FINANCIAL DEVELOPMENT AND UNEMPLOYMENT IN MALAYSIA

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I admit that this Graduation Exercise is my own work except the information, excerpts and references used have been acknowledged. I also admit that the contents of the Graduation Exercise are original and have not been submitted to the University of Malaya or other institutions for any other purposes. I am solely responsible for all the contents of this Graduation Exercise. Faculty of Economics and Administration and University of Malaya shall be absolved from any form of legal actions arising from this research.

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ABSTRACT

In the past decades, the topic financial development and economic growth has been popularly discussed by scholars. From the past literature, financial development is an important component in promoting economic growth. However, there has been less study about the relationship of financial development and unemployment rate. Therefore, this study aims to investigate the relationship between the financial development and unemployment rate in the case of Malaysia from year 1981 until 2018. This study analyses the relationship by using two model equations to test separately the effect of each financial development indicators (Domestic Credit to Private Sector and Stock Market Capitalization) on the unemployment rate. Autoregressive Distributed Lag (ARDL) method and Cumulative Sum (CUSUM) control chart have been used to test the long run and short run relationships of financial development variable and unemployment rate in Malaysia. As the results, this study finds that there is a significant long-term relationship of financial development and unemployment rate for both models. However, results also revealed that the short run relationship among the financial development and unemployment rate is not significant. This shows that the financial development indicators need to take time (long term) in exerting its effect on the economic variables (unemployment rate) in the case of Malaysia. Therefore, policymakers are suggested to plan their regulations in a long-term way by taking into the consideration of implementing lag.

Keyword: Financial Development, Unemployment Rate, ARDL method

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LIST OF ABBREVIATIONS

DCPS	Domestic Credit to Private Sector
MC	Market Capitalization
UN	Unemployment Rate
IN	Inflation rate
GDPC	Gross Domestic Product per capita
CS	Commodity Shock 1985-1987
AFC	Asian Financial Crisis 1997 – 1998
GED	Global Economic Depression 2001 – 2003
GFC	Global Financial Crisis 2008 - 2009

CHAPTER 1: INTRODUCTION

In this chapter, we are first going to look at the brief introduction and the background of study. Later, we shall discuss about the problem statement of the study. After that, there will be discussion on the main questions in this study and followed by the study objectives. Nest, the significance and scope of study will be discussed. Lastly, we shall discuss about the research structure for the overall study.

1.1 Introduction

Several studies have examined the effects of the financial system and economic growth over the past few years (Levine, 2005). However, there are hardly any reports on their effect on unemployment. Previous studies on unemployment focused on the consequences of labour market system, and recently discussed more on the regulation of goods markets (Nickell, Nunziata and Ochel, 2005; Bassanini and Duval, 2006). In this study, we empirically explore the impact of financial development towards unemployment, as one of the major characteristics of the financial system. Financial development has various indicators that can be used in affecting the unemployment rate, for example the domestic credit to private sector (DCPS) and market capitalization (MC). This study will go through a series of quantitative regression analysis to evaluate the impact level of the financial market development on the unemployment rate in short run and long run terms.

Financial development is an enhancement in allocations of investments funds and capital efficiently, monitoring corporate governance, trading diversification, risks management, savings mobilization and easing the exchange of goods and services based on the better ability in collecting information. Almost all sectors in economy are interrelated, especially each sector involves financial transaction among one another. Thus, financial development had shown its importance in the overall economy. Higher demand on the financial services leads to establishment of financial institutions such as banks and investment firms (Čihák et al., 2012). With the help of technology advancement, financial sector enables higher credit flow and stock market capitalization for the people. This indirectly helps higher economic development and more employment (World Bank, 2015). Therefore, financial sector development is crucial for to boost up a countries growth, particularly in terms of employment rate and economic growth as well.

Unemployment is an involuntary idleness of an individual willing to work but could not find any job due to market constrain, according to Everyman's Dictionary of Economics (Jhingan, 2008). As mentioned earlier, hardly any empirical studies have been conducted on the consequences of the financial system's effect on unemployment rate. Therefore, the financial sector plays a crucial role in carrying out development projects and serves as a catalyst for economic growth and employment. Countries with advanced banking and competitive stock markets are growing faster than countries with lagging financial system (Levine, 1997). In the latter reviewing of literature, there is a high correlated relationship between the employment rate and the development of banking sector and stock market. Historically, the financial development and unemployment are much interrelated. For example, during the Great Depression of 1929-1933, there were about 9,000 banks closed their operations, leading to decrease in production and employment rate (Bordo, 2000). Also, in 2008, most of the developing and developed countries have faced a severe recession, causing higher unemployment rate, government debt and depreciation of assets value (Sasi, 2009). The globe has experienced massive poverty and unemployment due to the global financial system's collapse during every financial crisis occurred in the past.

Thus, this study's goal is to investigate the relationship between Malaysia's financial development and unemployment rate. The main fundamental concept of this study is based on one Oxford Economic Papers from Gatti, Christophe and Vanbourg (2012) that researched the relationship between financial development and unemployment rate.

1.2 Background of Study

The Malaysian economy had experienced an accelerated growth throughout the post-independence period. Since 1980 until today, Malaysia had been doing well above the average of other upper-middle-income countries and ASEAN developing countries with its Gross National Income (GNI) per capita increased steadily and rapidly (World Bank 2016). In terms of real Gross Domestic Product (GDP) growth, Malaysia showed an improvement from -0.1% in 1957 to 7.8% (1966), before declining to 6.0% in 1970. Living standards improved during this period, as well while access to health care and education increased. The government fostered export-oriented industries in the 1970s that has seen significant growth in the manufacturing sector. The prolonged global recession in the 1980s resulted in a dramatic fall in

commodity prices and a drop in the overall annual growth rate to 6.0%. The annual average growth rate registered a staggering 9.6 percent from 1991 to 1996 as a result of heavy private sector involvement in the economy and increased foreign direct investment inflows (Lim, 2018). The economy was, however, affected by the 1997 Asian financial crisis, and later the 2001 world trade recession. True GDP growth varies from 4.2 per cent to 7.2 per cent between 2002 and 2017, except for a negative increase in 2009. Since then until 2018, the Malaysian economy has been growing well corresponding to the growth of other countries. The share of economics sectors in Malaysia mainly distributed into 3 categories: agriculture, manufacturing and service sectors which the service sectors has the largest share of 55%, followed by manufacturing and agriculture sectors. As Figure 1 below shows the shares of the main sectors in Malaysia in recent years from 2006 to 2016:

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Agriculture	8.61	9.99	9.97	9.22	10.09	11.45	9.79	9.11	8.87	8.45	8.65
Manufacturing	46.10	42.22	42.92	38.46	37.89	37.23	37.49	37.19	37.17	36.43	35.68
Services	45.29	47.80	47.12	52.32	52.11	51.32	52.72	53.70	53.96	55.12	55.68

Source: World Bank 2018.

Figure 1: Share of Sectors In Malaysia's Gross Domestic Product, 2006-2016

Looking at the overview of labour market in Malaysia, the participation rate of the overall labour force (population aged between 15 to 64) is varying around 64.8% and 67.7% from 1981 to 2018. In the 1970s, the Malaysian government adopted policies to promote export-oriented industries because of the highly unpredictable commodity prices in the 1960s. This resulted in expanded employment in the economy that peaked with a participation rate of 66.8% in the labour force in 1988. After 1997, the labour force participation rate decreased marginally from 65.6% and fell to 63.7% in 2010 as a result of the slower growth in the post-Asian economic crisis in the country (Department of Statistics Malaysia 2016). Nevertheless, the rate of labour force participation has slowly risen beyond 2010. Meanwhile, in the same year the unemployment rate is 3.4%.

Financial sector development, for example domestic crediting to private sector is therefore crucial for driving the economic growth and promoting more jobs in Malaysia (A recent classified newly industrialized country (NIC)). For Malaysia, it is important for the policy makers to keep abreast of the country developments at all time, and also not to forget the development in other countries as well in order to promote its own economic growth. With global financial system that convergence and

uncertainties, these volatility in the market are becoming the main challenge for the financial system in Malaysia. A stable and strong economic environment shall still be the main focus of the government. Strong points for the nation are attractive investment opportunities, efficient workforce and political stability, as they can contribute to sustained growth in investment inflows into economy. In addition, Malaysia is popular among investors to be a cost-effective country for long-term growth. Thus, higher investment flows into Malaysia causes higher economy growth. This indirectly enhance the establishments of domestic firms. Potential economic growth in Malaysia causes higher domestic credit flow to private sectors from banks.

The financial sector has becoming a significant driver of economic growth in Malaysia itself, accounting for 10.7 per cent of GDP especially in 2007 (Malaysia, 2008). Stock market capitalization is one of the financial development indicators. From the previous history data, the Malaysia stock market index, Kuala Lumpur Composite Index (KLCI) showed tremendous growth in the 80s and 90s. However, the trend showed a slight decline in 2000. This has been attributed to the uncertainty concerns regarding global economic growth, stock market instability and declining commodity prices. The stock market remained a significant avenue to collect funds given weak market conditions. With the elimination of the Real Property Gains Tax (RPGT), property stocks are expected to be boosted and high-end properties are assumed to gain positive effects from the tax holiday at selected locations favoured by international buyers. This market capitalization enables higher mobilization of funds and thus promoting economic growth and enable higher employability rate.

1.3 Problem Statement

The financial crisis that had erupted in the past has profoundly shifted people perspective on how the financial institution could actually affect the unemployment rate in most countries. Take an example from past history events, once the most popular investment banks in United States (Lehman Brothers), their failure during the crisis shows the long accumulated immense risks within the financial system in the world today. Ernst (2019) showed us the severe impact of sudden changing in perception of risk might create for growth and jobs. Most people during the time had neglected the huge risks built up by a rapidly growing financial sector that gradually undermined the entire system's stability. Ernst (2019) then argue that studying on the effect of financial market on unemployment dynamics would be able to assist for a

clearer picture between development in financial sector development and employment rate.

The significance of financial development in real terms was emphasised by the previous literature. Empirical evidence from various channels showed the bank credit that is market-based finance is being prioritised, in which it plays an important role in mobilising savings and essential risk sharing services (Acemoglu, Philipe and Fabrizio, 2006; Levine and Zervos, 1998). Significant reforms have therefore been introduced by policymakers in order to develop complex financial markets. Nevertheless, the onset of the financial system failure that causes the crisis shows us that the previous accelerating growth leading to financial market reforms would cause rising inequality, making growth acceleration unbalanced and ultimately unsustainable. In detail, there was a significant decline in the share of labour income across OECD countries during the era of rising financial market deregulation. Observers began to realize that consideration should be given to a significant transmission mechanism linking financial markets with the real economy to promote a full understanding of the ties between the growth of the financial sector and risk (Rajan, 2010).

There is weakness in the analysis of the advantages of the growth of the financial market and the need for changes in the financial sector, in which there less current study has especially investigated the relationship of financial markets development on job creation, volatility and earnings. Several studies by academics explored the relationship between financial growth and unemployment from different perspectives (Ernst and Semmler, 2010; Pagano and Pica, 2011; Wasmer and Weil, 2004). Looking at the previous evolution of financial sector development and regulation from different sources of information, we could observe an overall result as below:

- Developments in the financial market have an important, albeit uncertain, impact on the dynamics of unemployment. In addition, market-based financial growth (both stock and bond markets) tends to lead to more volatility in the labour market with increasing flow of unemployment (inflow and outflow). Moreover, an uncertain/ openness effect of the overall unemployment rates may be caused greater international financial transparency.
- With regard to financial market reforms, the liberalization of the securities market also leads to higher volatility in the labour market, confirming the impact of de facto stock and bond market growth. Similarly, the changes in the banking sector shall help in the creation of job, without impacting the increase of unemployment. The example of the changes are weaker credit restrictions

and banking sector privatization. At the same time, strengthened bank prudential regulation contributes undeniably a much lower unemployment rate due to the rising outflow and the declining inflow of unemployment. Unlike global de facto transparency, de jure capital account opening has a clear positive effect on employment rate.

- Looking at the post-crisis era, when viewed in a historical context, financial market re-regulation appears moderate. There have been only a few additional restrictions that make financial regulation less market-friendly. Financial market reform continues to show a distinctive trend of increased labour market volatility when evaluating the progression of financial sector deregulation after 2009. Just eliminating entry barriers for new banks tends to minimize labour market turnover, though at the expense of overall job dynamics reduction. Taken as a whole, the re-regulation of the financial market had only a somewhat small positive impact on changes in the labour market.
- An evaluation of the scenario shows that much higher benefits for jobs could have been achieved if financial market changes were integrated into a comprehensive set of regulations. The paper, taking a political economy viewpoint, discusses explanations why such a comprehensive reform plan has not been implemented despite its obvious advantages in the labour market. A fully fledged reformation of the financial system, that has potential positive impact on employment, would have some relation to a non-reform benchmark. However, we also need to consider the partial reforms.

In short, financial growth (development) has been claimed to have the ability to reduce unemployment. However, we need to consider 2 factors. First, will financial development generate more unemployed workers by relaxing the funding constraints that enable firms to invest in more capital-intensive technologies, replacing workers to raise production? Second, the degree to which better-developed financial markets alleviates both producers ' and consumers ' liquidity deficiencies, which in effect would generate economic growth as demand and output increase, ceteris paribus, resulting from increased employment. Thus, this paper aimed to solve the problem of identifying their relationship. The main problem is whether there is a significant effect of financial development on the reduction of the unemployment rate in Malaysia in both long run and short run period.

1.4 Research Questions

The purpose of this study is to fill the missing study between financial development and unemployment rate relationship. Hence, in this context, we would have 3 questions to be answered.:

1. How is the trend of financial development and unemployment rate in Malaysia?
2. Is the short run relationship between financial development and unemployment correlated to the long run relationship in Malaysia?
3. What is the long run relationship between financial development and unemployment rate in Malaysia?

1.5 Research Objectives

To investigate the relationship between the financial development and unemployment rate, 3 main research objectives are hence being created:

1. To understand the overall trend of financial development indicators and unemployment rate in Malaysia.
2. To examine the short run financial development and unemployment rate relationship in Malaysian economy.
3. To analyse the long run financial development and unemployment rate relationship in Malaysia economy.

1.6 Significance of The Study

This research targets to explore new literature about the connection between the rate of unemployment and financial growth in Malaysia in both short run and long run terms. For policy makers, this relationship is important because financial growth might exhibit an ambiguous impact on the unemployment rate in short run and long run terms, and effective policies are required to be enforced in conjunction with this relationship. In addition, this report will also investigate Malaysia's trend and relationship of financial growth and unemployment rate from 1981 and 2016. Policy makers could then decide which part to focus on in order to generate higher employability. Moreover, this paper will present on how effective the financial development indicator will be in performance of economic indicators such as unemployment rate in short run and long run terms. Investigating on Malaysia's unemployment rate, the domestic credit to private sector and capitalization of the

stock market will be playing an important role as the financial development indicators. This would also provide the government with an opportunity to concentrate on the sector that can contribute more to the unemployment rate.

1.7 Scope of Study

The analysis scope would be focusing only to the Malaysia case, by employing the statistical data set of unemployment rate, private domestic credit, stock market capitalization, GDP per capita, unemployment rate, inflation rate from 1981 to 2018. In this analysis, our financial development proxy shall be the Domestic Credit to Private Sector (DCPS) and Market Capitalization (MC). DCPS is the total resources given to the private sectors by banks and a measurement of efficient allocation of resources. MC shows the total outstanding shares of the companies in terms of market value and acts as a fund mobilisation market. Meanwhile, the control variable will be the GDP per capita and inflation rate. These are the key factors what would affect the unemployment rate. The analysis of the long run and short run relationship between financial growth and the rate of unemployment will be carried out using these variables. From the results, we will be looking at the impact of each financial development proxies on the unemployment rate.

1.8 Research Structure

There are 5 main chapters in this study. In this first chapter, we have discussed about the overview of the study, that consist of background of study and problem statements. This then led us to our questions and objectives. Second chapter will introduce the definition of the variables in this study. Then, the previous studies that had been done towards this similar study on the financial growth and unemployment rate relationship will be discussed in both theoretical and empirical section. Past studies offered guidance and insight into the relationship between the rate of unemployment and financial growth.

In the third chapter, this paper will clarify the overall conceptual framework, data collection and analysis methods such as correlation analysis, Unit Root Analysis, and the Autoregressive Distributed Lag (ARDL) method. Chapter four interprets the findings and discusses the results by comparing and contrasting past literature. Lastly, chapter 5 will be the conclusion section. There will be a summary will explain about the study contribution and the overall conclusion for this study.

CHAPTER 2: LITERATURE REVIEW

This chapter will show literature regarding the financial development and unemployment rate relationship. Firstly, we will discuss on the definition for the variables, then the theoretical framework. Next, we will introduce some of the empirical studies.

2.1 Financial Development and Unemployment Rate

2.1.1 Financial Development

From various literature, there are many different definitions of financial development given by the researchers. Ojo (1977) states that financial sector development will exert effect on economic growth. FitzGerald (2006) defined it as the development of financial markets, organization, capital investment and institution. Development in financial institutions happens when there is enhancement of financial indicators such as knowledge creation and capital allocation, business management and corporate governance, assets accumulation and savings pooling, and finally, goods and services exchange process (Cihak et al., 2012). Capital liquidity accumulation, business decisions, as well as advancement of technology are also the factors that will improve the employment rate. (World Bank, 2015).

By using the number and size of financial institutions, various kinds of financial products and the cycle of credit disbursement to the private sector, we can measure the degree of the financial sector development (Ghildiyal, Pokhriyal and Mohan, 2015). To enhance financial deposits, banking industries can raise the savings rate and allocating savings to provide more loanable funds for potential economics activities and increase the employment rate at the same time (Nwanna and Chinwudu, 2016). Nevertheless, banks can also raise the circulation of money supply to stimulate overall economic activities. Money will be circulated to the potential investment and thus help to earn higher revenue for firms (Nwanna and Chinwudu, 2016). The enhancement in the Human development Index (HDI) indicators and the reform of the financial sector (especially in industries related to banking) can help to boost up the economic activities and generate more employment, according to the report from Chakraborty (2010).

Generally, the credit given by banks to the private sector are one of the important roles played by banking sectors in financial growth. According to Ghildiyal, Pokhriyal and Mohan (2015), crediting to private sector is vital in stimulating economic

growth and employment. Domestic private credit helped transfer financial resources from the surplus units to the economy's scarce (deficit) unit. As results, when the domestic credit to private sector increases, the available amount of investment fund that used for private sector production will be higher. Higher production thus helps to improve a country's economic performance and more jobs will be created (Mishra and Singh, 2014).

In addition, there are also studies that researched on the financial development in the stock market. Studies done by Choong et al. (2005) states that the stock market and also the banking system are very important in helping the economic activities and job creation. This is because it transfers important finance-based resources from the surplus unit to the economic deficit unit. Levine and Zervos (1998) found that the development of the stock market would be important, as it can be one of a great market to the activity of financial organizations. Other interrelated emerging markets will also be benefited or taken into consideration as if the market capitalisation is doing well (Khan and Senhadji, 2000). When there is an enhancement of company performance in investment activities, this will lead to a beneficial effect to the stock market. In particular, investors would need to pour out their capital into the stock market to obtain more of the company shares without affecting the current production process of the company (Levine, 1991).

Market capitalization is widely used as an indicator of stock market's position in financial growth. Higher market capitalization will lead to a higher stability of the entire stock market by securing the confidence and the interest of the investors (Ghildiyal, Pokhriyal and Mohan, 2015). Moreover, stock market capitalization could have significant effect on the economic activity and job creation, similar results could be obtained by also examining the effect from stock market total value exchanged to GDP and stock market turnover ratio (Bayar, 2014). Nevertheless, Ang (2007) stated a result that only private stock generates a positive effect on economic performance whereas public stock has not influenced economic growth. Nonetheless, Chakrabarty (2010) has shown that market capitalization has a negative impact on economic growth that violets the traditional theory of their positive correlation. All of these effect onto economic growth will impact the employability in an indirect way. Thus, not only to economic growth, the employability is expected to be affected too by bank credit and stock capitalization.

2.1.2 Unemployment Rate

The term of unemployment is described in the analysis of Amani (2017) on the basis of a norm and a regional definition. The standard definition describes it as the number of workers without a job but looking for a job. While it is referred to by the national definition as the total number of people who do not work. It is also known as the people who do not work, but who are willing and capable of working. It is also known as the number of unemployed and job seekers aged 15 to 65. Regardless of the specific term, all interpretations of unemployment agree that the main attributes of unemployed people are job searching and ability to work. Since unemployment results in negative economic, social and security outcomes (Dimian, Begu and Jablonsky, 2017).

2.2 Theoretical Literature

There is an overwhelming consensus that the need to curb unemployment is important in order to achieve higher economic prosperity in any country. The ILO (1989) describes the unemployed as people who are eligible and who are looking for paid work and who have enrolled in any of the job centres. Nevertheless, the theoretical interpretation of unemployment by the ILO is slowly seen to be insufficient in describing the current labour markets conditions in those countries with low incomes. As mentioned above, there are a multitude of factors that can contribute to unemployment. Economists tend to find as many causes of unemployment as they might. Some historical literature had been done towards this issue. We can see this fact among their followers in the unemployment theories by leading macroeconomists such as theorist who supports Classical and Keynesian ideology.

A sustained increase in a country's unemployment would yield socio-economic and political effects. In typical economics theories, a severe unemployment condition would cause low level of overall countries productivity and reduction of labour force, imbalance market forces, deadweight loss of income of all parties, and an economic downturn (Njoku and Ihugba, 2011). Socially, if a person lost his or her job, that person might suffer from loss in self-confidence, psychological problems (mental disorder) and health issues. Even worse, that person might not be able to sustain their basic needs. In addition, high crime rates such as abduction, robbery, fraud, property security, prostitution activities and high divorce rates have been due to a steady increase in unemployment (Reynolds, 2000; Sulaimon et al., 2015). For policy makers, a nation marked by a high unemployment rate would experience problems such as

loss of trust in government, civil unrest, political thuggery and political instability (Hassan, 2013).

Therefore, financial sector is an important focus by policymakers to solve the unemployment rate issue. Generally, there are three important services provided by the financial system towards the country's economy. Also, all of these services are potential in improving and maintaining low unemployment. First, it aggregates capital for investment from diverse savers. Big banks act their role as agent in allocating and mobilising those savings. Having large branch networks enables them to easily liquidize millions of saving across the whole country economy (Sirri and Tufano, 1995). On the other hand, stock market is also another great saving mobilising market by allowing individual savers to invest their savings in large companies, so that companies would have enough funding for long terms projects. (Levine, 1991; Bencivenga, Smith and Starr, 1995). Second, with a developed financial system, it helps people to easily analyse and fund for the most attractive investment opportunities. For addition, banks reduce the cost of collecting and storing company information relative to what those costs would be in an atomic capital market where each shareholder has to gather all the information and data individually (Diamond, 1984; Boyd and Prescott, 1986). Third, after providing funding, the financial system helps to track firms. Banks save on cumulative maintenance costs because all individual savers are tracked (Diamond, 1984). With these assumptions, this leads to a believe that lower unemployment is associated with a higher level of sophistication of the financial system. Thus, enhancement in credit to the private sector due to business expansion and stock market capitalization will lead to a drop in unemployment.

2.2.1 Financial Development and Labour Market Interaction (Substitutes or Complementary)

First and foremost, financial development and labour market are assumed to be substitutes (Gatti, Christophe and Vanbourg, 2012). The elimination of dismissal and recruiting expenses benefits on the job creation (Rendon, 2001). Financial development also facilitates job creation as it enables businesses to finance the cost of labour change by issuing protection. When their worker recruitment regulation becomes less reliant on the firm's internal resources, firms can act more rapidly in changing their level of employment. Hence, given that the financial development is stable, eliminating labour market adjustment costs will have lesser impact on the

employment. This is because these costs can be offset through the issuance of protection. Similarly, given that the labour market can be adjusted perfectly, access to external financing (higher financial development) will have a lesser effect on the employment as there are no monetary adjustment costs.

Belke and Fehn (2002) also stated that when there are strong labour market institutions, the growth in financial sector would be effective. When it creates heavier financial constraints, poor financial development reduces the number of companies formed. If the labour market is adjustable, this will have less effect on unemployment as lower real wages offset the harmful effect of financial constraints. In this situation, it doesn't matter much to curb unemployment by through financial development. However, if the labour market was in the condition of strongly imperfect, i.e. if there are strong labour market structures, then the above-mentioned balancing effect will not occur. In this case, rising financial development is becoming especially effective in supporting employment. Thus, given that the condition in the labour market institutions are tense and tight, the unemployment rate can be lowered down by an increase in financial development. Similarly, given that the labour market institutions are in weak condition, then low levels of financial development can help in reduce unemployment.

Secondly, financial development and labour market are assumed to be complementary (Gatti, Christophe and Vanbourg, 2012). A model developed by Wasmer and Weil (2004) theoretically states that when there is weak competition over the labour and credit market, the market liquidity and equilibrium price will decrease, thus resulting a bad effect towards job creation. The model is distinguished by the presence of relations between credit and labour markets that are typically balanced. Further credit market competition reduces the number of borrowers as companies are less likely to find a funder. It discourages businesses from joining, which in effect makes it harder for employees to get a job. Therefore, if the credit multiplier in the credit market is in imperfect condition, this will worsen the unemployment rate caused by labour market imperfections. It indicates that the beneficial effect in the labour market with increased liquidity shall be amplified with the credit market volatility. In other words, deregulation of the labour market reduces unemployment, particularly when there is low restriction on the credit market, i.e. when there is intense competition on the credit market.

Koskela and Stenbacka (2004) showed the unemployment rate affected by capital markets depends largely on labour market institutions. They made assumption

of general equilibrium in all parties of labour markets. The examples parties are workers that receive the wage, companies and institution unions that work on regulation. Increased interest rate is influenced by unemployment through three channels due to higher concentration of banking. Firstly, unemployment rate rises as the firm financing cost rises. Secondly, when there is a restraining effect of base wage system, this will reduce the external choice of workers and stimulates employment. Third, companies are more passionate about sharing income as a negotiating tactic to secure a lower base wage. The impact of profit sharing increases the outside choice of employees, thus hurting jobs creation. If the bargaining power of unions is low, the effect of profit-sharing exceeds the effect of wage moderation, so that greater concentration of banking encourages employment. Thus, given that the condition in the labour market institutions are loose and weak, the unemployment rate can be lowered down by a decrease in the concentration of banking sector. Similarly, given that the concentration of banking sector is in weak condition, then weak levels of labour market institutions can help in reduce unemployment.

2.3 Empirical Literature on Financial Development and Unemployment Rate

2.3.1 Linkages Among Financial Development and Unemployment Rate

Empirical results of various research on the financial development and unemployment rate relationship varies across countries that follow different theoretical views. The findings are mixed according to several reasons, including the selection of estimation of financial development, estimation methods, and labour market institutions. Gatti, Christophe and Vanbourg (2012) analysed the unemployment rate and financial development relationship by looking into the selected OECD member countries. They found that capitalisation of the stock market had a negative effect on unemployment. Moreover, they found that in the case of a highly regulated labour market, the impact of credits given by the financial sector is negative correlated with the country's unemployment rate. In other similar cases, they do not deny the possibility of having a positive relationship. Gatti, Christophe and Vanbourg (2012) further suggests that the mechanisms of labour and consumer markets are not the only variables that decide unemployment. Citing, for example, the past studies that related empirically to the 'revenue and finance' states the close relationship between the investment growth and financial development. In particular, the size of the financial markets, the degree of concentration of the banks, the role of financial intermediation, etc., shall vary greatly from country to country and this will

greatly cause different effects towards the unemployment rate (Allen and Gale, 1995; Allen and Gale, 2000). Epstein and Alan (2018) documented a negative and important relationship in developing and emerging economies (DEMEs) between domestic financial growth and unemployment instability. This relationship is not found in developed countries (AE).

For the case in Indonesia, the role of bank credit to support economic development and to reduce both unemployment and poverty has been highlighted (Sipahutar, 2016). It shows the impact of credit on unemployment, economic development and poverty. Banks credit fosters economic growth and has an effect on credit scope and financial development. Furthermore, bank credit is a growth driver that accelerates economic development in Indonesia. Banks credit is an endogenous development factor for Indonesia, and a good economic proxy. Their estimation model demonstrated that bank-allocated credit increases real-sector business escalation, then fosters economic growth, decreases unemployment rate by growing demand for labour, increases wages, and then decreases poverty.

Bamidele (2015) explores how unemployment in Nigeria is affected by the Nigerian capital market. The result shows that unemployment has risen unabatedly for the period since the implementation of the Structural Adjustment Plan (SAP) with an average unemployment rate of 8.12 per cent, while market capitalization is 14.42 per cent compared to the size of the economy. They have found a significant relationship between market capitalization and also unemployment rate in Nigeria. Over the years, the stock market has expanded at the cost of job development in Nigeria. As their recommendation, policy makers should focus more on the mobility and liquidity of funds in order to create an efficient environment in the capital market. By doing so, firms would be able to more opportunity in obtaining funds to implement long-term investments. This helps in job creation nationwide.

2.3.2 Long-Run and Short-Run Relationship of Financial Development and Unemployment Rate

Especially for developing countries, not only does the financial development enables capital accumulation and also the advancement of technology, thus helping economic development and reduces unemployment (Çiftçioğlu and Bein, 2017; Pietrovito, 2012). However, it was found that unexpected interruption caused by the failure of financial system might lead to an increase in unemployment rate, poverty inequality and retard economic growth. The financial market is harming employment

by credit restrictions during the GFC (Dromel, Kolakez and Lehmann, 2010). Dromel, Kolakez and Lehmann (2010) suggest that the prevalence of financial market credit restriction not only exacerbates the unemployment rate of the country, but also causing the effect to be persistence. Therefore, we shall look further into their relationship in short run and long run terms.

Shabbir et al. (2012) looked empirically at the long-term relationship between the growth of the financial sector and unemployment in Pakistan, along with causality direction. To estimate the long-term relationship, Auto Regressive Distributed Lag (ARDL) was applied. A stable long-term relationship between measures for the financial sector and unemployment has been identified. Increasing the circulation of money in the economy has proven negative for the rate of jobs. Increased activities in the financial sector had positive effects both in the short term and in the long run on rising unemployment. Aliero, Ibrahim and Shuaibu (2013) found chronic unemployment in Nigeria, though structured allocation of credit in rural areas has both short- and long-term effects of reducing unemployment. Also, from the results, there is no significant inflation with the implementation of expansionary monetary policies. Thus, the policy makers should focus more on financial deepening in order to provide the essential financial support to those unemployed people in the country.

Research done by Raifu (2019) found that the financial development indicators in terms of stability, performance private sector crediting and liquidity would only be effective in short run terms in reducing unemployment rate. They have also found that the rate of financial development and unemployment is co-integrated. Osuka, Inejirika and Chinweze (2019) and Ogbeide, Kanwanye and Kadiri (2015) analyse the effect of financial development indicators towards the unemployment rate in Nigeria. It was found that larger supply of money and bank crediting reduced unemployment, meaning that as more people gain access to finance, more job-creating activity would be generated to employ more people, thus reducing unemployment while Market Capitalization was not important in influencing unemployment. All variables were found jointly to affect unemployment in the long run, and causality was found to flow unidirectionally from financial deepening to unemployment. Among other recommendations, this study recommended that credit be made available to people, particularly the poor and vulnerable, by the monetary authority and the government.

Gbolahan, Godwin and Murad (2019) showed that in the long-run, both financial depth and financial efficiency are negatively associated with unemployment.

Bayar (2016) looked into the relationship of financial development and unemployment in emerging market economies. It was found that the variables had a long relationship and domestic investment had a negative effect on unemployment, while financial development did not have a major impact on unemployment. Phelps and Zoega (2001) analysed the linkage between the share prices and employability in terms of long run period. The sample they referred to is from Organization for Economic Co-operation and Development (OECD) countries. As conclusion, they stated that the labour market can gain beneficial effects as if the stock market can be well developed.

2.4 Okun's Law (GDP Per Capita and Unemployment Rate)

O kun's law describes the causal link of unemployment to GDP. The theory's interpretation leads to the fact that GDP growth explicitly reduces the unemployment rate. A study by Sogner and Stiassny (2002) on the modification of Okun's law, stated that the employability in labour market can be affected by the change in overall aggregate demand that indirectly influence the company's decision to increase or reduce production.

2.5 Phillips Curve Law (Inflation Rate and Unemployment Rate)

Another theoretical model used to describe the nature of a relationship between inflation and unemployment caused by fluctuations in aggregate demand is the short run Phillip's curve. For the long run, the theory suggests that there will always be a natural rate for unemployment. Although recent empirical studies have shown that in the long run the inflation and unemployment rate relationship might be vertical, rather than sloping over the short run periods from left to right.

2.6 Summary

In this chapter, we have discussed on the definition of financial development indicators and unemployment rate, followed by explaining some of the theoretical literature. Next, the empirical studies are discussed that focus on the topic of long run and short run relationship between the financial growth and unemployment rate. Lastly, we employed Okun's Law and Phillip Curve theory as our control variable towards unemployment rate in this study.

CHAPTER 3: METHODOLOGY

This chapter will describe on data collection, method and analysis. The following conceptual framework shall provide a general picture of how the indicators of each variable are linked with each other. With the data abstracted from the reliable source for each variable and the reference to empirical model, we will then develop our research model. In this study, the descriptive statistics, cointegration test, correlation analysis, Unit Root test and Autoregressive Distributed Lag (ARDL) method shall be explained more deeply in the following.

3.1 Conceptual Framework

This paper shall focus on the relationship of the financial development variable and the unemployment rate in Malaysia. The sample period will be from year 1981 till 2018. Based on one of the reports released by World Bank in 2015, financial depth, accessibility, efficiency and stability are the main measurements that serve as the criterion used for financial development. In details, financial depth is being defined as the financial organisation and market size, meanwhile the financial accessibility represents the extent to the amount of people or individual are able to access the financial services. Furthermore, the financial efficiency measures the productivity of the financial institutions and organisations, while financial stability shows the sustainability goal achievement of those institutions. Nevertheless, this paper would only analyse the effect of the financial depth's financial development indicators (that are represented by the capitalisation of stock market and financial institution capacity) on the unemployment rate in Malaysia. Figure 2 below depicts the charts that relates all variables in this study.

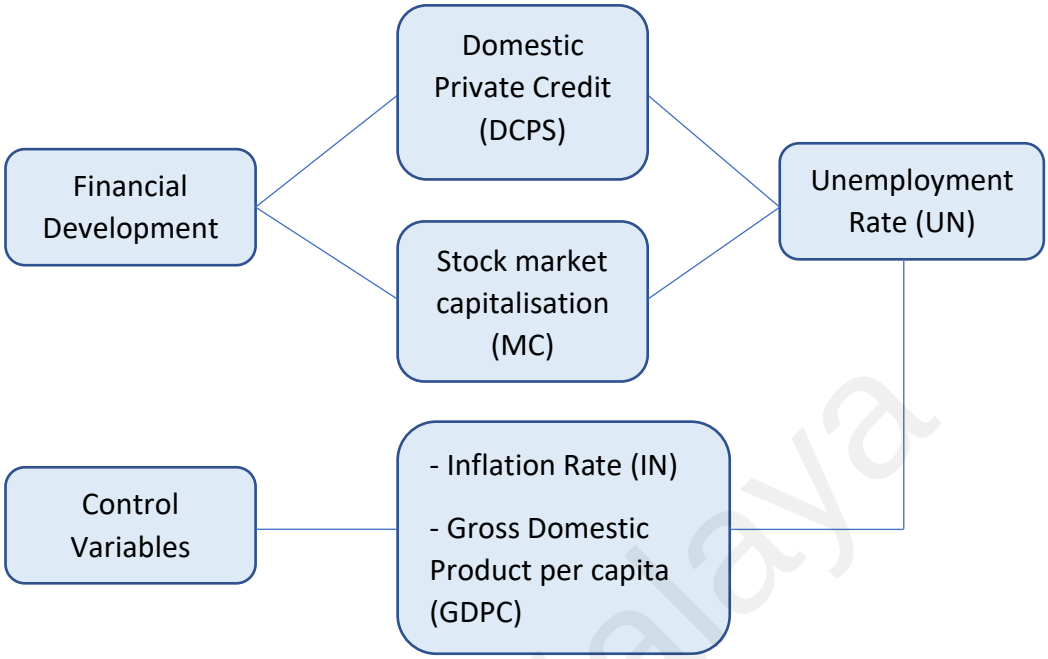

Figure 2: Conceptual Framework Diagram

As mentioned earlier, (Domestic Credit to Private Sector) DCPS and (Market Capitalization) MC will be the main focus in this paper, in which these serves as the effect of financial development indicator towards the unemployment rate. Serving as the benchmark, the domestic private credit is being selected rationally to measure the efficiency of the resource allocation by the institutions in the financial sector. In other words, domestic private credit can be found by knowing how much of the total credit amount being transferred by banks to the private sectors. Productive financial sectors would be able to allocate the resources (surplus) efficiently to the productive sectors, enabling them to have higher investments on higher productive activity. In this way, the private sectors would be able to enhance their output production eventually improve the overall economic performance and employment rate. Therefore, DCPS is expected to influence unemployment rate negatively.

Moreover, involvement of transactions in financial markets such as bonds and shares would channel more resources into the deficit unit in the economy can also be one of the mediums of financial development (Atje and Jovanoric, 1993; Choong et al., 2005; Majid, 2008). It made it possible for the competitive sectors to diversify financial capital, and the manufacturing cycle would not be interfered even if a firm's ownership is shifted (Levine, 1991). Market capitalization can imply stock market stability in order to protect the interests of investors (Ghildiyal, Pokhriyal and Mohan,

2015). Due to the efficient distribution of financial resources can be one of the functions in the stock market, market capitalisation is projected to positively influence economic development.

Other than the financial development indicators (DCPS and MC), there are other factors that we need to take consideration such as inflation (IN) and GDP per capita as these factors may cause biased results in our estimation results for financial development and unemployment rate relationships. Thus, these alternative factors would become the constant variables in this study as to reduce the biased effect towards the results produced. The significant control variables that affect the unemployment rate are GDPC and IN based on the Okun's Law and Philips Curve theory. By having GDPC and IN as constant variable, thus it would be easier to observe the real relation between our financial development and unemployment rate variables (Sharma, 2018). Lastly, to avoid any structural break issue in the unemployment rate and other variables used in this study, we therefore use some highlighted financial crisis events as dummy variable to avoid the structural break effect from affecting the estimations of the relationship. The highlighted financial crisis will be discussed in the following sections.

3.2 Data Source

Analysing the long- and short-term relationship between financial development and employability performance in Malaysia shall be our main goal in this study. In this report, secondary data such as DCPS, MC, UN, IN and GDPC since 1981 to 2018 were obtained from the World Bank Database and used in the analysis. In this analysis, DCPS and MC will be our main measurement of financial development. Control variable in this study will be the GDPC and IN. Also, UN will be the independent variable. A brief description for each variable, list of description and expected sign of independent variable were given in Table 1, 2 and 3 below.

Table 1: Description of Variables

Variable	Description
UN	Unemployment rate in Malaysia. The unemployment rate is calculated by expressing the number of unemployed persons as a percentage of the total number of persons in the labour force.
DCPS	In form of the proportion of GDP, domestic credit to private credit by banks. Financial development proxy that calculates the financial capital the financial institution has allocated to the private sector through loans, nonequity securities, and export credit.
MC	It shows the total outstanding shares of the companies in terms of market value. This contributes to total capitalisation in the market in terms of the proportion of GDP of the companies that are being listed domestically.
IN	Inflation rate that are measured in terms of percentage annually. CPI (Consumer Price Index) is used as the proxy in measuring the purchasing power and fluctuation in general price.
GDPC	Gross domestic product at present US dollar per capita. Economic growth proxy suggesting production or profits that accounts per head and used to calculate the standard of living of a nation's citizens.
CS	Dummy variable for Commodity Shock in 1985 - 1987
AFC	Dummy variable for Asian Financial Crisis in 1997 - 1998
GED	Dummy variable for Global Economic Depression in 2001-2003
GFC	Dummy variable for Global Financial Crisis in 2008 -2009

Source: World bank 2019

Table 2: List of variables

Variables	Description	Unit of Measurement	Source
Dependent variable			
UN	Unemployment Rate in Malaysia	Percentage Rate	WDI
Independent variable			
DCPS	Malaysia Domestic Credit to Private Sector	Percentage of GDP	WDI
MC	Malaysia Stock Market Capitalization	Percentage of GDP	WDI
Conditioning variables			
IN	Inflation rate	Percentage of GDP	WDI

GDPC	Gross Domestic Product per Capita	Natural Logarithm	WDI
Dummy variables			
CS	Commodity shock (1985-1987)	-	-
AFC	Asian Financial Crisis (1997-1998)	-	-
GED	Global Economic Depression (2001-2003)	-	-
GFC	Global Financial Crisis (2008 -2009)	-	-

Notes: Sample Period: 1981 – 2018. All series are annual data.
WDI denotes World Development Indicators developed by World Bank.

Table 3: Expected Signs of the Independent Variables

Variable	Description	Expected Sign
DCPS	Malaysia Domestic Credit to Private Sector	-
MC	Malaysia Stock Market Capitalization	-
GDPC	Gross Domestic Product per capita	-
IN	Inflation rate	-
CS	Commodity shock (1985-1987)	+
AFC	Asian Financial Crisis (1997-1998)	+
GED	Global Economic Depression (2001-2003)	+
GFC	Global Financial Crisis (2008 -2009)	+

As expected, based on the theory, the financial development is supposed to have a negative sign to unemployment rate as the growth of financial markets promotes growth. Following Okun's Law and Phillip Curve, GDPC and IN are assumed to be negatively correlated with unemployment rate. Lastly, the financial crisis such as CS, AFC, GED and GFC that cause the depression to economy and job loss is expected to increase or have a positive relationship with unemployment rate.

3.3 Empirical Model

In this paper, we shall focus on the financial development indicator and unemployment rate relationship in Malaysia. As expectation, the unemployment rate should have fluctuations caused by DCPS, MC, inflation rate and GDPC. As the result, the following equation will be our main focus in this paper. This indicates the assumed variables relationship in which DCPS and MC are projected to have a negative relationship with the unemployment rate while the inflation rate is estimated to also have a negative effect on the unemployment rate. Meanwhile, the GDPC is expected to affect the unemployment rate negatively. We will develop 2 equation model that will be used in our method analysis. The following model is developed based on the fundamental concept from Gatti, Christophe and Vanbourg (2012) that researched the relationship between financial development and unemployment rate.

Model Equation 1: $$UN_t = \beta_0 + \beta_1 DCPS_t + \beta_2 LnGDPC_t + \beta_3 IN_t + \beta_4 CS_t + \beta_5 AFC_t + \beta_6 GED_t + \beta_7 GFC_t + \varepsilon_t$$

Model Equation 2: $$UN_t = \beta_0 + \beta_1 MC_t + \beta_2 LnGDPC_t + \beta_3 IN_t + \beta_4 CS_t + \beta_5 AFC_t + \beta_6 GED_t + \beta_7 GFC_t + \varepsilon_t$$

Where,

UN_t = Unemployment Rate

$DCPS_t$ = Domestic Credit to Private Ratio (Percentage to GDP)

MC_t = Stock Market Capitalization (Percentage to GDP)

$LnGDPC_t$ = Natural log of Gross Domestic Product per capita

IN_t = Inflation Rate

CS_t = Dummy variable that indicate Commodity Shock (1985 - 1987)

AFC_t = Dummy variable that indicate Asian Financial Crisis (1997 - 1998)

GED_t = Dummy variable that indicate Global Economic Depression (2001 - 2003)

GFC_t = Dummy variable that indicate Global Financial Crisis (2008 -2009)

ε_t = Error term

3.4 Research Methodology

3.4.1 Unit Root Test (Stationary Check)

Unit root testing will be conducted to ensure the stationarity of the variables before progressing to the model estimation. According to Hallam and Zanoli (1993) and Obben (1998), it is more suggested to use the Phillips and Perron (1988) unit root test in this analysis because the sample duration used is a small sample which is from 1981 to 2018. The equation below shows root test equation for the PP unit:

$$\delta a_t = \mu + \theta t + p y_{t-1} + \varepsilon_t$$

where

$$\mu = drift\ coefficient$$

$$\theta t = deterministic\ trend\ coefficient$$

$$p = AR(1) coeefficient$$

$$\varepsilon_t = random\ error\ term$$

Meanwhile, the hypothesis to be tested are:

$$H_0 : p = 0\ (The\ series\ contains\ unit\ root)$$

$$H_1 : p \neq 0\ (The\ series\ does\ not\ contain\ unit\ root)$$

The stationary test was performed as the result of unit root test robustness review. The KPSS test that developed by Kwiatkowski et al. (1992) is used as the stationary test, where the hypotheses to be evaluated are:

$$H_0 : y_t\ is\ stationary$$

$$H_1 : y_t\ is\ not\ stationary$$

Stationarity is a crucial concept for time series data used in econometric theory based on concepts proposed by Griffith, Hill and Judge (2001). He stated that a false and bogus results may be produced if performing regressions between two variables that are not stationary. Most time series have the propensity to increase or decrease over time. Any combination of series depicting unique tendency result in significant results with high R2, however the results obtained may not be genuine (Granger and Newbold, 1974). Stationary testing is introduced via the Dickey Fuller and Modified Dickey Fuller method to prevent all these spurious regression outcomes problems. A series the, once separated, would be denoted as I(1) as if the series is said to be

stationary with integration at order 1. A sequence shall be recorded as I(n) if it shows stationary with n times differentiation. A sequence, stationary without differentiation, is recorded as I(0) (Gujrati, 2004).

3.4.2 Autoregressive Distributed Lag (ARDL) Method

This research employs a technique of estimation known as the Autoregressive Distributed Lag method developed by Pesaran, Shin and Smith (2001). Despite the fact that the approach is used to estimate the studied variables on their cointegration relationship. Moreover, we can apply it to analyse the effect in short run and long run period. This approach has many benefits over current methods of cointegration like Engle and Granger (1987), and cointegration methods like Johansen and Juselius (1990). For example, their cointegration tests are only possible if the criteria for the integration of the studied variables at order 1 is met. However, it would be inappropriate in using the method as if the interested variables shows level of integration that are not the same such as I(0) and I(1), then the methods are not useful. In such a case, ARDL becomes a useful estimation method. The ARDL structure is defined following existing studies such as Shabbir et al. (2012), Aliero, Ibrahim and Shuaibu (2013) and Çiftçioğlu and Bein (2017) as:

Model Equation 1

$$\Delta UN_t = \beta_0 + \beta_1 UN_{t-1} + \beta_2 DCPS_{t-1} + \beta_3 LnGDPC_{t-1} + \beta_4 IN_{t-1} + \beta_5 CS_{t-1} + \beta_6 AFC_{t-1} + \beta_7 GED_{t-1} + \beta_8 GFC_{t-1} + \sum_{i=1}^{n} a_i \Delta UN_{t-1} + \sum_{i=0}^{m1} \emptyset_i \Delta DCPS_{t-1} + \sum_{i=0}^{m2} \gamma_i \Delta GDPC_{t-1} + \sum_{i=0}^{m3} \sigma_i \Delta IN_{t-1} + \varepsilon_t$$

Model Equation 2

$$\Delta UN_t = \beta_0 + \beta_1 UN_{t-1} + \beta_2 MC_{t-1} + \beta_3 LnGDPC_{t-1} + \beta_4 IN_{t-1} + \beta_5 CS_{t-1} + \beta_6 AFC_{t-1} + \beta_7 GED_{t-1} + \beta_8 GFC_{t-1} + \sum_{i=1}^{n} a_i \Delta UN_{t-1} + \sum_{i=0}^{m1} \varphi_i \Delta MC_{t-1} + \sum_{i=0}^{m2} \gamma_i \Delta GDPC_{t-1} + \sum_{i=0}^{m3} \sigma_i \Delta IN_{t-1} + \varepsilon_t$$

From the equation above, UN_t is the unemployment rate. UN_{t-1} is the lag of unemployment rate. Using FD to be as the proxy for both DCPS and MC which act as the financial development variables. $FD_{t-1}$is the lag of financial development indicator. For the control variable, the lag of IN and GDPC will be represented as IN_{t-1} and $LnGDPC_{t-1}$. The operator Δ shows the variable is at first difference. β_0 shows the drift component of the model. Meanwhile, β_1 until β_8 shows multiplier for each of the variables in long run terms. As for short run dynamic parameters, it is represented by the coefficient of a_i, $\emptyset_i$, φ_i, γ_i and σ_i. Lastly the error term is represented by the ε_t. Based on the theoretical literature, financial development, regardless of short run or long run effect, should be negative correlated with the unemployment rate. The constant variable such as inflation rate and GDP per capita is included to strengthen the real relation among the dependent and independent variable. For example, according to Phillip curve theory, it proposes that inflation rate should have a negative relationship on unemployment rate. Similarly, as for the GDP per capita and unemployment rate, we shall refer to Okun's law. The law indicated that real GDP and unemployment rate are negatively correlated with each other. Thus, the higher the real GDP will yield lower unemployment. CS, AFC, GED and GFC act as the dummy variable in this model to avoid the structural break in unemployment rate.

Long-run Null Hypothesis (H0):

$$B_0 = B_1 = B_2 = B_3 = B_4 = B_5 = B_6 = B_7 = B_8 = 0$$

Long-run alternative hypothesis (H1):

$$B_0 \neq B_1 \neq B_2 \neq B_3 \neq B_4 \neq B_5 \neq B_6 \neq B_7 \neq B_8 \neq 0$$

If cointegration exists, then the error correction term (ect) which shows the speed of adjustment from the short-run towards the long-run equilibrium is specified as:

Model Equation 1:

$$\Delta UN_t = \beta_0 + B_5 CS + B_6 AFC + B_7 GED + B_8 GFC + \sum_{i=1}^{n} a_i \Delta UN_{t-1} + \sum_{i=0}^{m1} \emptyset_i \Delta DCPS_{t-1} + + \sum_{i=0}^{m2} \gamma_i \Delta GDPC_{t-1} + \sum_{i=0}^{m3} \sigma_i \Delta IN_{t-1} + nect_{t-1} + \varepsilon_t$$

Model Equation 2:

$$\Delta UN_t = \beta_0 + B_5 CS + B_6 AFC + B_7 GED + B_8 GFC + \sum_{i=1}^{n} a_i \Delta UN_{t-1} + \sum_{i=0}^{m1} \varphi_i \Delta MC_{t-1} + \sum_{i=0}^{m2} \gamma_i \Delta GDPC_{t-1} + \sum_{i=0}^{m3} \sigma_i \Delta IN_{t-1} + nect_{t-1} + \varepsilon_t$$

The ε_t in this context means the error term. When both the unemployment rate and the indicators of financial development are cointegrated, in equations 3 and 4, the error term shall be negative in which it is less than one and statistically significant.

3.4.3 Cumulative Sum (CUSUM) (Model Stability Test)

The CUSUM chart is used to measure the mean of a process based on samples taken at a given period of time from the process. The sample measurements at a given time establish a subgroup. Rather than independently examining the mean of each subgroup, the CUSUM chart shows the accumulation of current and preceding sample information. Better than X-bar chart, this chart is more sensitive in tracking minor shifts in the mean of a process. This chart focused on the target specification and also reliable estimate of the standard deviation. Due to this, after process control has been developed, the CUSUM chart is typically used. Typically, in the CUSUM chart, there will be an upper and lower boundary. If the upward or downward drift of the cumulative sum crosses the boundary, there will be an out-of-control process signal. This out-of-control process signal may be due to an assignable cause.

Following the CUSUM procedure presented by Ryan (2011), the steps for creating a CUSUM chart may be summarized as follows:

1. Evaluate from the equations below the value of z_i.

$$z_i = \frac{\bar{x}_i - \bar{\bar{x}}}{\hat{\sigma}_{\bar{x}}}$$

2. Calculate the lower and upper cumulative sums as follows

$$S_{Li} = -\max\left[0, (-z_i, -k) + S_{Li-1}\right]$$

$$S_{Hi} = -\max\left[0, (z_i, -k) + S_{Hi-1}\right]$$

3. Plot S_{Hi} and S_{Li} on a control chart. The h that has both positive and negative value acts as control limits. The k is assumed to be 0.5 (for detecting one-sigma shifts in the mean) and h is assumed to be 5.

4. When there is a detection of an out-of-control situation, the corresponding sum may be remained as it is, or reset to an appropriate starting value.

3.5 The Stylised Facts (Trend Analysis)

In a highly integrated world, the globalization movement positions developing countries and a big chaos of global financial crises undoubtedly had consequences for their economies. Therefore, in this paper, we shall focus on the causal relationship between financial development and unemployment rate in Malaysia. The following shows the analysis of Malaysia that has gone through from year 1981 to 2018 in terms of unemployment rate and financial development indicator. As highlights, we would focus to the main financial crisis events in looking into whether the financial development in Malaysia is sustainable. The trend analysis is illustrated in Figure 3, Figure 4 and Table 4.

Unemployment rate in Malaysia (1981 - 2018)

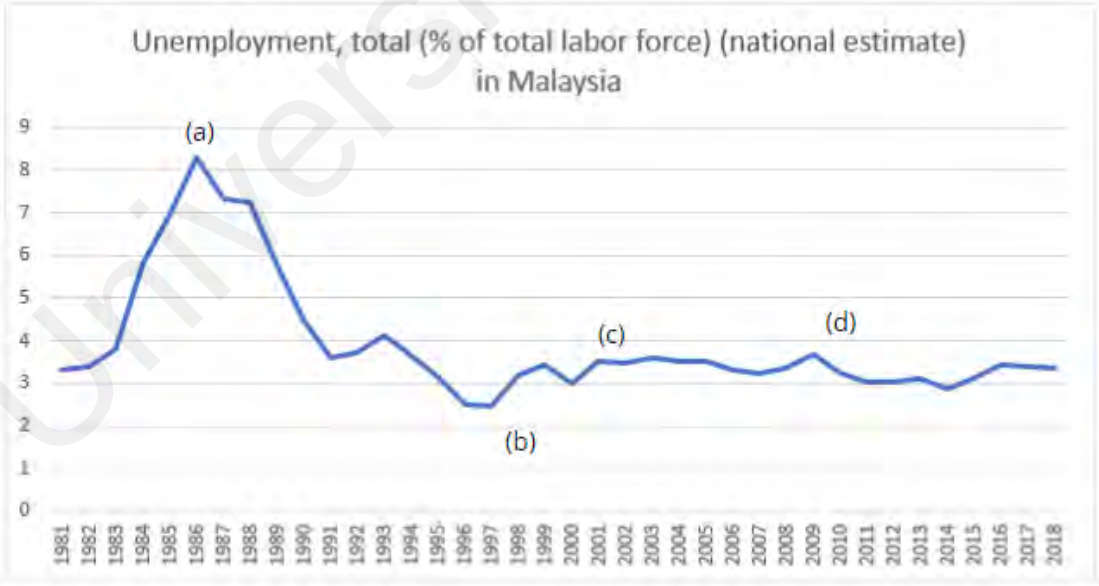

Figure 3: Unemployment Trend in Malaysia

Source: World Bank Database

Malaysia Financial Development Indicator (1981-2018)

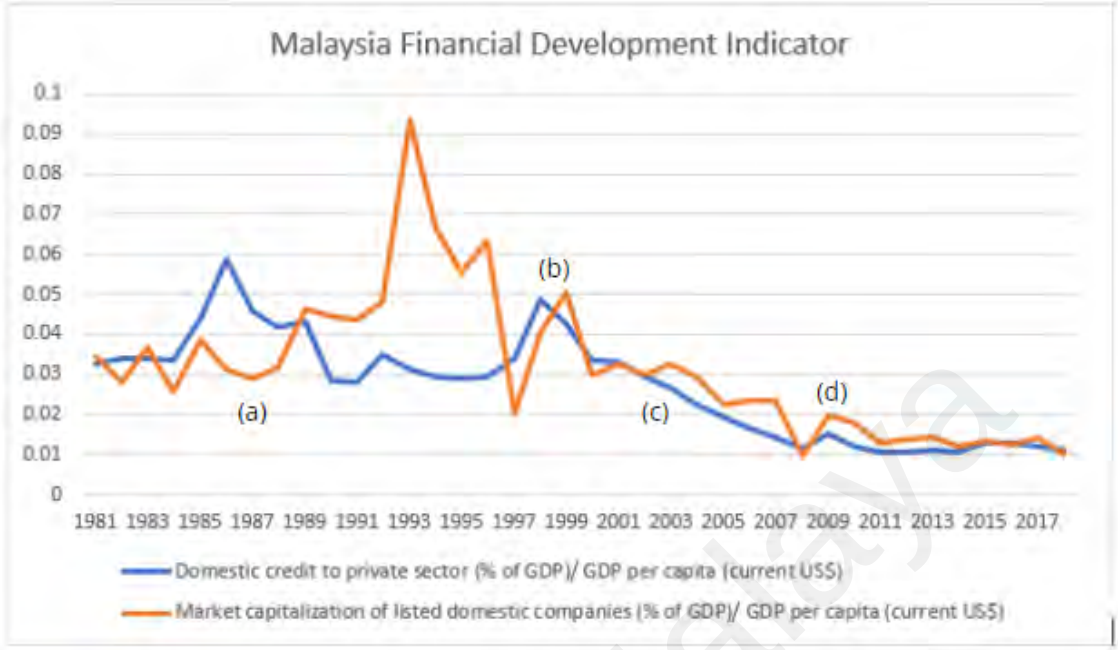

Figure 4: Financial Development Trend in Malaysia

Source: World Bank Database

Table 4: Overall Trend Analysis of Financial Development and Unemployment Rate in Malaysia during Financial Crisis.

	Trend		
	Unemployment Rate	Domestic Credit to Private Sector/ GDP	Market Capitalization/ GDP
(a)	Increase	Decrease	Decrease
(b)	Decrease	Increase	Decrease
(c)	Relatively Constant	Decrease	Decrease
(d)	Increase	Decrease	Increase

Source: Author's Analysis

Note: (a) Commodity Shock (1985 - 1987)

(b) Asian Financial Crisis (1997 - 1998)

(c) Global Economic Depression (2001 - 2003)

(d) Global Financial Crisis (2008 - 2009)

(a) Commodity Shock 1980s (1985-1987)

In the early 1980s, there is a severe deterioration in the commodity market worldwide and economic recession in most developed countries. This was due to the policy of rising interest rate implemented by (the' Volker shock'). Commodity shock

then was spread to Malaysia, causing the decreasing of total price index for export Malaysia's overall export price index by 30 percent, leading to a significant reduction of prices for palm oil and tin. Even worse, the trade relations were at a decreasing trend. Those new born industries that had just started their production were largely affected by the disruption of the global economy recession. Nearly towards the end of 1988, business loans owned by the Malaysia government contributes up to 37 percent of the total public sector debt (Prema, 2010). This economic crisis has caused a large reduction in the overall aggregate demand, creating unemployment and higher number of corporate bankruptcies on the general business front. This financial crisis showed that there is a negative relationship between financial development indicator and unemployment rate based on the trend analysis illustrated in Figure 3,4 and Table 4 above.

(b) Asian Financial Crisis (1997-1998)

The ringgit also faced strong selling pressure when the Thailand currency was facing speculation attack in mid-May. At that time, the depreciation of ringgit against the dollar had outreached. The flows of the capital in terms of equity had come to a reversal as the share price index of the KLSE's composite had drop tremendously nearly in the end of the year (Prema, 2010). Nonetheless, despite domestic financial institutions ' low foreign debt exposure, Malaysian policymakers have been struggling and survived for a while. In other countries such as Indonesia and Thailand, they received the financial funding help from IMF. The economy had been in recession by August 1998. National account published last August week showed a 2.8 percent and 6.8 percent contraction of production in the first two quarters respectively. Even worse, the overall unemployment rate rises from 2.6% in 1996 to 3.9% in 1998 based on the trend analysis illustrated in Figure 3,4 and Table 4 above.

(c) Global Economic Depression (2001-2003)

Consideration of the trends in unemployment in Malaysia for the period from 2000 to 2009 is important. The unemployment rate remained low at approximately 3 percent based on statistical analysis. Throughout 2001 and 2004, the unemployment rate increases gradually. A terrorist's attack was launched in the year 2001, that is the 911 case. The U.S. World Trade Centre had been the victim of this case, later cause a recession of the US economy It then causes the stagnation of the entire world economy. As the world's largest economy, the US needs to import huge amounts from the rest of the world. As a result, the recession in the US economy has reduced its imports, and exports around the world will also fall. The global economy is therefore

in recession. In Malaysia, however, the unemployment rate is 3.7 percent relative to 2002. Later in the year 2003, there were 2 main events happened worldwide, which are the Iraq war and the disease outbreak (Severe Acute Respiratory Syndrome (SARS)). This had impacted the Malaysia economy (Prema, 2010). The unemployment rate was 3.8%, which was 0.1% higher based on the trend analysis illustrated in Figure 3,4 and Table 4 above.

(d) Global Financial Crisis (2008)

Due to the outburst of the speculative bubble in the US housing market in the year 2008. Global financial crisis occurred and the effect is transmitted worldwide. Not only affect the capital flows in each country, this crisis had also impacted the trading activities and affected the commodity price. Each country faced different situations during this crisis, as this situation varies from country to country in terms of the financial trading activities with other countries and financial stability of financial institution and policies. After the crisis, Malaysia's stock market share prices show a sharp decrease by 20 percent from year 2007 till 2009, although the size of the crash was much smaller than in the Asian crisis (between 1996 and 1998 by 53 percent). A massive exodus of short-term capital flows also occurred in 2009, approximately US$ 6 billion. In this situation, Malaysia suffered from minimal shock damage as domestic financial market (financial system) had enough liquidity and the country has strong reserve position. However, after Malaysia had learnt lessons from the last Asian Financial crisis, the government had improved the resilience of the financial sector in Malaysia in facing the next financial crisis by having a broad-based reform of financial sector. Moreover, most Southeast Asian countries including Malaysia had actually small exposure to contingent debt obligations from the U.S. subprime market (Prema, 2010). From here, the effect of the financial development indicator on the unemployment rate is ambiguous based on the trend analysis illustrated in Figure 3,4 and Table 4 above.

From the entire analysis of the historical unemployment rate in Malaysia, we could observe the underdeveloped financial sector is unable to support the Malaysia to go through the financial crisis in the 1980s in which the unemployment rate is recorded the highest in the history in 1987. Later, the rate has been stable and low even though the global crisis in 1997 and 2008 hits. From the analysis, we could hardly observe a negative relationship between financial development and unemployment as proposed by theory in short run, but relatively significant in the long run terms.

3.6 Summary

In this chapter, we have discussed the approach used, the collection of data collection and data method analysis in order to complete our research objectives. Throughout the conceptual context, a brief idea about the variables are clarified. First, in model specification has been elaborated. Last but not least, this chapter specifically addressed the methods used such as correlation analysis, unit root test and ARDL process.

CHAPTER 4: RESULTS AND DISCUSSION

This chapter discusses the study's findings. Firstly, to analyse the properties of the variables, descriptive statistics, correlation analysis and unit root test will be performed. After that, an Autoregressive Distributed Lag (ARDL) model will be developed to respond to the second and third research goals, which is the long-term and short-term relationship between financial growth and the rate of unemployment in Malaysia from 1981 to 2018. The results for the ARDL model will be break down into two main parts, which is the financial development proxy (DCPS and MC), in order to test their relationship with the unemployment rate. CUSUM Test will be carried out to test for the stability of both the financial development model with unemployment rate.

4.1 Descriptive Statistics

In this section, we shall discuss about the mean, median standard deviation and also the value of maximum and minimum. The Jarque-Bera showing each variable's properties. The results for each of the respective variables were shown in Table 4.1: unemployment rate (UN), private domestic credit (DPCS), stock market capitalization (MC), inflation rate (IR) and gross domestic product per capita (GDPC).

Table 5: Descriptive Statistics

Variables	Mean	Std. dev	Maximum	Minimum	J-B	p-value
Dependent variable						
UN	3.919	1.402	8.290	2.450	30.537	0.0000
Independent variable						
DCPS	108.314	24.517	158.505	57.761	0.090	0.9560
MC	132.914	62.043	320.992	51.774	16.696	0.0002
Conditioning variables						
LnGDPC	8.400	0.629	9.339	7.455	2.735	0.2548
IN	2.869	1.813	9.700	0.290	31.814	0.0000

Notes: All statistics are based on original data values.

Table 5 shows the descriptive statistics. First and foremost, both the financial development indicator of DCPS and MC showed the average of 108.31% and 132.91%

respectively. Taking the sample period from 1981 till 2018, the standard deviation for both variable DCPS and MC are 24.51 and 62.04 respectively. With the average value of 108.31%, the analysis showed that DCPS is ranged from 57.76% to 158.50%. Meanwhile viewing at MC, it is ranged from the minimum value of 51.77% to the maximum value of 320.99%, which shows the range of fluctuation from its 132.91% average.

Based on the literature review, both the IN and GDPC are related to the unemployment rate. Thus, they shall act as the control variable in this study. For the mean value, IN and GDPC showed the result of 2.86% and 8.40% respectively. With the variability value of 1.81, IR is ranging from the minimum value of 0.29% to the maximum value of 9.70%. Moreover, GDPC has an average value of 8.40%. It ranges from the lowest value of 7.46% to the highest value of 9.34%, showing a slight variation from the 8.40% mean value.

After discussing the independent and control variable, we shall discuss the dependent variable unemployment rate (UN). It has an average value of 3.92% with standard deviation of 1.40. UN ranges from the lowest value of 2.45% in 1986 to the highest value of 3.92% in 1993, showing a slight variation from the 8.40% mean value.

Table 6: Correlation Analysis Results

Correlation t-Statistic Probability	UN	DCPS	MC	LnGDPC	IN
UN	1.000 ----- -----				
DCPS	-0.415 -2.736 0.009	1.000 ----- -----			
MC	-0.433 -2.886 0.006	0.454 3.057 0.004	1.000 ----- -----		
LnGDPC	-0.599 -4.483 0.0001	0.482 3.304 0.002	0.318 2.013 0.052	1.000 ----- -----	
IN	-0.326 -2.066 0.046	-0.317 -2.005 0.052	-0.026 -0.153 0.879	-0.234 -1.446 0.157	1.000 ----- -----

The Table 6 above shows the correlation analysis of all the dependent, independent and control variables. Firstly, both the financial development variables (DCPS and MC) are negatively correlated with the unemployment rate (UN) in which DCPS has the negative correlation value of -0.41 with unemployment rate while MC has -0.43. This negative correlation suggests that whenever there is an improvement in the financial development indicator, the unemployment rate will reduce. On the other hand, correspond to the Okun's Law and Phillips Curve Law, both GDPC and IN shows negative correlation towards the unemployment rate with the values of -0.59 and -0.33 respectively, in which these value shows the interaction of the variables somehow fits with the theories proposed. Moreover, both the financial development indicators are positively correlated with the value of 0.45. GDPC and IN exhibits a weak negative correlation of -0.23.

Both the financial development indicators DCPS and MC are shown to be positively correlated towards the gross domestic product per capita (GDPC) with the value of 0.48 and 0.32 respectively. From this analysis, we can approximate that an increasing change in the financial development variables will generate a positive effect towards the country's GDP. Meanwhile, both the DCPS and MC are negatively correlated with the inflation rate that has the value of -0.32 and -0.03 respectively. We

can foresee that a positive change in financial development will incur a stability in inflation rate.

4.2 Unit Root Test

Unit root and stationary testing are one of the important tests before we develop our ARDL model. GDPC will be in natural logarithm form while other variables will be in ratio percentage form. The results of each variable are shown in Table 7 below in testing their unit root and stationary status.

Table 7: Unit Root and Stationarity Tests (Trend and Intercept)

Variables	KPSS		PP		Results
	Level	First Difference	Level	First Difference	
UN	0.083 (4)	-	-2.595 (2)	-3.560 (5)**	I(1)
DCPS	0.148 (4)**	0.068 (3)	-2.021 (3)	0.001 (3)***	I(1)
MC	0.131 (4)*	0.056 (4)	-3.032 (4)	-8.597 (3)***	I(1)
LnGDPC	0.058 (4)	-	-2.500 (1)	-5.021 (3)***	I(1)
IN	0.056 (3)	-	-5.515 (2)***	-	I(0)

Note: *, ** and **** denote 10%, 5% and 1% significance level, respectively.
Ln denotes all series has transformed into a natural logarithm.
Figures in parentheses indicate bandwidth is chosen.

The null hypothesis for KPSS is that the variable is in stationary form, while the null hypothesis for PP is that the variable has unit root. Each variable needs to be tested at their level and first difference form in determine their status of unit root and stationery. First, both KPSS and PP shows contradict result for UN and GDPC, whereby the former suggests UN and GDPC to be stationary at level, while the latter found that the two variables are stationary at the first difference. Since unit root test is known to have low power, therefore to be conservative, this study treated the UN and GDPC to be stationary at first difference of follow I(1) process. Next, both DCPS and MC are found to become stationary after first differencing. Hence, there is a clear indication that both variables are integrated of order one. Lastly, the IN is found to be stationary at level.

4.3: Domestic Credit to Private Sector and Unemployment Rate (Model Equation 1)

4.3.1 Cointegration Test (DCPS)

Table 8: Cointegration Test (DCPS)

	Maximum Lag Length			
	1	2	3	4
ARDL Bounds test	4.782**	3.004***	9.067***	4.244**
Schwarz criterion	2.253	2.413	1.867	1.529
Akaike Info Criterion	1.731	1.709	0.978	0.452
Serial Correlation LM test (1)	0.926	0.009***	0.888	0.238
Serial Correlation LM test (2)	0.985	0.030**	0.031**	0.295
ARCH (1)	0.769	0.845	0.075*	0.334
ARCH (2)	0.951	0.906	0.180	0.476

Note: *, ** and *** denote 10%, 5% and 1% significance level, respectively. p is maximum lag length.
The estimation allows for an unrestricted intercept and no trend (case III).
The critical values for ARDL bounds test based on Pesaran 2001, N=40, l=7, Case III
10%, 5% and 1% critical values are: (2.260, 3.534), (2.676, 4.130) and (3.644, 5.464).
Values in () are the lag length chosen.
SERIAL is Breusch-Godfrey LM test.
ARCH is the Engle's test for no autoregressive conditional heteroskedasticity

For cointegration test in Table 8, this analysis will deploy ARDL bound test, SC (Schwarz Criterion). (AIC) Akaike Info Criterion, ARCH (Heteroskedasticity test) and the Serial Correlation LM test in order to test the appropriate lag length to be used for ARDL model. The maximum lag length for this analysis will set up to lag length of four. Further lags are found to have the issue of autocorrelation. Moreover, the regression unable to estimate due to excessive lag length selected.

For the ARDL bound test results, assuming that the null hypothesis is no cointegration. At lag length of 1, 2, 3 and 4, the null hypothesis is rejected at 5%, 1%, 1% and 1%level of significance respectively, meaning there is a long run relationship between the unemployment rate and the domestic credit to private sector. Lag 4 is selected because the model is free from autocorrelation in the residual. Lag 4 also has the lowest SIC and AIC among the lags. Therefore, following the suggestion from information criteria, this study uses a lag four to estimate the ARDL model.

4.3.2 Short Run ARDL Test (DCPS)

Table 9: ARDL Short-Run Dynamics Estimation (DCPS)

Variables	Coefficient	Standard Error	t-statistics	p-value
ΔDCPS	0.004	0.006	0.583	0.5669
ΔLnGDPC	-2.735	0.549	-4.976	0.0001***
ΔIN	0.020	0.044	0.439	0.6652
CS	-0.263	0.289	-0.909	0.3745
AFC	0.089	0.293	0.305	0.7638
GED	0.101	0.209	0.483	0.6350
GFC	0.583	0.361	1.612	0.1234
$\boldsymbol{ECT_{t-1}}$	-0.616	0.119	-5.185	0.0001****
Diagnostic checks				
Serial correlation LM test (1)	0.309			
Serial correlation LM test (2)	0.076*			
ARCH (1)	0.993			
ARCH (2)	0.996			
CUSUM Test	Stable			
CUSUM of Squares Test	Stable			

Notes: *, ** and *** denote 10%, 5% and 1% significance level, respectively.
Δ denotes first difference.
A maximum lag length of four was used, following the results of the cointegration tests.
The optimal lag structure for the resulting ARDL model was chosen using AIC.
Values in () are the lag length chosen. SERIAL is Breusch-Godfrey LM test.
ARCH test is used for heteroskedasticity tests.

We discuss the short run dynamics by using the short run ARDL model in Table 9. Different from analysing the long run effect, the error correction term coefficient (ECT) shall be included for calculating the short run effect. ECT shows the speed of adjustment for any variables to go back to the equilibrium point in the long run whenever there is any changes in short run term. From the results shown, the unemployment rate will restore at 0.616% each year when unemployment rate has short run deviation. The findings show that there is no significant short run effect of DCPS impacting on the unemployment rate.

While, the results show that only the GDPC has a major negative relation to the unemployment rate at 1% significant level. When the GDPC rises by 1%, the economy's unemployment rate will fall by 2.735%. Moreover, the IN does not, in the short term, affect the unemployment rate. All the financial crisis events such as

Commodity Shock (CS), Asian Financial Crisis (AFC), Global Economic Depression (GED) and Global Financial Crisis (GFC) do not show any significant short run relationship with unemployment rate.

Through this study, we might conclude that policy makers focus in improving the indicator of gross domestic product per capita rather than the financial indicator DCPS in effectively affecting the unemployment rate in short run. Furthermore, the results conclude that there will be no evidence of autocorrelation and heteroskedasticity. However, at 10% level of significant, there will be autocorrelation in the model. The cumulative sum control chart (CUSUM) is conducted to analyse the model's stability, and the CUSUM and CUSUM square model have shown the model to be stable in short run period.

4.3.3 Long Run ARDL Test (DCPS)

Table 10: ARDL Long-Run Relationship Estimation (DCPS)

Variables	Coefficient	Standard Error	t-statistic	p-value
DCPS	-0.044	0.007	-6.636	0.0000***
LnGDPC	-1.066	0.160	-6.659	0.0000***
IN	-0.298	0.123	-2.429	0.0282**
CS	-1.145	0.539	-2.123	0.0508*
AFC	0.159	0.431	0.370	0.7165
GED	-0.066	0.304	-0.216	0.8320
GFC	0.892	0.409	2.181	0.0455*
Intercept	19.072	1.463	13.032	0.0000***

Notes: *, ** and *** denote 10%, 5% and 1% significance level, respectively.
A maximum lag length of four was used, following the results of the cointegration tests.
The lag structure for the resulting ARDL model was (3, 2, 4, 2).

The above Table 10 shows the ARDL long run regression analysis results. This part will analyse the relationship of each variable with the unemployment rate in long run term. Thus, we shall analyse and discuss it as sequence shown above. Domestic credit to private sector (DCPS) has a long-term negative relationship with the unemployment rate at 1% significant level, according to the estimate results. In the long run, the unemployment rate will decrease by 0.044% when DCPS rises by 1%. The gross domestic product per capita (GDPC) and inflation rate (IN) has substantial relation to the unemployment rate that fits the Okun's Law and Philip Curve

in long run. 1% increase in GDPC and IN will reduce the unemployment rate by 1.066% and 0.298% respectively.

On the other hand, there is a major link between the dummy variable that represents the economic shocks and the unemployment rate, especially there is an unemployment structural break during the commodity shock in 1986. As shown above, in long run terms, the commodity shock (CS) and Global Financial Crisis (GFC) have significant relationship with unemployment rate. Unemployment decrease by 1.145% during CS while increase by 0.892% during GFC. Meanwhile, Asian Financial Crisis (AFC) and Global Economic Depression (GED) have no significant relationship with unemployment rate in Malaysia as the unemployment is relatively stable during those periods.

4.4 Stock Market Capitalization and Unemployment Rate (Model Equation 2)

4.4.1 Cointegration Test (MC)

Table 11: Cointegration Test (MC)

	Maximum Lag Length			
	1	2	3	4
ARDL Bounds test	5.401**	3.372***	9.822***	1.406***
Schwarz criterion	2.241	2.462	1.804	2.012
Akaike Info Criterion	1.719	1.759	0.914	0.934
Serial Correlation LM test (1)	0.854	0.000***	0.695	0.001***
Serial Correlation LM test (2)	0.983	0.000***	0.146	0.000***
ARCH (1)	0.820	0.593	0.259	0.304
ARCH (2)	0.915	0.231	0.168	0.281

Note: *, ** and *** denote 10%, 5% and 1% significance level, respectively. p is maximum lag length.
The estimation allows for an unrestricted intercept and no trend (case III).
The critical values for ARDL bounds test based on Pesaran 2001, N=40, I=7, Case III
10%, 5% and 1% critical values are: (2.260, 3.534), (2.676, 4.130) and (3.644, 5.464).
Values in () are the lag length chosen.
SERIAL is Breusch-Godfrey LM test.
ARCH is the Engle's test for no autoregressive conditional heteroskedasticity

For cointegration test in Table 11, this analysis will deploy ARDL bound test, SC (Schwarz Criterion). (AIC) Akaike Info Criterion, ARCH (Heteroskedasticity test) and the Serial Correlation LM test in order to test the appropriate lag length to be used

for ARDL model. The maximum lag length for this analysis will up to lag length of four. For the ARDL bound test results, assuming that the null hypothesis is no cointegration. At lag length of 1, 2, 3 and 4, the null hypothesis is rejected at 5%, 1%, 1% and 1%level of significance respectively, meaning there is a long run relationship between the unemployment rate and the stock market capitalization. Lag 3 is selected because the model is free from autocorrelation in the residual. Lag 3 also has the lowest SIC and AIC. Therefore, to obtain unbiased estimate, this study uses lag 3.

4.4.2 Short Run ARDL Test (MC)

Table 12: ARDL Short-Run Dynamics Estimation (MC)

Variables	Coefficient	Standard Error	t-statistics	p-value
ΔMC	-0.001	0.001	-0.522	0.6072
ΔLnGDPC	-1.742	0.565	-3.081	0.0055***
ΔIN	0.113	0.036	3.178	0.0043***
CS	0.123	0.271	0.454	0.6544
AFC	-0.066	0.295	-0.225	0.8244
GED	-0.091	0.175	-0.522	0.6071
GFC	-0.202	0.356	-0.567	0.5765
$\boldsymbol{ECT_{t-1}}$	-0.621	0.068	-9.176	0.0000***
Diagnostic checks				
Serial correlation LM test (1)	0.232			
Serial correlation LM test (2)	0.397			
ARCH (1)	0.584			
ARCH (2)	0.785			
CUSUM Test	Stable			
CUSUM of Squares Test	Stable			

Notes: *, ** and *** denote 10%, 5% and 1% significance level, respectively.
Δ denotes first difference.
A maximum lag length of three was used, following the results of the cointegration tests.
The optimal lag structure for the resulting ARDL model was chosen using AIC.
Values in () are the lag length chosen. SERIAL is Breusch-Godfrey LM test.
ARCH test is used for heteroskedasticity tests.

We discuss the short run dynamics by using the short run ARDL model in Table 12. Different from analysing the long run effect, the error correction term coefficient (ECT) shall be included for calculating the short run effect. ECT shows the speed of adjustment for any variables to go back to the equilibrium point in the long run whenever there is any changes in short run term. From the results shown, the

unemployment rate will restore at 0.621% each year when unemployment rate has short run deviation. The findings show that there is no significant short run effect of MC impacting on the unemployment rate. While, the results show that only the GDPC and IN have major negative relation to the unemployment rate at 1% significant level. When the GDPC and IN rises by 1%, the economy's unemployment rate will fall by 1.742% and 0.113% respectively. All the financial crisis events such as Commodity Shock (CS), Asian Financial Crisis (AFC), Global Economic Depression (GED) and Global Financial Crisis (GFC) do not show any significant short run relationship with unemployment rate.

Through this study, we might conclude that policy makers focus in improving the indicator of gross domestic product per capita and inflation rate rather than the financial indicator MC in effectively affecting the unemployment rate in short run. Furthermore, the results conclude that there will be no evidence of autocorrelation and heteroskedasticity. The cumulative sum control chart (CUSUM) is conducted to analyse the model's stability, and the CUSUM and CUSUM square model have shown the model to be stable in short run period.

4.4.3 Long Run ARDL Test (MC)

Table 13: ARDL Long-Run Relationship Estimation (MC)

Variables	Coefficient	Standard Error	t-statistic	p-value
MC	-0.014	0.002	-5.581	0.0000***
LnGDPC	-0.921	0.234	-3.931	0.0009***
IN	0.212	0.123	1.722	0.1013
CS	0.699	0.699	0.999	0.3300
AFC	0.263	0.726	0.363	0.7208
GED	-0.373	0.386	-0.967	0.3459
GFC	-0.171	0.714	-0.239	0.8132
Intercept	12.918	2.111	6.121	0.0000***

Notes: *, ** and *** denote 10%, 5% and 1% significance level, respectively.
A maximum lag length of three was used, following the results of the cointegration tests.
The lag structure for the resulting ARDL model was (3, 2, 3, 0).

The above Table 13 shows the ARDL long run regression analysis results. This part will analyse the relationship of each variable with the unemployment rate in long run term. Thus, we shall analyse and discuss it as sequence shown above. Stock

market capitalization (MC) has a long-term negative relationship with the unemployment rate at 1% significant level, according to the estimate results. In the long run, the unemployment rate will decrease by 0.014% when DCPS rises by 1%. The gross domestic product per capita (GDPC) is has negative significant relationship with unemployment rate, while inflation rate (IN) has no substantial relation to the unemployment rate in long run. 1% increase in GDPC will reduce the unemployment rate by 0.921 respectively.

On the other hand, there is a major link between the dummy variable that represents the economic shocks and the unemployment rate, especially there is an unemployment structural break during the commodity shock in 1986. As shown above, in long run terms, all the financial crisis events such as Commodity Shock (CS), Asian Financial Crisis (AFC), Global Economic Depression (GED) and Global Financial Crisis (GFC) do not show any significant short run relationship with unemployment rate.

4.5 Discussion

Generally, both the financial indicators (Domestic credit to private sector and stock market capitalization) has a significant long run negative relationship with unemployment rate, but has no impact in the short run period. Perhaps, in the case of Malaysia, the effect on the unemployment rate by the financial development indicators could not be done effectively in short period of time. In short, in this paper, we found that the financial development has a long run relationship with unemployment rate in Malaysia, but not in short period of time. Financial sector development therefore has important macroeconomic implications on unemployment rate in long run terms in Malaysia. Yet financial crises are the result of financial sector problems and adversely impact the economies. Therefore, both the positive and negative effect shall be considered so that we could find the net impact towards unemployment rate with the change in financial development.

Next, we shall discuss about the relationship of financial development and unemployment rate in long run terms. Gatti, Christophe and Vanbourg (2012) found a significant relationship between financial development and labour market. This fits to our results in long run terms. Empirical findings such as Bayar (2016), Shabbir et al. (2012), Aliero, Ibrahim and Shuaibu (2013), Çiftçioğlu and Bein (2017), Gbolahan, Godwin and Murad (2019) and Kim (2018) also obtained similar results (in line with

our long run period results) that unemployment rate and financial development are negatively related and that the causal effect of financial development on unemployment in some countries is statistically significant in long run terms. From here, we assume that unemployment depends on credit, business, stock and labour market stability, with more strict regulation associated with greater unemployment. In average, these results are more prevalent in countries with higher rates of economic and financial growth, lower income inequality, greater access to trade, greater democracy and a common law system. Osuka, Inejirika and Chinweze (2019) explained as more people gain access to finance, more job-creating activity would be generated to hire more people, thus reducing unemployment. From this study, we may see that different countries possess different behaviour and pattern of relationship between financial development and unemployment at which our results are in line with their findings. Our results in this case are in line with the theoretical expectations if we look at long terms effect.

To explain our long run significant results from firm's perspective, Epstein and Alan (2018) also documented a negative and important relationship in developing and emerging economies (DEMEs) between domestic financial development and unemployment volatility and the absence of such relationship in developed economies (AEs). Our results are in line with their study in long run terms as Malaysia is a developing country. The reasonable explanation behind this may be related to the firm's production variability towards labour model and credit capital. Smaller use of input credit capital and higher bank credit and capital accumulation indicates a well financing development. These shall make businesses more robust when financial shocks occur. Improved shock tolerance of firms stabilizes job decisions, contributing inevitably to smoother fluctuation in unemployment. Then, by having a greater financial development and firms with better structure and networking among each other, input credit interfering that acts as an essential mechanism could be able to promote a smaller volatility across firms. In fact, the effectiveness in stabilizing the unemployment rate will be weaker when there is an increase in the average bank credit-GDP ratios and lower input credit use. This effect can be clearly seen in those AE countries.

Theoretically, regardless of short run or long run period, financial development should be able to promote more job creation and thus reduce the unemployment rate. However, there is only a limited number of studies that researched on the topic about the relationship between financial development and unemployment. Our findings indicated that financial sector has not contributed to employment in Malaysia in short

run period, but works significantly in long run period. Similarly, the short-term results of our research and some studies such as Gatti, Christophe and Vanbourg (2012), Gbolahan, Godwin and Murad (2019), Bayar (2016) and Ogbeide, Kanwanye and Kadiri (2015) contributed to a contraction of theoretical expectations (financial development should be effective in short run towards unemployment rate). We assessed this inconsistency could result from a few possible causes. First and foremost, the financial development can affect the unemployment rate and economic growth, only if the country can enhance their other economic growth determinants such as the effectiveness of public and private institutions, the development in human capital, and the advancement in entrepreneurship and technology. That contradiction may arise from the discrepancy between financial development and economic growth determinants. Secondly, after reaching a threshold level, the development in the financial sector could be highly helpful to the real economy. If the financial sector is not able to attract and collect enough funds, then there will insufficiently funds to mobilize and promote economic growth, even in its early stages of development. So financial sector underdevelopment can be a cause for the inconsistency at issue.

We suggest that policymakers contribute to the growth of the financial sector and real-market equilibrium. In particular, they can encourage people to deposit more savings and enable these saving pools to mobilise and fund the potential companies in the market. In the case of Malaysia, the financial development variable could only be effective in the long run in affecting the unemployment rate. The reason behind this is most probably the lag effect of the financial development variable, causing the unemployment rate to not respond on the spot. Lastly, we propose that future studies will examine the relationship between unemployment and the growth of the financial sector by classifying the countries in terms of the degree of financial sector growth.

4.6 Summary

The financial development and unemployment rate in this chapter shows a long-term relationship while no relationship in the short run. Different approach method has been used in order to analyse their relationship from different perspective.

CHAPTER 5: CONCLUSION AND RECOMMENDATION

In this chapter, we shall summarise and conclude the key findings on the financial development and unemployment rate relationship in Malaysia. This chapter will also address the drawbacks of the research, policy proposals and suggestions for future analysis.

5.1 Conclusion

For a long time, the relationship between financial stability and economic growth have been discussed. Several economists provided various insights into the issue of the relationship between financial development and economic growth, such as the effect on economic performance from financial development. Some literature provided evidence that financial development would encourage economic growth although studies have also shown that economic output would be negatively influenced by change in the financial sector. However, little research on the investigation of the interaction between financial development and unemployment seems to have been done.

Thus, this study is conducted to find the financial development and unemployment rate short run and long run relationship in Malaysia from 1981 through 2018. The study sets three key objectives: (1) investigating the trend between financial development and the unemployment rate in Malaysia; (2) defining the short-term financial development and the unemployment rate relationship in the Malaysian economy; (3) investigating the long-term relationship between financial development and the unemployment rate in Malaysia. We use secondary data for this analysis that is sourced from the database of World Bank. The financial development (DCPS and MC) in this context act as the independent variable while the unemployment rate is the dependent. Whereas, this analysis contains two control variables which are gross domestic product in Malaysia and inflation rate to reduce their effects on the dependent variable. Several analyses such as Unit Root and ARDL test have been carried out in order to achieve the study goals that have been addressed.

Firstly, trend analysis has been done to analyse the recent trend of financial development and unemployment rate in Malaysia during the financial crisis. Before going on with the second and third objectives, we need to carry out Unit Root test. From the test, all variables except inflation rate are required to be integrated at first order. Meanwhile inflation rate is found stationary at level. Cointegration test is carried

out for the two model equations in knowing the optimal lag to be used in the ARDL model. Second, after completing ARDL short run analysis, the study finds that the financial development has no short run impact on unemployment rate. Thirdly, this study goal is also to investigate the long-term relationship between financial growth and unemployment. By performing the long term ARDL test, the coefficients of each independent variable found in this study shows long-term relationship with the dependent variable, unemployment rate. The findings are in fact in line with the macroeconomist's proposed theory where financial growth has long-term impact on the unemployment rate. This paper shows that both the financial development measure (private-sector domestic credit and stock-market capitalization) has a long-term negative relation to the unemployment rate. In other words, an improvement in financial growth will also help to boost the country's employability in long run implementation, but not in short term period.

In short, from 1981 to 2016, this study found an important negative long-term relationship in Malaysia between financial development and unemployment rate, but not in short run terms.

5.2 Limitation of Study

This research faces certain limitations. Firstly, the data found from the World Bank database is not large enough to affect the sample duration as most of them exist in short period of time. Consequently, the study findings may not be closely associated with the true relationship of the variables that we are interested in. In addition, the short sampling size may also trigger unideal results for control variables, often showing marginal results. In addition, as country has different policies in combating financial crisis, thus the limited sample period may not easily bring out the effect of the financial crises that could have an impact on Malaysia's financial stability and unemployment rate.

5.3 Policy Recommendation

According to previous studies of finance-led-growth nexus, policy makers should have focused more on the implementation of program that support the development of the financial system in Malaysia, so that the job creation and economic growth can be boosted. In order to boost the unemployment rate, the financial sector in Malaysia needs to be well established and regulated. Due to DCPS

is negatively correlated with unemployment rates, banking sector should be having a strong regulation by enforcing the encouragement of the correct selection of projects by banks, thereby helping to stimulate the growth of real sector production, thereby enable more job creation. Better guidance needed to be given to allow banks to implement a more rigorous framework, which helps more effectively in channelling financial capital.

In addition, policy makers should also pay attention to the stock market as it is one of the important markets in enabling capitalization to occur and thus yielding a positive impact on the economic growth and job creation. In the stock market, tight regulation is also required to prevent any market participant betting on the market and causing other participants to lose out. Participant loss would cause investment reduction as participants lose market trust and therefore fewer capital is channelled to the more effective sector in Malaysia.

5.4 Recommendation for Future Study

Recommendations for the future research is important. First and foremost, it is possible to use a longer sampling duration to obtain a more reliable result. In addition, a financial development index could be developed to provide a more consistent financial development metric. Secondly, many studies had been conducted to examine the relationship between the rate of financial development and unemployment, and the variables used for financial development were different from study to study. As the disparity between proxies, mixed results will be found. Hence, a standardized index can be built for a better performance, including various measures of financial growth. Last but not least, to provide a greater fitness of the model, more variables can be added. In our results, the R-squared value for each model equation does not able to explain fully the unemployment rate, that is 100% of explained variability. Thus, in the future analysis, more variables may be added which will influence the unemployment rate.

5.5 Summary

As an overview, this chapter stated about the overall conclusion for the study related to the topic of financial development and unemployment rate relationship. We discussed about the challenges faced in the study, some policy recommendation and lastly some of study improvement comments.

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