan, 2012) that proposed GDP influences the inflow of foreign labor positively. According to the World Bank (2016), Malaysia has been able to reach remarkable achievements over the past decades, including extreme poverty eradication and promotion of inclusive growth due to the large entrance of foreign labor. As Malaysia's GDP is steadily growing, the need for foreign labor also increases because foreign labor have become one of the primary sources of labor for low-skilled occupations, most commonly found in labor-intensive sectors such as construction, agriculture and manufacturing in Malaysia. Besides according to the Eleventh Malaysia Plan by the Economic Planning Unit (2016), an increase in Malaysia's GDP leads to the increase in foreign labor in the long term since Malaysia came to an understanding of the significant impact of foreign labor in Malaysia. Also, Malaysia aims to reach a high-income nation status by 2020 so foreign labor play an important role in helping Malaysia

reach its productivity levels and labor demands especially in the low skilled and labor-intensive sectors of the economy. Moreover, as the demand of foreign labor increases, the wage-level of foreign labor reflects the same in a small way, too (Massey et al., 1993). As clarified by Harris and Todaro (1970), migration of foreign labor is triggered when they expect a possible higher income earned overseas than in the home country. Clemens (2014) also finds the positive relationship between income in the destination country and migration for very poor countries.

On the other hand, according to Ottaviano and Peri (2008), the effects of domestic GDP on foreign labor depend on the skill characteristics of the native and foreign labor in the production process. For instance, the increase in GDP may increase the needs for only skilled foreign labor human capital and not the unskilled labor. Nevertheless, even though skills are progressively demanded as the Malaysian economy revamps, there is corresponding need for foreign low-wage service workers to help suppress business costs and Malaysia economically competitive. Furthermore, as the country's GDP increase, there is increment in the demand for home and health care services too due to the personal needs and lifestyles of the increasingly wealthy middle class and the older population. This then increases the need for foreign labor due to the fact that with better education and growing affluences, majority of the local workers appear unwilling to perform low-paid service works (Chia, 2011).

Aside from that, there are however previous studies (Narayanan & Lai, 2005; Shafii, Musa, & Ghazali, 2009) that concluded that GDP has a negative relationship with the inflow of foreign labor into a country in the long run. Such scenario arise when employers opt to employ foreign workers which cost lower rather than increasing the pays or upgrading working facilities and environment to entice local workers. Such employers often oppose to minimal salary levels as it decreases their competence by raising their wage payments,

and thereby enlarging the overall construction costs. Hence, the Malaysians are often deprived of the opportunity in the competition with foreign workers for employment, and the wage rates for local workers have remained low since (Shafii, Musa, & Ghazali, 2009). As a result, Malaysians tend to migrate to other countries that provide them with better wages and this causes the discharge of currency from the local country, drop in productivity performance, and deterioration of the economic growth in the long term (Abdul-Rahman et al., 2012). Therefore in order to prevent such situations from arising in the future, the local government ought to decrease the dependency on foreign labor when the GDP increase.

Does LNGDPPC affect FL in the short run?

Results from Table 4.5 above represent that there is a relationship between GDP and the inflow of foreign labor in Malaysia in the short run. Through the estimated coefficient of CointEq(-1) retrieved, which is -0.861524(<1.00) and the p-value is 0.0006(<0.01) , this ratifies the idea of a co-integrating and significant relationship between GDP and foreign labor force in Malaysia. The coefficient of D(LNGDPPC) is significant with p-value=0.0288 at significance level of 5% and 10% respectively. This indicates that for every 1% increase in GDP, the foreign labor force decreases by 18.370411% on average. Therefore, there is negative short run relationship between foreign labor force and GDP.

In the short run, governments tend to decrease the foreign labor force when their country's GDP increase. According to Friedberg and Hunt (1995), a 10% increase in the fraction of foreign labor force in the population reduces native wages by at most 1%. Borjas (2003) also reported that an increase in the inflow of foreign labor increases labor supply causing the wages of the average native workers to fall in the short run. Not only that, the decrease in wage rate may lower the growth rate of the economy. Therefore this can explain why an increase in the country's GDP leads to the decrease in foreign

labor in the short run economy. Furthermore, an increase in the number of foreign workers has a negative impact on the marginal product and hence the rental rate of capital. This means that access to foreign labor which appears to lower the rate of return to capital may discourage capital deepening (Christofides et al., 2007).

As Malaysia aspires to become a developed country by 2020, there is growing attention on the role that immigration plays in the process (World Bank, 2015). Based on the Eleventh Malaysia Plan prepared by the Economic Planning Unit (2016), it emphasizes the relevance of an efficient and inclusive labor market and a high-skilled workforce to achieve the goal of becoming a high income country by 2020. One of the Plan's primary areas of focus is the creation of an efficient and flexible labor market, which involves efforts to raise productivity, enhance job matching as well as to improve the management of foreign workers. For instance, a cap on foreign workers' share of the labor force and an improved system of levies for the entry of foreign labor are adopted by Malaysia in order to control the inflow of foreign labor (World Bank, 2015). Not only that, as the country aims for a high-skilled workforce, less foreign workers are needed since they are mainly needed for low-skilled jobs and not high-skilled ones. This finding therefore proves that there is a negative relationship between GDP and foreign labor as high economic growth does not necessarily increase the inflow of foreign labor (Friedberg & Hunt, 1995; Borjas, 2003). Since foreign labor may halt economic growth, governments restrict the flow of foreign labor when the country's GDP increase to prevent the negative effect foreign labor has on the economy's growth rate.

Mismatch with the findings of this study, there are previous studies that concluded differently whereby the increase in GDP may lead to an increase in the inflow of foreign labor in the short run to overcome the labor shortage in Malaysia (Mehmet, 1988; Pillai, 1991). The impressive growth and transformation of the Malaysian economy from an exporter of primary

commodities to a major supplier of manufactured goods has been acknowledged in the development literature (World Bank, 1993). According to Mehmet (1988), the shift in the Malaysian industrialization effort from import substitution to export expansion brings about the pressure to provide employment for a growing labor force. Foreign workers gained approval in the local country as they were needed to fill up job openings abandoned by local citizens, thereby complementing the latter. This is because local citizens can be somewhat picky when it comes to getting a job, low-skilled and what are deemed 'unprofessional' jobs are often needed to be covered by foreign workers who are willing to take up any forms of occupations. In conclusion, the increase in GDP may pressure the government to increase the inflow of foreign labor into a country.

4.4.3 The impact of Exchange Rate on Foreign Labor

Does LNEXR impact FL in the long run?

Table 4.4 above illustrates the result of the long run relationship between exchange rate and foreign labor in Malaysia. The results show significant relationship between foreign labor and exchange rate at 1% significance level. The estimated coefficient for exchange rate indicates a negative long run impact on foreign labor whereby an increase in exchange rate causes a decrease in foreign labor force in Malaysia. In short, for every 1% increase in exchange rate, on average there is 7.533409% decrease in foreign labor force in Malaysia.

The negative relationship of exchange rate on foreign labor force is consistent with the findings of Keita (2014) whereby the researcher discovered that appreciation of destination country's currency against home country's currency while high migration cost is associated with migrating. According to the Malaysia Economic Monitor proposed by World Bank (2015), the process of

migrating to Malaysia is costly for foreign workers and generates gains that mostly favor third-party intermediaries. Foreign workers who come to Malaysia face high costs of migration potentially ranging from approximately RM9,000 to RM14,000 depending on sector of employment and country of origin due to the referral fees and fees to process the worker for departure, and in many cases, the receiving agent charges additional fees to place the foreign workers into a job. The high fixed costs for foreigners who intend to migrate to Malaysia also increase incentives for immigrants to become undocumented (World Bank, 2015). For foreign workers, the costs involved in migrating affect both the decision to migrate to a new labor market and how long they stay after they have arrived. Most foreign workers have limited resources in their home countries and see immigration as a way to improve their income as well as overall economic conditions (World Bank, 2015). However, having to pay high costs often encourages perverse behaviors such as overstaying or entering the country illegally to avoid paying fees altogether which increases the number of illegal workers in Malaysia. As a result, while these undocumented workers stay in the country and take over the jobs, this decreases the inflow of foreign labor into the country as they face difficulties in securing a job. Due to these factors, it can therefore prove that exchange rate has a negative impact on foreign labor inflow in Malaysia in the long run.

In previous studies done by Marconi (2012) and Faleiros, Silva, and Nakaguma (2016), these researchers proposed that the level of exchange rate is the principle considered behind the loss of aggressiveness of the manufacturing sector amid the most recent decade, and a caution that it could lead in the end to a procedure of deindustrialization. As stated by Broz and Frieden (2006), a genuine appreciation for exchange rate expands the buying force of local occupants by bringing down the relative cost of foreign tradable merchandise. In other words, it indicates that an appreciation of local exchange rate increases imports due to the relatively lower cost of acquiring them which thoroughly and negatively affects the local manufacturing sector.

When the local manufacturing sector is no longer welcomed by the local residents, this reduces the inflow of foreign labor because they are longer needed in this sector. All in all, increase in exchange rate leads to a decrease in foreign labor in a country or vice versa in the long run.

Does LNEXR affect FL in the short run?

Results from table 4.5 above illustrates that there is significant relationship between exchange rate and foreign labor force in Malaysia in the short run. This statement is consistent the coefficient of CointEq(-1) obtained which is -0.861524(<1.00) and p-value=0.0006(<0.01) which verifies the conclusion of a co-integrating and statistically significant relationship between unemployment rate and foreign labor force in Malaysia. The coefficient of D(LNEXR(-1)) is significant with p-value=0.0074 at significance level of 1%, 5% and 10% respectively. The positive coefficient indicates that for every 1% increase in Malaysia's exchange rate, the foreign labor force increases by 8.855314% on average. Therefore, this indicates that there is a positive relationship between the inflow of foreign labor and exchange rate in Malaysia in the short run.

This hypothesis is supported by Spilimbergo and Mishra (2009) who have suggested that there is an immediate relationship between exchange rates and foreign labor migration. Moreover, the positive impact of exchange rate on the inflow of foreign labor is also consistent with the findings by Ku (2008) and Yang (2008) who claimed that a higher exchange rate may allow higher remittance to be translated back to the home country and therefore encouraging migration. The evaluations recommended that conversion standard deteriorations are altogether connected with higher foreign labor migration rates to GDP. Such can be applied in the case of Malaysia whereby the depreciation of the Ringgit in the recent years has decreased the inflow of foreign labor into the country. This is because the current Ringgit is no longer as attractive to most of the foreign workers as the currency is in the earlier

years when the exchange rate of Malaysia is high as compared to their home currencies. As the foreign workers' home currency appreciates against the Ringgit, the amount of remittance that can be converted back to their home country is less; thus majority of the foreigners may consider working in other countries where the exchange rate is higher to earn more for their families. This finding therefore proves that there is negative relationship between exchange rate and the inflow of foreign labor in Malaysia.

4.4.4 The impact of Government Policies on Foreign Labor

Does GOV impact FL in the long run?

Table 4.4 above indicates the long run relationship between the implication of government policies and foreign labor force in Malaysia. The results show that there is significant relationship between foreign labor and government policies at 5% and 10% significance level respectively. The estimated coefficient for the dummy variable, government policies, indicates a negative long run impact on foreign labor force. It indicates that when government policy is implemented to restrict foreign labor flow into Malaysia, the foreign labor force in Malaysia decreases. In other words, if a policy is implemented to limit the inflow of foreign labor, on average there is 1.700407% decrease in foreign labor force.

The Malaysian government had in the past adopted and imposed many types of policies to regulate the flow of foreign workers into the country in the long term. For instance, to regulate in-migration the Malaysian government signed the Memorandum of Understanding (MoU) with several designated countries such as Indonesia, Philippines, Bangladesh and China whereby the designated countries promised to import a specific amount of labor into Malaysia within a set time frame. Besides, in order to attract more foreign labor into the country, the private sector was permitted to set up employment agencies to legally

recruit foreign workers from other countries (Devadason & Chan, 2014). Not only that, in 2007 a new outsourcing system that does not attach workers permits to a particular employer was imposed which dilutes the control of the government and more foreign workers were imported into the country. The government also revoked the mandatory contributions to EPF in 2001 and revised the limit of the work permits from five years to three years to alleviate labor shortages as well as to prevent the local employers from recruiting illegal foreign labor (Kanapathy, 2004). Conversely, to diminish the recruitment of foreign workers in Malaysia, the government formed the Special Task Force on Foreign Labor in October 1995 to replace the private recruitment agencies to ease the regulation and control on foreign labor (Chin, 2002). Thereafter, the Special Task Force became the sole agency for recruitment and a one-stop-agency to deal with the processing of immigrants (Devadason & Chan, 2014). To deter the recruitment and retention of legal migrants, the government also resorted to instituting market-based measures such as the levy system imposed in 1991, the mandatory contributions to the Employees Provident Fund (EPF) in 1998 and the reduction in the maximum limit of work permits in 2001.

According to Chia (2011), over the past decades, various strategies were used to expel foreign workers ranging from terms of qualification to therapeutic sponsorships as well as decreased appropriations for PRs in Singapore. Besides, education fees were additionally expanded for non-natives and PRs and the government also tightened the foreign ownership of landed properties in Singapore. Not only that, the government of Singapore tighten the growth in foreign workers through a combination of higher levies, tightened entry as well as higher qualifying salaries. All these policies were adopted in an attempt to decrease the benefits of foreign labor and to indirectly affect the decisions of foreign labor mobility into the country. This proves that the implementation of restrictive labor policies indeed have a significant effect on reducing the flow of foreign labor migration.

Does GOV affect FL in the short run?

Result from table 4.5 above indicates the relationship between the implementation of government policies to restrict foreign labor and foreign labor force in Malaysia in the short run. The coefficient of CointEq(-1) obtained is -0.861524(<1.00) and the p-value is 0.0006(<0.01) which validates the idea of a co-integrating and statistically significant relationship between government policies and foreign labor force in Malaysia. The coefficient of D(GOV) is significant with p-value=0.0176 at significance level of 5% and 10% respectively. The negative coefficient indicates that if the Malaysian government implemented policies to restrict the foreign labor inflow, the foreign labor force decreases by 1.464941% on average. Therefore, this indicates that there is a negative relationship between the inflow of foreign labor and implementation of government policies in Malaysia in the short run.

In the case of Malaysia, this finding can be proven from the previous study by Devadason and Chan (2014) whereby the researcher found some of the policies implemented by the Malaysian government in order to control the inflow of foreign labor into the country. To halt and reduce the inflow of foreign workers into Malaysia in the short run, the government had taken several actions such as the imposition of import bans, increase in levies for recruitment of foreign labor as well as the launching of amnesty programmes. For example, to arrest illegal foreign workers, several amnesty programmes had been launched since 1991 and the March-July 2002 programme had successfully saw the departure of a total of 570,000 illegals (Devadason & Chan, 2014). Apart from that, the launching of Ops Nyah I and II in 1991 to stop illegal infiltration and to weed out illegal immigrants were carried out to control the foreign workers in the country. On the other hand, to encourage in-migration the Malaysian government lowered the levies for the recruitment of foreign workers in 1999 and 2005, and also grant permissions to foreign workers whose contracts have expired to change employers within the same

economic sector as long as their work permits are still valid. Not only that, in October 2004 undocumented foreign workers who were deported under a four-month amnesty programme were thereafter allowed to return on official permits. These evidences proved the findings of this study whereby different government policies implemented depending on the country's situation is able to affect the inflow of foreign workers in the long run.

Aside from that, the finding from this study can be proven in the case of Singapore whereby Singaporeans have griped about the antagonistic parts of the flood of foreign labor, including rivalry for occupations, lodging and school places, and also the absence of essential English aptitudes among first line service personnel (Chia, 2011). These had then resulted to Singapore's Prime Minister Lee Hsien Loong to take appropriate measures to protect the local citizens and in August 2009, he made a declaration that the government would moderate the pace of its admission of outside specialists. In conclusion, when the government imposes policies to restrict the foreign labor inflow into the country, the foreign labor force decreases and vice versa.

4.5 Conclusion

Using the ARDL approach to determine the long run and short run coefficients of the four macroeconomic variables, it can be concluded that unemployment rate, GDP per capita, exchange rate and the implementation of government policies impacts foreign labor force in Malaysia both in the short run and long run.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Conclusion

This chapter presents the summary of the study. The findings suggested that there is significant relationship between foreign labor and the macroeconomic variables of Malaysia, mainly the unemployment rate, GDP per capita, exchange rate and government policy implications. Besides, this chapter includes suggestions for policy impositions, limitations of this study, and recommendations for future researches.

5.1 Summary

There is co-integration between foreign labor and the macroeconomic variables investigated. It indicates that there is long run relationship between the variables which are foreign labor, unemployment rate, GDP per capita, exchange rate and government policies. Following that, the ARDL approach is applied to estimate the coefficients of unemployment rate, GDP per capita, exchange rate and government policy implications to determine the impact of these variables on foreign labor in both the long and short run.

Unemployment rate negatively affects the inflow of foreign labor in Malaysia both in the long and short run; that is an increase in unemployment rate decreases the inflow of foreign labor into Malaysia. This result is consistent with the buffer and neo-classical theories discussed earlier as well as the findings of Pischke and Velling (1997) and Pope and Withers (1993) who stated that countries with higher unemployment rates tend to prevent the increase in inflow of foreign labor into the country. The buffer or neo-classical theory can be applied in such scenario when unemployment rate increases, when the wages of a country tend to stay the same or

grow at a slower rate, thus the labor market decreases the demand for foreign labor to return to equilibrium. Not only that, according to buffer theory, it is said that when a country's unemployment rate rises, the government intervenes in a way that prevent and restrict the flow of foreign labor in order to protect the vulnerable groups in domestic country (Dobson et al., 2009).

Besides, GDP per capita has a positive long run relationship with foreign labor. This conclusion is consistent with the buffer and neo-classical theories whereby an increase in Malaysia's GDP leads to an increase in the inflow of foreign labor. This finding is also supported by Pang and Lim (1982) and Jennisen (2002) whereby countries with high GDP attract the inflow of foreign labor to meet the demand and shortages of labor. Also, foreign labor find a higher GDP country to be more attractive since it indicates higher possible income, better economic conditions, and more job opportunities in the country (Shrestha, 2016). However, GDP per capita is found to have a negative relationship with foreign labor in the short run. This is because countries with high GDP can attract foreign labor; however, overflow of foreign labor can decrease the nominal wage rate, and consequently the economic growth rate as well. Following that, the inflow of foreign labor is reduced as the growth rate decreased as supported by Bartram (2000) and Borjas (2003) where government restricts the inflow of foreign labor when the GDP of a country is high to prevent negative impacts on the economic growth. Moreover, inconsistent with the study hypothesis, GDP is found to negatively impact the inflow of foreign labor into Malaysia due to the possibility of increment in capital-intensive products as a substitution of labor-intensive products in the country. GDP of Malaysia may increase over time but it may be due to the rise in productivity levels of capital intensive sectors; hence, the need for foreign labor force to help meet productivity demands may decrease.

Exchange rate has a positive short run effect on foreign labor which is consistent with the neo-classical theory. In other words, an increase in exchange rate increases the inflow of foreign labor into Malaysia. In the short run, the appreciation of the

currency of the destination country can increase and attract the inflow of foreign labor into the country (Mishra & Spilimbergo, 2011; Bodvarsson & Van den Berg, 2013). This is because it increases the expected value of the remittances when the currency appreciates relative to their home currency and thus the amount of income they can send back home to their families is much more compared to another country whose exchange rate is lower. On the other hand, exchange rate is found to have a negative impact on foreign labor in the long run. This finding whereby a fall in the exchange rate increases the inflow of foreign labor into Malaysia does not match the study hypothesis. However, Keita (2014) proved that appreciation on currency increases the purchasing power of a country because it can import the merchandise with a relatively lower cost and hence do not need to rely on labor force to do so. Thus, it can be concluded that an appreciation of the currency of the destination country decreases the inflow of foreign labor in the long run due to the decrease in demand for labor.

Government policy implications have a negative relationship with foreign labor both in the long and short run. This finding is in line with the study hypothesis whereby if there is policy imposed by the government to restrict foreign labor inflow, the inflow of foreign labor in Malaysia decreases. This finding is supported by prior researches (Pang & Lim, 1982; Stahl, 1984; Bartram, 2000) which concluded that a labor importing country is likely control the size of the foreign labor force through legislative or administrative measures and adjust its labor supply to accord with business cycles. For instance, during an economic downturn foreign workers can be repatriated and retrenched or the growth in labor import can be curtailed, and vice versa during an economic growth.

5.2 Policy Implications

This study mainly concentrates on investigating the impact of macroeconomic variables such as exchange rate, unemployment rate, GDP per capita and government

policies, on the foreign labor force in Malaysia. This study is thus a source to parties like investors, governments, policymakers and also future researchers.

According to the former Prime Minister Tun Dato' Sri Haji Abdullah bin Haji Ahmad (2014), Malaysia has been a successful developing country and is forging towards becoming a developed nation and foreign labor force is much needed in the developing progress. Therefore, despite the harms that an overloading foreign force may bring (Hyoji, 2007; Kanapathy, 2008; Siow, 2011), Malaysia still requires a large amount of foreign labor to fill in those unwanted job vacancies in order to sustain its economic growth since foreign labor is a very important influence in developing countries (Adi, 2003). Deputy Prime Minister Zahid Hamidi (2016) has announced an intake of 1.5 million of foreign labor to meet the demands of industries and said that they will suspend the recruitment of foreign labor once the gaps in labor force are filled. As a result, consistent with the vision of Malaysia to become a developed nation and its need for human capital especially in low-skilled sectors where local citizens do not wish to partake in due to the '3D' image, below are some of the policy implications that can be implemented to tempt and raise the inflow of foreign labor into Malaysia. Also, the policy implications suggested below are based on the short run impacts of the macroeconomic variables on foreign labor force since Malaysia only demands foreign labor on a short term basis and would freeze the recruitment of foreign labor once its vision has been achieved.

Appreciation of the Malaysian Ringgit may attract more foreign workers into the country. In order to increase the value of a currency, political stability should be maintained whereby a stable political environment refers to a predictable political environment, which in turn attracts investment, both internally and externally (Shepherd, 2010). On the contrary, a non-stable political environment increases both the uncertainties and risks of investing in the host country and therefore deterring foreign investors to enter the economy. While foreign investors are leaving the host country, the country's currency drops as more currencies are being sold in the foreign exchange market. Alesina, Ozler, Roubini, and Swagel (1992) as well as Kutan and

Zhou (1993; 1995) stated that political volatility leads to the decline of a country's currency, reduces investment from foreign countries and at the same time makes the exchange rate unstable. Such incident also happened in the case of Malaysia whereby the 1MDB scandal had caused severe investment outflows from Malaysia which resulted in a drastic fall of the Malaysian Ringgit (Liau, 2016; Choong & Burgos, 2016). To achieve political stability, the effectiveness and efficiency of a government ought to be strengthened. The government should first be able to respond proficiently towards crises by making wise decisions taking into account the welfare of the nation's citizens. Secondly, an effective government should also guide and lead the local citizens to achieve better standards of living by handling unemployment and inflation effectively as well as protecting the basic rights of citizens. Furthermore, the decision makers in governmental departments should promote justice in their actions and are willing to listen to the voices of the local citizens so that they could be a role model to the people and thereafter influencing them to possess similar traits too. Policy makers should also enforce transparency when imposing policies in order to achieve greater political stability; that is, by increasing the quality of policies implemented due to open access to information and thereby preventing any individual from involving in rent seeking activities. All these will then improve and increase the confidence as well as the faithfulness of the citizens thereby enhancing the stability of the political environment.

Apart from that, this study found that government policies bring significant and direct negative impacts to the foreign labor flow in Malaysia. Therefore, the Malaysian government should implement a policy or enforce the existing labor policies in order to improve the working environments and living conditions of foreign workers to attract more foreign labor into Malaysia. Nowadays, there is a rising number of news and articles reporting that foreign workers have suffered abusing issues from their employers. The poor management of foreign labor in Malaysia allows the happening of abusive cases and the rights of foreign labor, especially the unskilled workers, are not fully protected (Devadason & Chan, 2014; Rasiah, Lee, & Crinis, 2015). Also, the World Bank (2015) stated that employers do not necessarily conform to all labor laws

in the case of hiring and treating foreign labor, especially those related to 'recruitment fees'. Although the existing laws in Malaysia do not discriminate against foreign labor, the labor policy regarding foreign labor in Malaysia are somehow inconsistent, lack of worker protection and poor monitoring against non-compliance and abuse. Hence, the regulations and labor laws in Malaysia need to be enforced to avoid abusive issues and any inhuman behaviors in treating foreign workers such as withholding payments or confiscation of identity and legal documents of workers, verbal and physical abuses as well as substandard living conditions. For instance, if any employer is caught involving in any of the aforementioned abusing issues, they should be banned from hiring foreign workers for a certain period of time. Besides, treatment of foreign workers under labor regulations in the event that the worker sustains injuries in industrial accidents at the workplace should be revised. Under the Workmen's Compensation Act for foreign labor, the employer is required to pay for the worker's medical and rehabilitation expenses and this may be open to abuse as the employer may not settle the medical bills (Devadason & Chan, 2014). Not only that, the scheme provides that an injured foreign worker can claim compensation from him employer and to ensure that the worker is duly paid, the employer is required to insure his liabilities under the Act. However, as stated by Devadason and Chan (2014), the injured worker may not receive any compensation if there is no valid insurance; unlike in the case of local workers who are insured under the SOCSO scheme. Thus, the government should reinforce the existing governing acts as the provisions of these labor laws are discriminative against foreign workers to attract more foreign labor into the country. As long as the basic rights of a foreign labor is guaranteed, the willingness of migrating to Malaysia to look for a job will also increase thereby boosting the inflow of foreign labor into the country.

In addition, this study found that unemployment rate negatively influences foreign labor force in Malaysia. This means that a decrease in the inflow of foreign labor is related to an increase in Malaysia's unemployment rate. The unemployment rate of Malaysia has recently increased to 3.5% in April 2017; however, the rise in unemployment rate may not influence the entrance of foreign labor flow in Malaysia.

Although there is a slight increase in unemployment rate in Malaysia which indicates that there are more Malaysians who cannot secure a job in the country, the low-skilled sector of the country continues to face labor shortage. This is because the local citizens of Malaysia refuse to perform '3D' jobs even when they could not secure a job in the other sectors such as the middle and high-skilled sectors due to their nature and prejudiced perceptions that these are unwanted jobs and are only suitable for uneducated and unskilled people. As a result, Malaysia's Human Resources Minister, Richard Riot Jaem, travelled all the way to Dhaka to sign a MoU with the Bangladeshi government for an additional 1.5 million workers over the next three years (Pook, 2016) to fill up the job vacancies in the low-skilled sectors. Following this, it explains that the increase in unemployment rate is related to the jobs in the high skilled sectors instead of the low-skilled whereby high-skilled foreign workers compete with the local citizens of Malaysia who seek for middle and high-skilled occupations. If the unemployment rate is high, it will only impact on the inflow of high skilled foreign labor into Malaysia as the country is very much in need of low-skilled foreign labor to complement the local high-skilled labor force. However, this study focuses on discussing and recommending policies to increase the inflow of foreign labor of low-skilled to fill up the '3D' job vacancies; corresponding to Malaysia's objective to achieve Vision 2020.

5.3 Limitations and Recommendations

While conducting this research to study the relationship between foreign labor and the macroeconomic variables in Malaysia, several limitations were identified.

- All the results and findings from this study might only be applicable in the Malaysia labor market and significant to help local policymakers. This is because the data sources used in this study are collected and based in the case of Malaysia; thus it only focuses on the labor market of Malaysia and can be imprecise if applied to other countries or regions. Moreover, every country has its own historical background, unique forms government policy, and distinct

economic conditions. Thus, the results and findings of a study can vary from countries to countries depending on the characteristics and regulations of that particular country or region. The discussions and implications from this research can only act as a reference for studies on other countries in investigating the relationship between foreign labor and other macroeconomics variables. Future researchers are therefore encouraged to perform studies on the dataset of the labor markets of few different countries or regions of the world for ease of comparison and determine the degree of application of the findings achieved in this study.

- The inflow of foreign labor is not only affected by the macroeconomics factors discussed in this study. It can also be affected by other macroeconomic variables such as inflation (Reubens, 1981; Wijnbergen, 1984; Tsuda, 1999), net foreign direct investments (Taira, 1980; Brady & Wallace, 2000; Gelan, Fealing, & Peoples, 2007), immigration policies (Yamanaka, 1993; Bartram, 2000; Malhotra, Margalit, & Mo, 2013; Czaika & Haas, 2013), and microeconomic factors such as education levels (Belanger & Bastien, 2013), income equality (Fiala, 1987; Maxwell, 1990; Mills, 2003) and poverty (Mooney, 1967; Taylor & Martin, 1997). For further understanding and discussions on the effects that impact the inflow of foreign labor into a country, future researchers are encouraged to examine the impact of other macroeconomic factors and the relevant microeconomic variables that are not discussed in this study.

- Moreover, the granger causality relationships between the variables are not discussed in this study. As shown in the theoretical framework, there is bidirectional relationship between the variables whereby each independent variable affects the dependent variable and the dependent variable also influences each of the independent variables. In short, there is granger causality between the variables but such relationship is not proven and discussed in this study. Although it is important to know the impact of the

macroeconomic variables on the inflow of foreign labor force in Malaysia, it is also essential to study the effect of foreign labor force on the macroeconomic variables in Malaysia. Therefore, it is recommended for future researchers to study the causality relation between the variables used in this study to ease policymakers or the related parties in making decisions in the near future.

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APPENDICES

Appendix 1: Augmented Dickey Fuller (ADF) Unit Root Test Results

<u>Level Form: Intercept and Trend</u>

Foreign Labor

Null Hypothesis: FL has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.028289	0.5621
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

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

Unemployment Rate

Null Hypothesis: LNUNEMP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 7 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.859396	0.0323
Test critical values:	1% level	-4.440739	
	5% level	-3.632896	
	10% level	-3.254671	

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

GDP per capita

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

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.190333	0.4769
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

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

Exchange Rate

Null Hypothesis: LNEXR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.575796	0.2930
Test critical values:	1% level	-4.323979	
	5% level	-3.580623	
	10% level	-3.225334	

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

First Difference: Intercept

Foreign Labor

Null Hypothesis: D(FL) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.183006	0.0002
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

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

Unemployment Rate

Null Hypothesis: D(LNUNEMP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.143532	0.0347
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

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

GDP per capita

Null Hypothesis: D(LNGDPPC) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.114306	0.0000
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

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

Exchange Rate

Null Hypothesis: D(LNEXR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on AIC, maxlag=7)

|		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.667382	0.0105
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

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

Appendix 2: Diagnostic Checking Results on Model 3.6

Ordinary Least Squares (OLS)

Dependent Variable: FL
Method: Least Squares
Date: 03/11/17   Time: 06:38
Sample: 1986 2015
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNUNEMP	-1.003836	1.144194	-0.877330	0.3887
LNGDPPC	5.861858	0.572913	10.23168	0.0000
LNEXR	-2.240990	1.976657	-1.133728	0.2677
GOV	-0.847777	0.624527	-1.357470	0.1868
C	-30.20027	14.71159	-2.052822	0.0507

R-squared	0.850175	Mean dependent var	9.120667
Adjusted R-squared	0.826203	S.D. dependent var	3.842412
S.E. of regression	1.601863	Akaike info criterion	3.931223
Sum squared resid	64.14910	Schwarz criterion	4.164756
Log likelihood	-53.96835	Hannan-Quinn criter.	4.005932
F-statistic	35.46529	Durbin-Watson stat	0.724290
Prob(F-statistic)	0.000000		

Jarque-Bera Normality Test
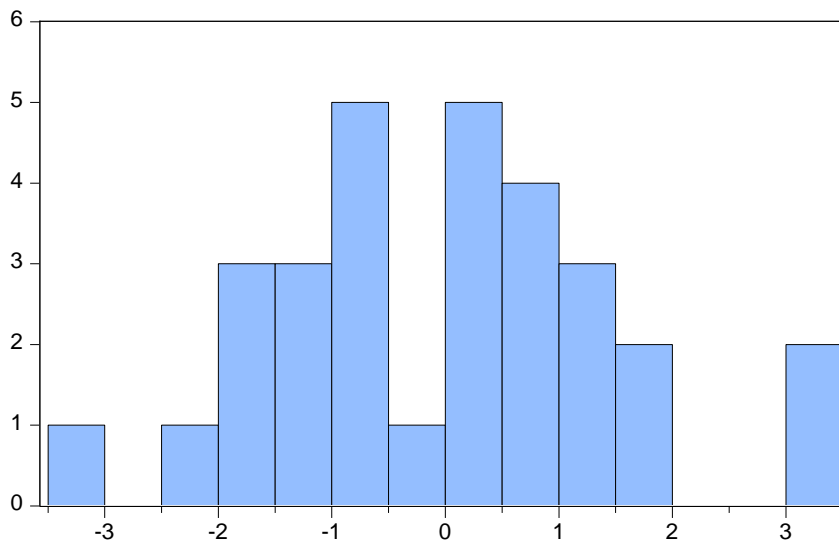
Series: Residuals
Sample 1986 2015
Observations 30

Mean	3.06e-15
Median	0.117082
Maximum	3.088788
Minimum	-3.330207
Std. Dev.	1.487292
Skewness	0.120041
Kurtosis	2.822953
Jarque-Bera	0.111231
Probability	0.945903

Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	7.815292	Prob. F(4,21)	0.0005
Obs*R-squared	17.94516	Prob. Chi-Square(4)	0.0013

ARCH Heteroskedasticity Test

Heteroskedasticity Test: ARCH

F-statistic	1.907302	Prob. F(2,25)	0.1695
Obs*R-squared	3.706763	Prob. Chi-Square(2)	0.1567

Ramsey RESET Test

Ramsey RESET Test
Equation: UNTITLED
Specification: FL LNUNEMP LNGDPPC LNEXR GOV C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.257812	24	0.7987
F-statistic	0.066467	(1, 24)	0.7987
Likelihood ratio	0.082969	1	0.7733

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.177168	1	0.177168
Restricted SSR	64.14910	25	2.565964
Unrestricted SSR	63.97194	24	2.665497

LR test summary:

	Value	df
Restricted LogL	-53.96835	25
Unrestricted LogL	-53.92686	24

Appendix 3: Bounds Test for Co-Integration

<u>Model 3.6</u>

ARDL Bounds Test
Date: 03/06/17   Time: 18:47
Sample: 1990 2015
Included observations: 26
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	9.513167	3

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Appendix 4: ARDL Long Run and Short Run estimation

<u>Model 3.6</u>

ARDL Cointegrating And Long Run Form
Dependent Variable: FL
Selected Model: ARDL(2, 4, 3, 2)
Date: 03/06/17   Time: 18:53
Sample: 1986 2015
Included observations: 26

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FL(-1))	-0.439977	0.246823	-1.782560	0.1050
D(LNUNEMP)	-16.555674	6.764890	-2.447294	0.0344
D(LNUNEMP(-1))	-10.270767	4.325294	-2.374582	0.0390
D(LNUNEMP(-2))	2.556500	3.937391	0.649288	0.5308
D(LNUNEMP(-3))	2.497268	2.409407	1.036466	0.3244
D(LNGDPPC)	-18.370411	7.201296	-2.550987	0.0288
D(LNGDPPC(-1))	-11.315744	5.492181	-2.060337	0.0663
D(LNGDPPC(-2))	-10.084427	6.554039	-1.538658	0.1549
D(LNEXR)	1.506569	2.608066	0.577658	0.5763
D(LNEXR(-1))	8.855314	2.647272	3.345072	0.0074
D(GOV)	-1.464941	0.516269	-2.837552	0.0176
CointEq(-1)	-0.861524	0.173170	-4.975013	0.0006

Cointeq = FL - (-8.5743*LNUNEMP + 8.9384*LNGDPPC - 7.5334*LNEXR
   -1.7004*GOV + 50.3533)

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNUNEMP	-8.574308	3.246057	-2.641453	0.0247
LNGDPPC	8.938382	1.439281	6.210310	0.0001
LNEXR	-7.533409	2.043429	-3.686650	0.0042
GOV	-1.700407	0.652269	-2.606910	0.0262
C	50.353312	29.605977	1.700782	0.1198