Chapter 1
Introduction

1.1 Background

Over the past five decades, economic growth has been widely discussed. The majority of theoretical and empirical studies during that time have concentrated on the function of some elements (capital, labour resources, and the use of technology) considered to be drivers of growth. Some economics scholars have tried to take into consideration the important role that the financial sector may play in growth, notably Goldsmith (1969) and Hicks (1969). Goldsmith (1969) undertook the first study on the relationship between fiscal development and economic development, which confirmed the important role of the fiscal sector in the process of growth (Wachtel 2003). In addition, Hicks (1969) stated that financial development played a significant role in igniting industrialization in the United Kingdom by mobilizing great sums of funds for long-term investment ventures (Levine 1997).

Nevertheless, the role played by financial intermediation in economic development remains under debate (Hassan, Sanchez et al. 2011). Although some believe it has affected economic growth, others claim that finance does not have any impact on real variables such as GDP growth. Robert Lucas (1988, p. 6) emphasised that economists “badly over-stress" the role of fiscal factors in economic growth (Levine 1997). In recent years, economists have paid a great deal of attention to the issue of causality between finance and growth (Ghirmay 2004). Many empirical studies have found a strong relationship between finance and growth. For example, in their studies, King and Levine (1993a, 1993b) showed that financial intermediation has positively impacted the economy (Gaytan and Ranciere 2001).

This study examines the causal relationship among securities market development, bank development, Islamic and conventional insurance development, and economic growth in Malaysia for the period from 1975 to 2012. The analysis is conducted using cointegration and Granger causality tests. Malaysia is an excellent choice for this study because it has a rich history of financial sector reforms (Ang and McKibbin 2007).The Malaysian capital market has developed significantly in terms of market size, , range of instruments and efficiency. This progress has enhanced its role in supporting economic growth and transformation.. In particular, these developments have been aimed at strengthening the capital market to fill the institutional vacuum in the financial system and complement the role of traditional banks (Harun 2002).

The takaful industry in Malaysia has seen rapid growth and transformation since its founding 20 years ago. It has evolved from a minor sector with one player offering limited, basic products into a thriving industry that has been integrated into the mainstream financial system. This has been achieved thanks to the concerted efforts of Bank Negara Malaysia and the takaful operators and has led to the development of a dynamic, flexible and effective takaful industry(Center 2005).

1.2 Study motivation

The causal relationship between fiscal development and economic growth has been widely discussed by researchers from both theoretical and empirical perspectives (Vazakidis and Adamopoulos 2010). However, while a number of researchers, such as Schumpeter (1911), Goldsmith (1969), Hicks (1969), Mckinnon (1973), Shaw (1973), Gelb (1989), Roubini and Sala-i-Martin (1992), Easterly (1993), Pagano and Volpin (2001), and Jalil et al. (2009), have found significant correlations between finance and growth, others like Agbetsiafe (2004), Odhiambo (2008), and Christopoulos and Tsionas (2004) have reported the converse. In addition,

a small number of studies, such as Fowowe (2011), Demir han, Aydemir et al. (2011), and Jalil and Feridun (2011), have suggested that there is a bidirectional correlation between fiscal development and economic growth. It is clear that the relationship between finance and growth has not yet been resolved. The first motivation for this study comes from a number of gaps and unresolved issues in the literature about the relationship between fiscal development and economic growth. The second motivation is that after the rapid economic growth that followed the industrial transformation of the 1970s and 1980s, Malaysia has evolved in recent years into a leader of the developing world. This phenomenon has been accompanied by a significant improvement in the fiscal system. Fiscal development, in terms of the emergence of more fiscal institutions and fiscal instruments, has been dramatically enhanced in recent decades. The third motivation is that Malaysia has a rich history of reforms in the financial sector. It has instituted a number of financial restructuring aimed at improving the financial system since the 1970s; in the immediate aftermath of the Asian financial crisis hit the country in 1997-1998, a series of macroeconomic policy responses such as capital controls and deflationary policy has taken place. This was followed by restructuring in the corporate and banking sectors. These initiatives were followed by the restructuring of the banking and corporate sectors. Thus, the steps that have already been undertaken towards reform provide the necessary motivation to explore the role of fiscal development in enhancing growth in Malaysia. Finally, the data available for Malaysia is considered relatively good by the standards of developing nations.

1.3 Statement of the problems

Over the years, many studies have studied the correlation between financial development and economic growth (Schumpeter (1911), Jamil (2010), Mckinnon (1973), Iyare and Moore (2009), Abu Bader and Abu Qarn (2008) King and Levine (1993), Fry (1997), Khan and

Senhadji (2000), Levine et al. (2000), Fowowe (2011). However, the majority of these studies focus on developed countries, and only a few have been undertaken in developing countries. Over the past two decades, as the Malaysian government has established several laws to regulate banks, the stock market, and other financial institutions and privatised some of these institutions as a result, Malaysia has been cited as an example of a country that successfully reformed its financial policies after the worldwide recession of the mid-1980s (Narayanan 1996). In addition, the Malaysian economy has experienced a relatively rapid growth rate over the last twenty years, even while undergoing a structural transformation (Lim 1987). Despite these developments in the economy and reforms in the financial sector, to our knowledge no attempt has yet been made to test the causal relationship among banks, the securities market, Islamic and conventional insurance institutions, and economic growth in Malaysia. Therefore, the aim of this study will be to investigate and analyse those causal relationships in order to examine the role of fiscal development in enhancing the country's growth.

1.4 Objectives of the study

1-Examine the causal relationship between securities market development, and economic growth in Malaysia.

2- Examine the causal correlation between bank development and economic growth in Malaysia.

3- Examine the causal correlation between conventional insurance development, and economic growth in Malaysia.

4- Examine the causal relationship between Islamic insurance development , and economic growth .

5- Investigate the causal relationship in the long term between securities market

development, and economic growth .

6- Investigate the causal relationship in the long term between bank development, and economic growth .

7- Investigate the causal relationship in the long term between conventional insurance development, and economic growth .

8- Investigate the causal relationship in the long term between Islamic insurance development and economic growth .

9- Investigate the causal relationship in the short term between securities market development, and economic growth .

10- Investigate the causal relationship in the short term between bank development, and economic growth .

11- Investigate the causal relationship in the short term between conventional insurance development, and economic growth .

12- Investigate the causal relationship in the short term between Islamic insurance development, and economic growth .

1.5 Theory of financial intermediation

The causal relationship between fiscal and economic growth has remained an important issue for debate among economists in both theoretical and empirical literature (Luintel and Khan 1999). Fiscal intermediaries are important for technical innovation and economic growth, due largely to their services, such as mobilizing savings, evaluating projects, managing risk, monitoring managers, and facilitating transactions that they provide. Thus, they serve as a main channel in the community to allocate savings efficiently to business owners (Liang and Reichert 2011). Some studies (see Boot and Thakor 1997a, 1997b; Sylla 2002, 2003) have asserted that

significant banking activities motivate economic growth. For example, Sylla (2003) indicated that most banks operating in America over the last two decades have worked to provide financial services to new entrepreneurs (Adams, Andersson et al. 2009).

Tobin and Brainard (1963) argued that financial intermediaries could assist entrepreneurs in developing their business by providing them loans at low rates of interest and with simple procedures. Financial intermediaries evaluated various investment opportunities available through the assessment of the risks so that capital would go to the most promising projects. This led to an increased value of investments that could have a multiplier impact on the economy (Ang 2008).

Others (see McKinnon, 1973; Shaw, 1973; Kapur, 1976; Galbis, 1977; Fry, 1978, 1995; Mathieson, 1980) believe that fiscal development has a major role in the operation of growth. In particular, they emphasize the need for the liberalization of the financial sector, which they consider a positive step to promote the productivity of physical capital and thus contribute to economic growth (Luintel and Khan 1999). Robinson (1952), however, argues that finance does not affect economic growth and the demand for fiscal services came as a result of the expansion of the real economy (Ndikumana 2001).

1.6 The Functions of financial intermediation

1.6.1Mobilizing saving

The second function of financial intermediaries is mobilizing saving. Banks play an important role in making credit available for investment by pooling the savings from individual savers and directing it to productive investment, which in turn contributes to capital accumulation and economic growth(Ang 2008).

1.6.2 Risk management

The majority of projects require a long-term commitment of capital, while the individual generally needs savings to be available upon demand. Through the combination of individual savings, banks are able to manage both liquidity risks and long-term credit requirements, because it is extremely unlikely that every individual saver will demand funds at the same time. In addition, banks are able to diversify risk through the provision of loans for a wide range of projects (Al-Tammam 2005).

1.6.3 Acquiring information and resource allocation

The most important function of financial intermediaries arises from the fact that individuals are unable to determine the best investments for their savings. Financial intermediaries are more able to acquire information on creditors and ventures and serve as agents for investors, assisting them to choose the best destinations for their savings. In addition, they operate as agents for these lenders through monitoring debtors (Al-Tammam 2005).

1.7 Research gaps

Much research has been undertaken on the causal correlations among financial development and economic growth in many developing and developed countries. The majority of these studies have used only either the banking sector or stock market development as proxies for financial development. Furthermore, studies that have addressed this relationship particularly in terms of the long term versus the short-term are very few indeed. To our knowledge, there is a notable lack of research that has examined the causal links among banking, the stock market, Islamic and conventional insurance, and economic growth. Consequently, studies of these relationships in terms of long-term and short-term, in both developed and developing countries

such as Malaysia are not likely to exist. Therefore, this study will attempt to fill in these gaps.

1.8 The definition of Islamic insurance and the reasons for its use for this study.

"*Takaful* is an Islamic insurance system based on the principle of mutual cooperation (*ta'awun*) and donation (*tabarru*), where the risk is shared collectively and voluntarily by a group of participants. It is derived from an Arabic word which means 'to help one another.'" This is an agreement by a group of societal members to secure or protect each other against a defined loss or damage that may be inflicted upon them. As a concept, this kind of insurance does not contradict Islamic principles, since it is essentially a system of mutual assistance (Redzuan, Rahman et al. 2009). However, the operation of traditional insurance involves elements of uncertainty (*al-gharar*) and gambling (*al-maysir*) in insurance contracts and usury (*al-riba*) in investment activities, which do not comply with the requirements of Islamic law (Bin Abdul Hamid, Rahman et al. 2011).

According to the Central Bank of Malaysia Islamic insurance has witnessed impressive growth in the Malaysian fiscal market; in fact, Central Bank data showed a much higher growth of the *takaful* industry than of its traditional counterpart (Redzuan, Rahman et al. 2009). The majority of studies that have been undertaken have focused only on conventional insurance and its relation to economic growth such as Ward and Zurbruegg (2000) and Haiss and Sümegi (2008). However, there is a lack of research focusing on Islamic insurance and its relation to economic growth, though see Rahman, Yusof et al. (2008). This gap is surprising since the majority of Malaysian Muslims prefer to deal with the Islamic insurance system. So, through difference between conventional insurance and Islamic insurance mentioned above, this study will focus on Islamic insurance and its relation with economic growth.

1.9 Expected Contributions

1.9.1 Contributions to the literature

Given the lack of studies that have focused on the causal correlations among banks, the securities market, Islamic and conventional insurance, and economic growth in developed and developing countries, this study contributes to the literature in many ways. First, it examines those causal correlations, using a variety of indicators of banks, the stock market, and Islamic and conventional insurance. More specifically, the difference between this study and others is that this is the first to use Islamic insurance variables like AGTF, CPFT, and AFTF with a variety of indicators used in the literature to represents banks, stock market development, and conventional insurance development (see Ang and McKibbin (2007). Kar and Pentecost (2000). Nguyen, Avram et al (2010) and Boon (2005). to examine the causal relationships among bank development, securities market development, Islamic and conventional insurance development, and economic growth in Malaysia. Second, it examines this relationship over both the long and short terms. Finally, it provides evidence about the role played by Islamic insurance in promoting growth in Malaysia.

1.9.2 Contributions to practice

It is expected to contribute to practice in several ways. The findings of this research will provide regulators in Malaysia a better understanding of the role played by the financial system in economic growth. In addition, the specific findings may be adopted into policies to improve the financial system in an attempt to reach higher levels of economic development.

1.10 Plan of the thesis

This thesis consists of six chapters: an introductory chapter, a chapter on the Malaysian financial system, the literature review chapter, the methodology chapter, the empirical results chapter, and a chapter with discussion and conclusions. Chapter one focuses on introducing the thesis. It comprises of general background to the study and the motivation for it, a statement of the research problems, and an outline of the study's objectives. It also presents a theory of financial intermediation, the functions of financial intermediation, research gaps, expected contribution, and the thesis plan.

Chapter Two provides a brief recap of Malaysian economic growth and discuss the components of the Malaysian financial system, while Chapter Three reviews the literature related to stock market development, the banking sector, Islamic and conventional insurance development, and economic growth. Chapter Four describes econometric techniques used to measure the causal relationship among stock market development, the banking sector, Islamic and conventional insurance development, and economic growth. Chapter Five provides detailed analysis of the data and presents the empirical results of the tests used. Chapter six consists of a discussion and the conclusions of this study, based on test findings. It also offer some recommendations based on the study and offers suggestions for further research

Chapter 2
The Malaysian Financial System

2.1 Introduction

Malaysia is a developing country situated in Southeast Asia, known before 1963 as the Federation of Malaya. The country occupies an area of almost 329,750 square kilometres. The Federation of Malaysia is made up of 13 states, and is divided into the two regions of Peninsular Malaysia, also known as West Malaysia, and East Malaysia: most states are located in West Malaysia. The capital city is Kuala Lumpur, located in south-eastern Peninsular Malaysia, just 300 kilometres from Singapore (Zakaria 2003). Malaysia is a multi-ethnic country with a diverse population (Abazov 2013). The Malaysian population is 28.6 million, of which more than 50% of is Malay Muslim, with the rest divided into two groups. 35% of the population is Chinese, while 10% is Tamil (Zakaria 2003) . The official language of Malaysia is Malay, though English is widely used in business, trade, and mass media. There are other ethnic languages spoken widely, such as Chinese, which is spoken mostly by those of Chinese origin, as well as Tamil and Hindi, spoken predominantly by Indians and Punjabis (Julian and Ahmed 2009). Malaysia is, like many other though by no means all Asian countries, recognized internationally for its availability of natural resources, such as petroleum, tin, timber, copper, iron, and natural gas (Julian and Ahmed 2009). The Malaysian economy has been growing rapidly; the average Malaysian income is currently two and a half times higher than it was 15 years ago. The country's impressive economic performance has played a vital role in reducing poverty rates compared to other economies in the geographic region. Unemployment and inflation are at low levels, even by the standards of more advanced countries (Coppel 2005).

The purpose of this chapter is to discuss the components of the Malaysian financial system. The chapter is structured as follows: the second section provides a brief overview of Malaysian economic growth. The Malaysian financial sector master plan is discussed in section three, followed in section four by a description of the Malaysian financial system. A conclusion to the chapter is provided in the final section.

2.2 Overview of Malaysian Economic Growth

Since Malaysia achieved independence, the country has provided a fundamentally good climate for investors, which has been attributed to the availability of many factors such as abundant natural resources, a large number of foreign banks, a high number of skilled workers, and an adequate and even sophisticated infrastructure. These factors, coupled with a large agricultural sector, were important in achieving rapid industrial growth within the 1960s, which had a significant effect on economic growth in the two decades that followed. The accelerated growth of real GDP in the period of four ranged from 1.0% in 1957 to 7.8% in 1966 6.0% in 1970. The economic growth in the 1960s led to enhancements in living standards, increased access to health services, better educational attainment, and a higher level of urbanization (Ang 2007).

The 1970s saw the beginning of a new stage of economic development, marked by a rapid increase in the construction and manufacturing industries and a strong strategic focus on fairness or equity, in particular through policies of affirmative action (Yusof, Bhattasali et al. 2008). The proportion of private credit to GDP more than doubled from 21.2% to 49.1% throughout the same period. The economy grew strongly at an annual average rate of 7.9% due to the extraordinary performance of these industries (Ang 2007).

Nevertheless, the performance of the Malaysian economy was passively affected by the petroleum crisis, which was one reason behind the global slump of 1975. Real GDP growth decreased considerably from 8.3% in 1974 to 0.8% in 1975. The inflation rate rose speedily from 3.2% in 1972 to 17.3% in 1974. The government responded to the sharp decline in the growth through enormous expenditures on public investment ventures, which rose nearly threefold between 1971 and 1975, and again between 1976 and 1980, providing incentive for economic activity. As a result, the growth rate of real GDP recovered. The recorded annual growth rate of gross domestic product in the 1980s was about 6.0%, almost two percentage points less than the prior decade. This was principally due to a sharp decline in goods prices, after a global economic slump that extended for a long period in the early 1980s. In late 1982, the government faced the problem of twin deficits: a fiscal deficit of 18% in GDP and a current account deficit in 14% of the GDP. In light of these troubles, it sought foreign loans and there was a major boost in external debt of 10 billion Malaysian ringgit (19.5% of GDP) in 1980 to 24.3 billion Malaysian ringgit (40.7% of GDP) in late 1982 (Ang 2007).

Malaysia's growth remained strong in 1990s until the 1997 Asian financial crisis. Real GDP growth averaged 8.5% per year, inflation remained low at between 2% and 3%, unemployment was below 3%, and cash was still "strong." Prices and exchange rates remained stable and predictable, which encouraged external borrowing but also generated a large deficit in the current account in short-term capital flows, which made a difference even in the securities market. Finally, the systemic weaknesses in several areas led to a crisis in 1997. These deficiencies include rapid credit growth that led to too much investment, generating price bubbles in both the securities and real estate markets and revealing limitations in oversight and organization. Private investors who participated in the vigorous foreign market, which is largely

unregulated, were exposed to ringgit market information asymmetries and encouraged risk taking. The crisis, once unleashed, brought Malaysia's economic growth to an abrupt end. The Malaysian economy straightened out only after radical macroeconomic changes were implemented, against the advice of the IMF and World Bank. Among these were the conversion of the currency from a variable to a fixed exchange rate, capital controls to stem the exodus of flowing portfolio funds, and sharp increases in interest rates (Wood and Seminar 2005).

Malaysia is currently categorised as a newly industrialising country and looks forward to being classified as an advanced nation by the year 2020. To achieve this objective and building on previous policies, the Malaysian government launched new programs such as the Seventh Malaysia Plan as part of a new development policy promoting an external fiscal centre and continued modernisation in the capital markets and the fiscal sector in general. In addition to this, the plan urges local companies to invest abroad in any region where they have comparative technological merits (Mohamed 2000). The Malaysian economy also continues to be strong despite the petroleum and financial crises, due to the diversification of its economy and industrial transformations over the 1970s and 1980s that underpinned positive growth.

Figure 1

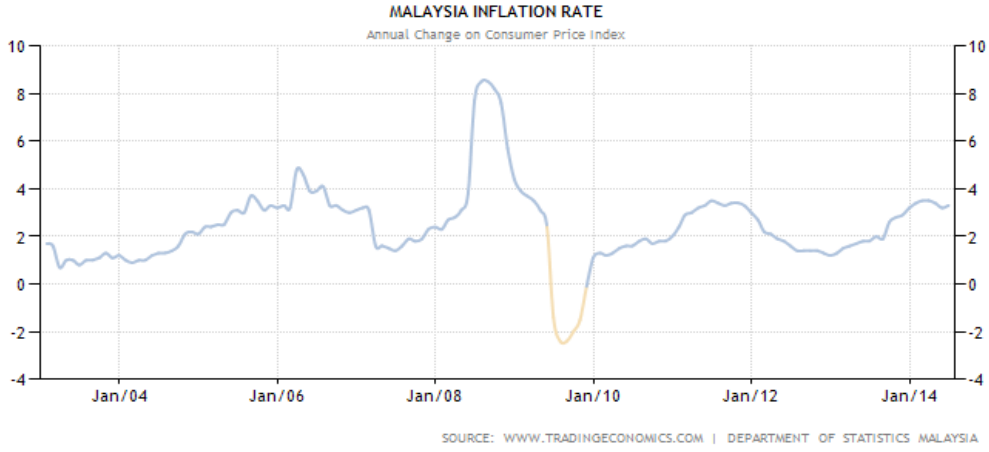

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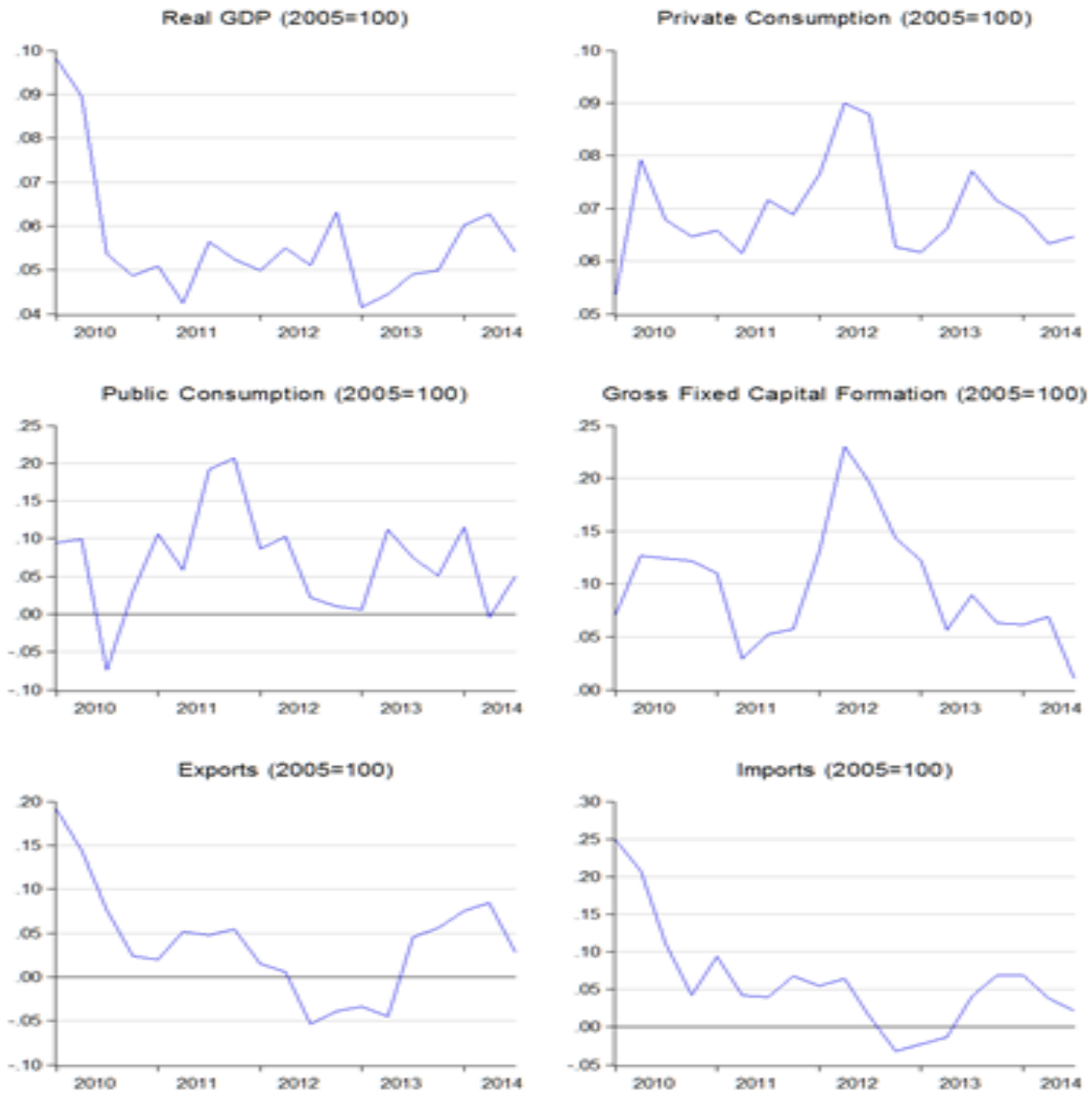
Figure 2



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2.3 The master plan for the financial sector

As changes accelerate and the global fiscal sector continues to evolve in the new millennium, the fiscal system in Malaysia (and particularly local banking institutions) faces increasing pressure to be more efficient, competitive, and innovative, as well as to utilize

technology effectively and become more strategically concentrated. The country's fiscal infrastructure thus has to be developed in accordance with these demands in order to meet the challenges ahead. As a strategy to achieve more dynamism in the fiscal system in Malaysia (Institute Bank-Bank Malaysia 2013), the Financial Sector Master Plan (FSMP), released in March 2001, has introduced strategies for developing the financial sector over both the near and distant future (Bank Negara Malaysia 2001). The aim of the FSMP is to and project and prepare for trends in the fiscal system over the next ten years in an effort to ensure the competitiveness, resilience, and continued effectiveness of the Malaysian financial system . (Bank Negara Malaysia 2013).

2.3.1 Bank sector

The bank sector master plan was applied in three stages: the primary goal of the first stage was to improve a core group of strong local banking organizations. Before the first stage began, there were 19 finance companies, 31 commercial banks (14 foreign-owned), 12 commercial banks, and 7 discount houses. After the end of the first stage, the number of financial institutions decreased to ten commercial banks, ten finance companies and nine merchant banks (Bank Negara Malaysia 2013). The second stage focused on removing certain restrictions on foreign banks to increase competition in the banking sector and thus consumer choice. This stage began in 2004 (Holmes 2004). In the third stage, in an effort to liberate the banking sector, more foreign banking institutions were allowed to enter Malaysia, while domestic banks were allowed to enter international markets. This last phase began in 2007 (Holmes 2004).

2.3.2 Insurance industry

The Malaysian insurance industry is fairly small by international standards. As a result, important modifications and other advancements have to be achieved to raise performance standards in the Malaysian insurance sector to meet the levels of practice and performance found in international sectors (KPMG 2013). The insurance sector portion of the FSMP will be applied in three phases.

The first phase is to build the capabilities of local insurance companies to create operational resilience and better administration for insurance companies and encourage their development and improvement in regards to skills, size, and technology(Bank Negara Malaysia 2013) . Concerted action will take place in the second phase to establish the foundations needed for marketplace discipline in order to have complete and rational organization and oversight of the insurance sector. The focus at this stage will be on enhancing the financial flexibility of insurance companies and promoting consumer safeguards (Bank Negara Malaysia 2013). The opportunity to enter the marketplace takes place in the third phase. The process of progressive liberalization is expected to serve as a strong catalyst in the acceleration and development of the local industry up to international standards (Bank Negara Malaysia 2011).

2.3.3 Islamic financial institutions (Islamic banking and insurers)

Malaysia's Islamic financial sector has maintained steady progress since the establishment of the first Islamic financial institution in 1983 and development of the first Islamic insurer in 1984. Even though the performance of Islamic financial institutions began in a promising fashion and has continued to impress, they remain comparatively small in regards to traditional banks and insurers. The capacity of Islamic financial institutions to stake their claims

in the most important markets within a rapidly growing and challenging financial environment relies on the strategic ability of local industry players to maintain competitive advantage and become leaders in the marketplace. Islamic financial institutions are expected to meet the challenges of competition arising from globalization and fiscal liberalization, and to increase the role of technology in the formation of a microstructure for both the labour and fiscal markets, all while dealing with a new generation of informed consumers demanding distinct and sophisticated products (KPMG 2013) .

There are three phases of the Islamic banking and *takaful* industry master plan. The first involves enhancing the operational institutional infrastructure. Within this stage, the emphasis is on the implementation of a scalable platform for the sound expansion of Islamic financial institutions (Central Bank of Malaysia 2013). The second phase involves spurring competition and improving infrastructure. New licenses will be issued for qualified players in the local industry in order to spur increased competition (Central Bank of Malaysia 2013). Finally, the third stage involves upgrading performance levels through gradual liberalization and guaranteeing an efficient infrastructure. The market will open to qualified foreign Islamic banking actors to promote efficiency and fiscal innovation in the industry (Central Bank of Malaysia 2013).

2.3.4 The Venture capital industry

The venture capital (VC) industry in Malaysia remains in the earliest stage of development. To satisfy funding requirements for economics effectively and efficiently, the Malaysian VC industry requires more skill and expertise in assessing start-up ventures, augmenting their risk sentiment, and building universal networks. Thirty-six VC corporations

were founded in Malaysia by the end of 2001 (Bank Negara Malaysia 2013).

2.3.5 The capital market master plan

The vision for the Malaysian capital market is to be competitive at the international level in all key areas pertaining to the fundamental needs of investment and capital in Malaysia, including its long-term economic goals (KPMG 2013). The plan envisages greater liberation of the securities brokerage sector, the financial derivatives market, and the managing of conventional investment, stock, and bond markets, along with the Islamic capital market (Abdullah 2010).

In order to achieve this vision, six main goals were selected as the key strategic initiatives of the master plan: 1) to be the preferred centre of gathering funds for Malaysian firms; 2) to promote an effective investment management industry and a more favourable environment for investors; 3) to strengthen the competitive environment and the efficiency of companies in the market; 4) to develop a robust and competitive environment for mediation services; 5) to ensure a stronger regulatory system and greater facilitation; 6) to make Malaysia into the global Islamic capital centre (Abdullah 2010).

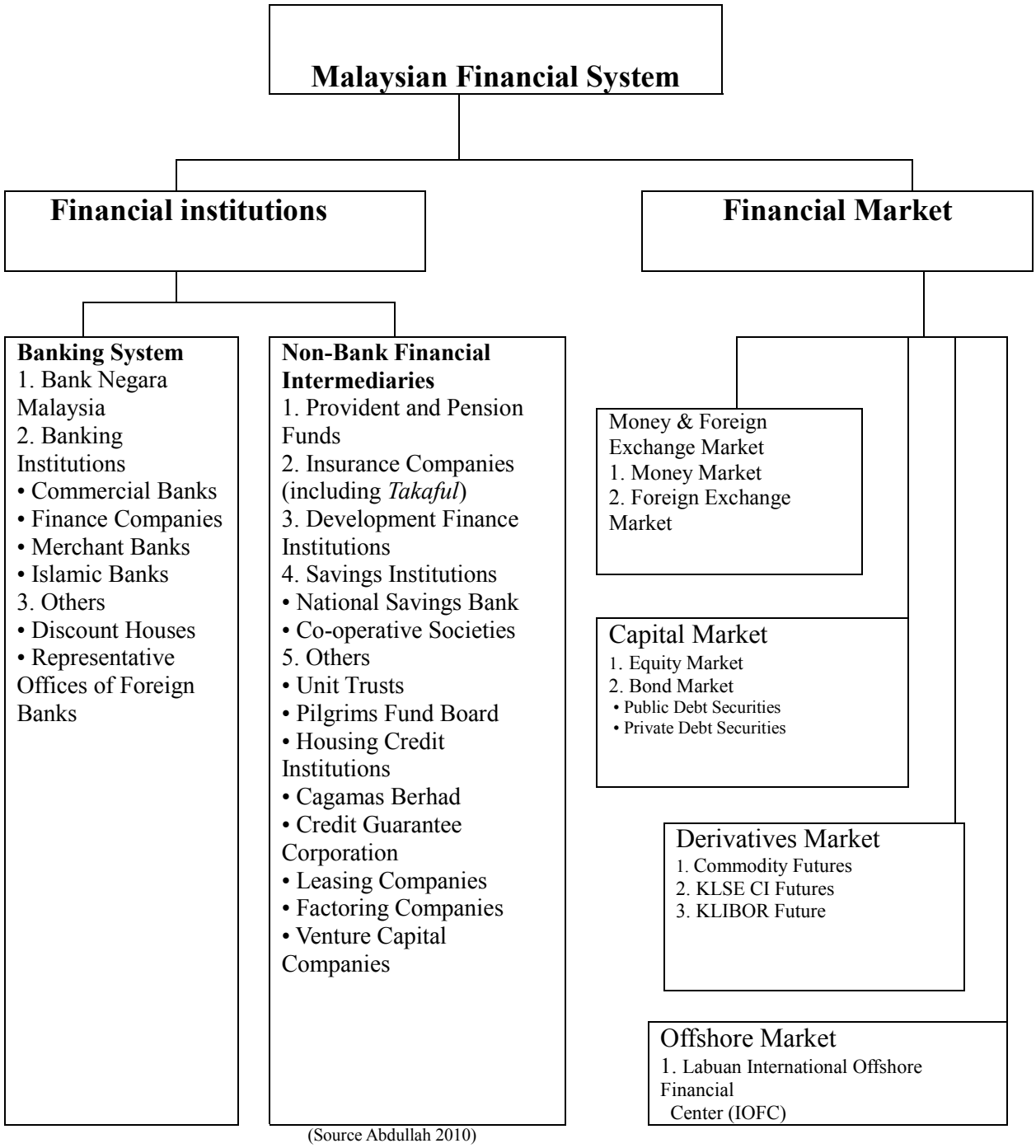
The capital market master plan has three phases. The first focuses on expanding local capacity and promoting a basis for more competition through progressive deregulation and selective liberalization, with some relaxing of the barriers to enter emerging areas of the capital market in the effort to accelerate the development of those segments (KPMG 2013). Then, in 2004 and 2005, Malaysia undertook the gradual expansion of access to markets and the progressive removal of barriers to entry across other sectors of the capital market, in addition to improving infrastructure and the services provided (Abdullah 2010). Finally, from 2005 to 2010, Malaysia instituted other expansion plans for transformation into a mature capital market and

developed international locations in fields where the country had a competitive advantage in fields in which it boasted expertise. Overall, the FSMP has guided the Malaysian financial system over the past decade of reform, serving to make it more efficient, competitive, innovative, and technology-driven (KPMG 2013).

2.4 The structure of Malaysia's financial system

Over the first decade following independence, the Malaysian fiscal system and monetary policy were comparatively undeveloped when compared to international systems and policies and the banking system was significantly controlled by overseas banks (Mohamed 2000). However, since the 1990s, the Malaysian financial system has undergone a major shift, driven by financial liberalisation and integration, economic transition, technological advances, and more discerning clients. The Malaysian fiscal system today is more versatile, efficient, and flexible, which has allowed the fiscal system to make financial intermediation function effectively and strengthened its role as a major contributor to economic growth (Lee 1990). An outline of the structure of the Malaysian financial system appears in Figure 3.

Figure 3 shows that the fiscal system in Malaysia is composed of two main components, fiscal institutions and the fiscal market. The former can be divided into two types of institution, banking institutions and non-bank institutions, such as provident and pension Funds, conventional and Islamic insurance firms, development financial institutions, savings institutions, and other fiscal institutions such as unit trusts, pilgrims fund boards, and housing credit institutions. The financial market, meanwhile, consists of a foreign-exchange market, a capital market, a derivatives market, and an offshore market (Sabri 2010).



(Source Abdullah 2010)

2.4.1 Banking System

The Malaysian banking system is considered the largest fiscal intermediary in terms of total assets, accounting for more than 60% of the total assets of the fiscal system. The system

includes the Central Bank of Malaysia, commercial banks, finance companies, merchant banks, and Islamic banks. In addition to bank institutions per se, there is a group of miscellaneous institutions that deal in financial processes, such as discount houses and representative offices for foreign banks (Ang 2009). What follows is a brief overview regarding each of these institutions.

2.4.1.1 Bank Negara Malaysia (BNM)

Bank Negara Malaysia (Central Bank of Malaysia) was founded in January 1959 in accordance with the 1958 Banking Ordinance (Bank Negara 2003). The main role entrusted to the bank has been the regulation and supervision of bank activity in the country (Bank Negara 2003). The Central Bank of Malaysia also assists in building institutions and infrastructure representing the foundation of an innovative and solid fiscal system (Chin 2010). The Central Bank of Malaysia can be understood as the banker for the state and for other banks. It accepts deposits from all fiscal institutions that operate in the country (Lee 1990), and has always been recognised as a last-resort lender for all financial institutions (Abdullah 2010). The bank also dispenses policy advice to the government in regards to issuing new forms of securities and loan programs, and represents the state in many financial institutions around the world, such as the Bretton Woods institutions (Lee 1990).

The Central Bank of Malaysia has played a major role in motivating the growth of financial institutions in the country and stabilising the economy by curbing inflation and counteracting recession and unemployment (Lee 1990). It supervises all banks and other financial institutions in Malaysia, regulating activity in terms of a minimum cash reserve ratio and liquid assets ratio and providing guidelines and directives that are relate directly to creditors and lenders (Lee 1990). By 2007, the assets of the Malaysian Central Bank accounted for more than 17% of the total assets of the fiscal system. As the country's monetary authority, the bank

bears the responsibility of maintaining financial soundness, such as keeping the value of the ringgit stable. Furthermore, the central bank carries out monetary policy by adjusting the level of interest rates (Institute Bank-Bank Malaysia 2013).

2.4.1.2 Commercial banks

Local commercial banks play a significant role in the banking system. They are the largest and most important suppliers of funds in the system, with a total lending reach of more than RM600 billion at the end of 2003 (Sufian, Majid et al. 2007). There are presently 31 commercial banks (of which 14 are fully foreign-owned) acting in the economy within a network of more than 2000 branches (excluding Islamic banks), including 13 domestic banks (Bank Negara Malaysia 2013). Local banking institutions (excepting discount houses) currently dominate with more than 74% of the market share of bank segments in terms of total assets and total deposits (Bank Negara Malaysia 2011).

The banks serve a number of important functions. They mobilize savings through a number of bank accounts options like current, savings, and fixed deposit accounts (Chin 2010), while providing a wide variety of lending and credit facilities to the public and businesses (Abdullah 2010). They issuing and manage instruments related to payment, such as monetary drawing and fund transfers in and out of the country (Institute Bank-Bank Malaysia 2013), and provide a variety of other miscellaneous banking services, such as safety deposit boxes for valuables and any important documents (Abdullah 2010). The banks act as agents for their customers, receiving many types of payments on clients' behalf, such as collections, lease revenues, stock dividends, etc. (Institute of Bankers Malaysia 2013). They play a key role in financing government activities through the purchase of government securities and treasury bills (Chin 2010), provide investment services like managing money and investing for the third parties

and any other banking activities approved by the Central Bank of Malaysia and the Ministry of Finance (Chin 2010), and finally dealing in foreign exchange (Abdullah 2010).

2.4.1.3 Finance companies

Finance institutions represent the second largest group authorised to accept fixed and saving deposits from the public in Malaysia (Sufian 2007). These institutions were registered under the Finance Companies Act 1969. All their activities are currently governed under the Banking and Financial Institutions Act 1989 (BAFIA, (Chin 2010). They focus on consumer lending, for instance rent-to-own, rental, factoring, block discounting housing loans, and individual loans. Finance corporations are also permitted to present other services, such as foreign exchange and performance guarantees (Sufian 2007). By the end of 1997, there were 39 finance companies in the country with a total of 1144 branches. By the end of 2003, however, the number of these firms had shrunk, through a series of mergers, to 11 firms with a total of 729 branches. The total loans provided by these firms amounted to more than RM100 billion by the end of 2003 (Ang 2009).

2.4.1.4 Merchant banks

During the 1970s, the Malaysian government established a number of banks called merchant banks. These banks played a significant role in the development of the fiscal system in conjunction with the firms' development of the country (Sufian 2007). Due to changes affecting businesses, especially smaller ones, in terms of size and production capacity, the banking needs of the state became larger and more complicated, demanding additional funding and other bank services. Merchant banks worked to fill the needs for such services by complementing and supplementing services already provided by commercial banks (Sufian and Majid 2007) .

Merchant banks play a vital role in the money market in terms of short-term financing as well as capital-raising activities including provision of finance and specialize in syndication, corporate finance, dispensing advice to clients regarding financial problems, marketing of issues, allotments and refunds, listing on stock exchanges, and investment portfolio management (Institute of Bankers Malaysia 2013) . Merchant banks also provide other bank services, such as project and bridging financing that are normally granted by way of revolving credit, term loan facilities, acceptance credits, and leasing block discounting (Chin 2010). There are currently 13 merchant banks operating throughout the country with 24 branch offices (Institute Bank-Bank Malaysia 2013).

2.4.1.5 Islamic banking

One of the characteristic features of the financial system in Malaysia is the existence and development of Islamic banking, which is becoming an increasingly significant element of the country's financial structure. Malaysia is regarded as the first country to have Islamic banking operating side-by-side with traditional banking (Ang 2009). The first Malaysian Islamic bank was founded in 1983. The need for such a bank arose from the fact that the majority of people in Malaysia are Muslim. Since this majority subscribes to the principles of *Shariah*, the Islamic bank system exists to work alongside the traditional banking system. A law for regulating Islamic banking activities came into effect on April 7 1983 (Chin 2010). As with other banks, the Islamic bank is supervised and regulated by the Central Bank of Malaysia (Billah 2007). The Islamic banking system is not available only to Muslims. It is open to all, regardless of religion. (Institute of Bankers Malaysia 2013) . There are currently 17 Islamic banks acting in the economy with a network of more than 2200 branches (Central Bank of Malaysia 2013) .

Islamic banks were established to follow the principles of Shariah, which encompass but are not

limited to the following core principles: i) a prohibition of *al-riba* (usury or interest); ii) a prohibition on *al-gharar* (uncertainty); iii) concentration on *halal* businesses; and iv) the pursuit of justice along with other moral and religious objectives. (Institute of Bankers Malaysia 2013). Bank Islam Malaysia Berhad was the first bank to be given an Islamic banking licence to in Malaysia, starting operations on 1 July 1983 with a network of 122 branches. Much later, Bank Mualamat Malaysia Berhad started operations on 1 October 1999, with a network of 40 branches (Institute of Bankers Malaysia 2013) . Besides these two Islamic banks, there are other financial institutions that offer a wide variety of Islamic banking products and services as part of the Islamic banking sector. (Institute of Bankers Malaysia 2013) .

2.4.1.6 Discount houses

During the 1960s, the Malaysian government established discount houses. These commenced operation during the beginning of 1963. Discount houses concentrate on providing short-term money. They accept short-term deposits and funds from financial institutions, as well as public and private firms in the form of money-at-call, overnight money, and short-term deposits (Institute of Bankers Malaysia 2013). Money received is then reinvested in the form of deposits and securities in government bonds, treasury bills, negotiable certificates of deposit, and banker acceptances, as well as to provide an active secondary market for such activities (KPMG 2013).

2.4.1.7 Representative offices of overseas banks in Malaysia

A representative office of a foreign institution is an office founded in Malaysia in order to determine allowable activities for its head office. There are currently 32 foreign institutions

located in the capital city of Kuala Lumpur, with the majority based in developed countries such as the United Kingdom and Japan. A representative office is simply a liaison office permitted to provide banking service indirectly to the Malaysian market (KPMG 2013).

2.4.2 Non-bank fiscal Intermediaries

Non-bank fiscal mediators consist principally of three institutions, namely, insurance firms, provident and pension funds, and development financial institutions (Sabri 2010).

2.4.2.1 Provident and pension funds (PPFs)

PPFs are a group of fiscal intermediaries intended to give participants and their families a measure of social security in the form of death, deficit, retirement, and medical benefits. (Ang 2009). Malaysian PPFs include the Employees Provident Fund (EPF), the Social Security Organisation (SOCSO), the Armed Forces Fund, and the Teachers Provident Fund (Ministry of Finance Malaysia Annual Report 2001/2002). PPFs have played a significant role in the economy in terms of mobilising and channelling money to public funding and private sector ventures (Ministry of Finance Malaysia Annual Report 2001/2002). PPFs are the second largest group of fiscal intermediaries in Malaysia in terms of total assets behind banking institutions, accounting for 21.2% of the aggregate assets of fiscal institutions, RM2475.9 billion by the end of 2007 (Institute Bank-Bank Malaysia 2013) .

2.4.2.2 Development fiscal institutions (DFIs)

DFIs were founded by the Malaysian government in order to encourage development within specific economic sectors, such as manufacturing, agriculture, export-oriented industries, infrastructure sectors, and highly capital-intensive investments (Bank Negara 2013) . DFIs generally specialise in providing a wide range of loan products (short- and long-term) to fund

projects that may involve a higher credit risk or market risk due to the longer periods of investment required (Institute Bank-Bank Malaysia 2013) . As of 1999, the total assets of Malaysian development institutions accounted for more than 3.6% of the aggregate assets of banking institutions. Total lending granted by development financial institutions amounted to more than RM10.0 billion, representing 2.9% of the total lending within the banking sector. Of the total credit they granted, 31% was directed to the manufacturing sector, 17% to the construction sector, 13.4% to farming, 12.1% to transportation and storage, and 10.3% to the real estate sector (Bank Negara 2013) .

The major DFIs operating in Malaysia include Bank Kerjasama Rakyat Malaysia Berhad, Bank Pertanian Malaysia, Bank Industri & Technologi Malaysia, Bank Pembangunan & Infrastruktur Malaysia Berhad, Export-Import Bank of Malaysia Berhad, and Malaysian Industrial Development Finance (MIDF) (Bank Negara Malaysia 2002)

2.4.2.3 Insurance Industry

Presently, there are 141 companies registered under the Insurance Act 1996, including 64 insurers, 36 brokers, and 41 adjusters. The 63 insurers registered under the insurance Act are categorised in the following groups:

- Ten life and general insurance firms.
- Seven life insurance firms.
- Thirty-six general insurance firms.
- One life reinsurance firm.
- Nine general reinsurance firms.
- One composite reinsurance firm. (Bank Negara Malaysia 2000)

2.4.2.3.1 Life Insurance companies

A life insurance activity serves to cover a person's life. As a reward for taking risks, insurance corporations get funds in the form of premiums. Life insurance is an agreement between the insured and an insurance firm, where the insurance firm pledges to pay a designated beneficiary a certain sum of money upon death, permanent disability or major illness of the insured person. Premiums of such insurance are calculated based on the following age, health, and the sum assured along with any other benefits that accrue in the policy. Life insurance companies can be classified into the following groups: whole life, endowment, term assurance, and others (Chin 2010).

2.4.2.3.2 General Insurance companies

General insurance handles nearly every kind of risk except risks to life. This kind of insurance provides protection to consumers who would like to protect themselves from common risks, such as a loss of property or income, accident, theft, fire, or other unexpected events. (Institute of Bankers Malaysia 2013). In the event of loss, the insurer compensates the insured to the extent of the loss suffered. The main economic function of general insurance is to narrow the area of risk for entrepreneurs by converting part of their risk into a contractual cost or premium that makes up a part of a pooled risk. (Institute of Bankers Malaysia 2013).

The maximum period of general insurance is usually one year, renewable thereafter. General insurance in Malaysia can be classified into the following categories: marine, aviation, and transit insurance (MAT), fire insurance, and miscellaneous insurance (KPMG 2013). General insurance companies obtain their funds from two main sources, the policy premium and net investment income, while their main expenditure in regards to claims principally includes

policies, commissions, and administrative expenses (Institute of Bankers Malaysia 2013).

2.4.2.3.3 Reinsurance

Reinsurance involves the spreading of risks by an insurer, who shares the risk of life or general business with other insurance companies (KPMG 2013). The Malaysian National Reinsurance Berhad was formed in 1973 to undertake this business. There are currently 37 licensed insurance brokers and 42 adjusting companies operating in the Malaysian insurance industry (KPMG 2013).

2.4.2.3.4 Insurance intermediaries

a) Insurance agents

Insurance agents are insurance professionals that act as intermediaries between insurance companies and buyers of insurance. They also work as advisers in all issues related to insurance and provide recommendations to customers in regard to the various kinds of insurance, particularly comprehensive insurance (KPMG 2013).

b) Insurance adjusters

The function of an insurance adjuster is to evaluate insurance losses for both insurance companies and claimants alike. In addition, the insurance adjuster plays a significant part in guaranteeing that claims are settled correctly and serviced competently. More than half of the forty-two adjusters in the country are small players dealing principally with automobile claims (KPMG 2013).

2.4.2.3.5 Takaful

On 24 November 1984, the Malaysian government founded an Islamic insurance company under the name of Syarikat *Takaful* Malaysia Berhad in order to provide insurance coverage for Muslims in accordance to the principles of *Shariah* (Mokhtar 2008). "*Takaful* is an Islamic insurance system based on the principle of mutual cooperation (*ta'awun*) and donation (*tabarru*), where the risk is shared collectively and voluntarily by the group of participants. It is derived from an Arabic word which means 'to help one another'" (Redzuan, Rahman et al. 2009). The company was governed by the *Takaful* Act 1984, and started operations on 1 August 1985, providing both family-focused and general *Takaful* business (Mokhtar 2008). There is great potential for Islamic insurance investing in Malaysia, due to two main reasons: its penetration of the market in the country is low and the fact that the majority of Malaysians are Muslims means a ready-made market. *Takaful* insurance has continued to record double-digit growth rates since its emergence in the 1980s (KPMG 2013).

In many *Takaful* products, especially within the family category, contributions that are received from contributors are usually divided into two accounts for the purposes of protection and saving. These are maintained in the contributor account and the contributor special account (KPMG 2013). A general *Takaful* fund is a short-term contract between a group of people and an insurance company where contributors undertake to pay an amount of money and a *Takaful* operator acts merely as a manager of the fund. Contributions received from participants are pooled into the general *Takaful* fund, which is then channelled into investments in activities that are permissible under Islam. Profits gained from these investments then return back into the fund. (Onagun and Ismail 2011).

Takaful general plans are fundamentally contracts of common guarantee based on a short-

term foundation (usually one year). These plans provide members with dedicated financial help in relation to specific kinds of loss. Schemes are designed in order to protect both individuals and firms against certain risks, such as material risk losses, damage caused by a catastrophe or disaster caused to real estate, assets or property. Contributions paid by clients are collected into the *Takaful* fund in the form of *tabarru'* to suit the risk factors of a business that is ingrained in its underwriting activity (Onagun and Ismail 2011).

Figures4

Comparison of Contemporary Insurance Markets					
	Premium (per capita) USD [B]	Premium (volume) USD billion [B]	GDP (PPP per capita) USD [A]	Total population Million [A]	Muslim population Million [A]
Australia	2,833.0	60.3	40,233	22.9	0.4
Indonesia	32.0	7.3	4,666	238.0	207.6
Malaysia	322.0	8.8	15,568	28.4	17.4
Singapore	2,558.0	14.2	59,711	5.2	0.8
Thailand	154.0	10.5	9,396	66.8	3.1

[A] *Source: Wiki*
[B] *Source: Australia A Global Financial Services Centre Benchmark Report 2010*

Source:(Wouters 2014)

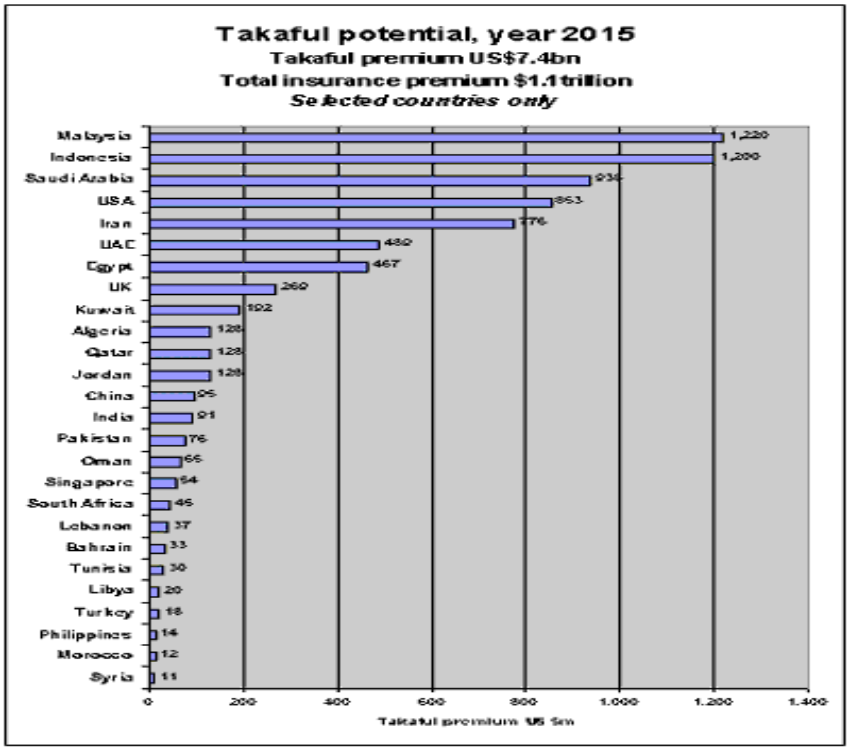


Figure 5
Source: (Finance 2014)

2.4.2.4 Savings institutions

Savings institutions arose in Malaysia alongside other financial institutions so that the two might complement each other in providing financial services to clients as major deposit accepting institutions. The two main savings institutions operating in the country are the National Savings Bank and a number of cooperative societies (Institute of Bankers Malaysia 2013). Unlike other financial institutions, savings institutions focus mainly on providing financial services to rural areas that are not adequately served by other financial institutions and concentrate particularly on middle- and lower-income groups (Institute of Bankers Malaysia 2013).

2.4.2.4.1 Bank Simpanan Nasional (National Savings Bank)

The National Savings Bank (NSB) was incorporated on 1 December 1974 in accordance with the National Savings Bank 1974 law through a reorganisation of the previous Post Office Savings Bank system (Institute of Bankers Malaysia 2013). The NSB specialises in providing retail banking services, such as accepting deposits and awarding credit and advances, with all types of loans advanced by the bank channelled into specific sectors, such as home loans, credit cards, hire-purchase, and corporate loans. All bank deposits are also guaranteed by the government (Institute of Bankers Malaysia 2013).

2.4.2.4.2 Cooperative societies

The cooperative movement began operations in Malaysia in 1922. At the same time, the Department of Cooperative Development was also founded. Cooperatives are defined as an "autonomous association of a group of people who united voluntarily and pooled their resources by themselves in order to reach a common goal." According to the Co-operative Societies Act

1948, a cooperative society can be defined as a "society which has the goal of enhancing the economic interests of its members in accordance with collaborative principles." Thus, their objective is to provide opportunities for members to save and contribute to economic interests. Together, members can be financially stronger due to their better bargaining power as a collective. (Institute of Bankers Malaysia 2013).

Cooperatives can be categorized according to the types of functions they perform into single-purpose or multi-purpose. Inclusive guidelines within the framework of the National Co-operative Policy serve to reduce absolute poverty and to create provisions for employment and business in order to improve people's lives. The total number of cooperative societies is currently more than 4000, with a membership of over five million (Institute of Bankers Malaysia 2013).

2.4.2.4.3 Bank Kerjasama Rakyat Malaysia Berhad

This bank was incorporated in 1954 under the Cooperative Act 1948. The bank's main objective is to improve quality of life by providing funding, fiscal, and advisory services for the trade sector, industry sector, farming sector, and others, as well as to encourage thrift among its members (Bank Negara Malaysia 2002) . The major activities of the Bank Kerjasama Rakyat Malaysia Berhad include personal financial services and those related to ownership, education and other funding, including pawn broking for the public (Bank Rakyat 2010) . Since 1997, all banking services offered by the bank are based fully on the principles of *Shariah* (Bank Negara Malaysia 2002).

2.4.2.5 Unit trusts

Unit trusts are considered appropriate investments for small individual investors, for whom they provide an opportunity to diversify their investment in securities. A unit trust is

governed by a trust deed, which is a legal document made between three parties, namely, managers, investors, and trustees (Chin 2010). Revenues depend on the level of risk that is borne by the investor, with increased risk leading to increase in potential returns (Institute of Bankers Malaysia 2013). Unit trusts offer the following advantages:

· Investment in a unit trust enables investors to diversify their investments and thus creates a better spread of risk while at the same time obtaining greater returns;

· The trust is operated by a professional fund manager or expert who has significant financial knowledge regarding investing;

· Investment in a unit trust frees the investor from substantial administrative burdens, such as spending significant amounts of time monitoring investments;

· The fund manager is committed to buying back units from the investor wishes to exit the trust;

· The managers' fees are chargeable and investments within the fund are tax-exempt;

· If investors are not be able to endure the services of experts to maintain their investments,

· Units can be used as security to obtain credit (Institute of Bankers Malaysia 2013).

2.4.2.6 Property trusts

A property trust is a particular type of unit trust that serves to pool sums of money from people who want to invest money that is often used to acquire real properties or estates. The organizational guidelines for property trusts are stipulated by the Securities Commission (Institute of Bankers Malaysia 2013). The preconditions for established management firms to have a property trust fund are very similar to those of unit trust funds: a company must have a

minimum paid-up capital of at least RM500, 000 (Institute of Bankers Malaysia 2013).

2.4.2.7 Housing credit institutions

The main housing policy goal of the Malaysian government has been to encourage homeownership amongst the country's population. It depends on financial institutions, such as commercial banks, two housing credit institutions—Malaysia Building Society Berhad (MBSB) and the Borneo Housing Mortgage Finance Berhad (BHMF) —to carry out the task of providing housing loans (Institute of Bankers Malaysia 2013). These two housing credit institutions, the MBSB and BHMF, are the leading providers of housing loans in the country (Institute of Bankers Malaysia 2013). The MBSB obtains funds in the form of loans from four main sources: the employees provident fund, contributor funds, deposits received from the public, and deposits from organizations. The services provided by the BHMF are similar to those of the MBSB, although its activities are limited to the Sabah and Sarawak in East Malaysia (Institute of Bankers Malaysia 2013).

2.4.2.8 Cagamas Berhad

This national real estate company was incorporated in December 1986 in order to guarantee a steady flow of financing for the housing industry and to promote a secondary mortgage market in the country. The Cagamas Company began operations in October 1987. By the end of 2002, the aggregate volume of outstanding housing loans purchased by the company reached RM14, 823,000, while its total outstanding debt securities were RM 24,970,000 in the same year (Institute of Bankers Malaysia 2013). This national mortgage corporation issues notes and bonds in order to pool funds. Notes are normally in the form of short-term debt instruments

with a maturity date of 364 days or less. Bonds are typically in the form of long-term debt instruments with a maturity date of one year or more. Fiscal companies invest in these notes and bonds.

Finances that are raised are principally utilized in two areas (Institute of Bankers Malaysia 2013). Firstly, funding is provided in the form of housing loans to the Treasury Department by the Cagamas Company and other companies, and the department in turn provides housing loans to civilian employees in the public sector. Secondly, Cagamas creates a secondary market by purchasing housing loans from the main providers of such credit, and hence, works as a mediator for investors for the long term. Since the founding of the Cagamas Company, fiscal companies have been able to offer longer periods of repayment for housing loans (Institute of Bankers Malaysia 2013). Before 1986, the maximum time span for housing loans was ten years, whereas today such loans can extend more than 24 years. This change has been made possible to a large extent by the Cagamas Company, as fiscal institutions' positions of liquidity can be modified easily by selling housing loans to Cagamas. The banks sell the housing loans rather than actual houses to Cagamas. (Institute of Bankers Malaysia 2013).

2.4.2.9 Leasing firms

Rental firms constitute a comparatively small part of the Malaysian financial system, but they contribute to the sector's growth. Under the third schedule of the BAFIA 1989, a rental firm is a scheduled business that the bank Negara has the ability to organize and oversee in regards to companies (Institute of Bankers Malaysia 2013). The major source of funding here comes from capital from fiscal firms and other contributing funds. Inter-firm borrowing and leasing companies could be called "pure-leasing" companies, because most activities of these companies

are focused on leasing (Institute of Bankers Malaysia 2013). Leasing companies deal principally with industrial, transport, warehousing, financial, and insurance and business services, as well as general trading and farming sectors (Institute of Bankers Malaysia 2013).

2.4.3 Financial Markets

The Malaysian Financial Market is mainly comprised of a money market, a foreign exchange market, a stock market, a derivatives market, and a bond market (Sabri 2010).

2.4.3.1 The money market

The money market is a way to move short-term funds (typically overnight) with varying maturities not exceeding 12 months (Ang 2009). The money market offers a ready source of funds for shareholders who face a temporary shortfall in finances. In addition, it offers short-term investment opportunities for people who have temporary financial surpluses (Ang 2009). The instruments of the money market are fundamentally represented in deposits and short-term securities, such as banker's acceptances, commercial paper, and treasury bills (Institute Bank-Bank Malaysia 2013). Both commercial banks and investment banks are considered key players in the money market (Institute Bank-Bank Malaysia 2013).

2.4.3.2 The foreign exchange market

The foreign exchange market is a market in which participants are able to purchase, sell, and exchange currencies (Chin 2010). Transactions in the market can be conducted through a spot market or a forward market. Trading in foreign currencies requires the immediate delivery of foreign exchange on what is called a spot market, whereas transactions requiring delivery on

future dates (with the exception of weekends) occurs in what is called the forward market, which allows participants to hedge against foreign exchange risk, by offering them a means of lowering their exposure to exchange-rate fluctuations. The major contributors to the foreign exchange market are the commercial banks (including Islamic banks) and certain investment banks. Trading activities in the foreign exchange market are controlled by transactions of Malaysian currency in relation to US currency and other currencies, such as the Euro and the Japanese Yen (Institute Bank-Bank Malaysia 2013).

2.4.3.3 The equity market

Unlike the money market, the stock exchange specialises in raising funds for the long term. The development of a stock market offers benefits to a community because it provides a wide range of channels to borrow from, especially in terms of medium- and long-term financing. The stock market provides a way for companies to raise funds by issuing equity and securities that are listed on the main or second boards of the Stock Exchange Berhad (Karim 2005). The primary market is used to raise new funds for organizations, whereas the secondary market offers the necessary liquidity for investors to satisfy their individual requirements. Secondary market trading in securities and equities is done by securities brokers. In addition to the main and secondary boards, the Malaysian Securities Dealing and Automated Quotation (MESDAQ) system was founded in 1997 as a means for small, high-growth potential, and high-technology firms to raise funds (Rani 2010).

2.4.3.4 The derivatives market

Derivatives are financial instruments that derive their value from the performance of a

real asset, financial performance, or market indicator. Bursa Malaysia Derivatives (BMD) currently offers a variety of products, such as the Kuala Lumpur Stock Exchange compound index (KLSE CI), Futures (FKLI), and options. All of these products are used to cover the three market sectors of stocks, fiscal instruments, and commodities. The main use of derivatives is to trade in or hedge against fluctuations in the price of core assets. Derivatives can also be used to speculate in order to achieve capital gains (Institute Bank-Bank Malaysia 2013).

2.4.3.5 The bond market

The credit market is a marketplace in which both the private sector and the public sector can collect funds through issuing private debt securities and Malaysian government securities, respectively. Malaysian government securities have become a major source for the funding needs of the local market. Recently, the popularity of the bond market has increased among companies, with many firms starting to issue special debt bonds as an alternative way to raise funds (Institute Bank-Bank Malaysia 2013) .

Figure (6) According to Malaysia's Securities Commission (SC), the Malaysian capital market size is predicted to reach up to US$1.5 trillion by 2020

Source: (Pouyanegar 2014)

2.4.4 Other institutions and bodies

2.4.4.1 Issuing houses

In Malaysia there are currently two issuing houses. The first was founded on 18 November 1971 under the name of the MIDF Consultancy and Corporate Services Sdn Bhd (MIDFCCS). The second issuing house was established on 20 February 1993 under the name of the Malaysian Issuing House. Both specialise in undertaking and providing share issuance facilities for Initial Public Offerings (IPOs) and advisory services (Institute of Bankers Malaysia 2013).

2.4.4.2 Securities Commission (SC)

The SC was founded on 1 March 1993, after the enactment of the law of the Securities Commission 1993. The timing of its foundation was opportune, for the accelerated pace of economic growth required more ways to finance investments. The SC is responsible for the organization and development of the stock industry, fiscal futures, option markets, unit trust schemes ownership, and mergers and acquisitions of firms (Dennis 2008). The function of the SC in regards to future contracts, according to the law of Securities Commission 1992, does not include commodity futures, which remain under the supervision of the Ministry of Primary Industries, and judged under the law of Goods Trading 1985 (Institute of Bankers Malaysia 2013).

2.4.4.3 Bursa Malaysia (formerly the Kuala Lumpur Stock Exchange)

The buying and selling of shares in Malaysia has been recorded as early as 1870. A stockbrokers' association was formed in 1937 under the name of the Malayan Stockbrokers. By

1960, The Malayan Stock Exchange was founded and the public trading of shares commenced. The Stock Exchange of Malaysia was incorporated in 1964, and by 1965, with the separation of Singapore from Malaysia, the common bourse continued to work under the name of the Bursa of Malaysia and Singapore. Finally, its name was changed to the Kuala Lumpur Stock Exchange (KLSE) in 1973 (Hooi 2008). During this period, there was only one main board, which consisted of larger firms. On 11 November 1988, a second board was established, comprised of small corporations in order to enable them to raise funds from the stock market (Institute of Bankers Malaysia).

In November 1992, the Central Depository System (CDS) was introduced by the Bursa of Kuala Lumpur. This entailed a scripless circulation system to improve the efficiency of circulation and the settlement system, as well as to empower the Bursa to deal with higher trading volumes. The CDS aims to assist in decreasing episodes of stealing, rigging, or the inappropriate tampering with scripts. A CDS account can be opened by an individual with any Authorised Depository Agent (ADA), though only stockbroker firms have been appointed as ADAs (Institute of Bankers Malaysia 2013).

2.4.4.3.1 Demutualisation of the KLSE

On 5 January 2004, the Bursa of Kuala Lumpur finished its conversion from a non-profit entity limited by the guarantee of its members to a commercial entity limited by shares (Aj Surin 2011). Following this, the Bursa of Kuala Lumpur vested and moved its stock exchange business to another company it fully owned (The Malaysian Bar 2004) , while the demutualised KLSE has become the Exchange Holding firm, known as the Bursa of Kuala Lumpur. (The Malaysian Bar 2004) . The benefits of the demutualisation of the Bursa of Kuala Lumpur include (Institute

of Bankers Malaysia):

a) it empowered the Bursa of Kuala Lumpur to strengthen its institutional structures, as well as its organization and governance in order to face emerging challenges and competition in the globalised world;

b) it placed the Bursa of Kuala Lumpur in a better position to meet the collective interests of its broader stakeholders, and therefore be of better service to market-oriented clients;

c) it helped to improve liquidity, leading to a more appealing market for the trading of securities, benefiting all market members;

d) it expanded access to markets, encouraging direct involvement from investors and local and international mediators capable of drawing new or additional volumes of trading to the market.

The principal recipients are the government, the economy, and the capital market, including issuers and the mediators of investors. On 20 April 2004, the name of the Kuala Lumpur Stock Exchange changed to the Bursa Malaysia Berhad, while the MSEB changed its name to the Bursa Malaysia Securities Berhad (Institute of Bankers Malaysia 2013).

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2.4.4.4 Malaysian Exchange of Securities Dealings and Automated Quotations (MESDAQ)

The MESDAQ market began in 1997 with the goal of providing a suitable means for the listing of high-growth and technology firms to attract capital without the need for bank financing. The market includes corporations engaged in advanced electronics, information technology, communications, and other emerging technologies (Saleh, Rahman et al. 2009). MESDAQ was approved under the Securities Industry Act 1983 as a stock exchange (Dennis 2008). The business rules of MESDAQ allow for the creation of several committees, such as a

disciplinary committee, emergency committee, and compensation fund committee, in order to carry out functions that the Board assigns. The SC performs the job of oversight with respect to MESDAQ to guarantee that exchange operates in a fair and orderly way and properly enforces both its own rules and Malaysian securities laws. Firms listed on MESDAQ use three patterns for the allocation of their shares: universal suffrage, private subscription, or a mixture of the two. Trading on the MESDAQ follows the system of market-making competition. Every firm has to designate at least two of the assigned market-makers, who have made a firm commitment to quote continuously and make a market by accepting the purchase and sale of a minimum number of units in stock shares (Institute of Bankers Malaysia 2013).

2.5 Conclusion

In conclusion, the Malaysian financial system is large and diversified when compared to its past. In the decade following independence, the Malaysian financial system and the monetary policy were relatively underdeveloped. The development since is obvious by the increase in the total number of financial institutions that populate the financial system today, such as non-bank financial intermediaries in the banking sector, which a play significant role in promoting Malaysian economic growth. For example, in 1959, of the country's 26 commercial banks, only eight were domestic-owned, while the remainder were in foreign hands. Presently, there are about 31 commercial banks (of which 14 are fully foreign-owned) active in the economy with a network of more than 2000 branches (excluding Islamic banks), including 13 domestic operations. In addition, since the beginning of the 1980s, the stock market, the government stock market, and the corporate bonds have witnessed robust growth. For instance, at the end of 1993, the Malaysian stock market was capitalised to the amount of US$91 billion, an increase of 58% compared to its situation in 1991, and twice as large as the Singapore stock market. In 1992, a

report from the International Finance Corporation declared that the Kuala Lumpur Stock Exchange was ranked tenth in the performance of international stock markets (Mohamed 2000) . The main reason for these improvements in the financial system is the reform undertaken by the Malaysian government in order to develop the country's financial sector. According to (Ang 2008), Malaysia has a rich history of reform in the fiscal sector, having launched several fiscal restructuring programs in order to achieve a better fiscal system since the 1970s.

This chapter has shown that the Malaysian economy has recorded strong growth with relative price stability over the past several decades. Real GDP growth averaged 8.5% per year, inflation remained low in the region of 2% to 3%, and unemployment was below 3%. This strong economic performance has had a positive effect on the quality of life, as the rate of Malaysian income is now two and a half times higher than it was 15 years ago. Nonetheless, the performance of the Malaysian economy was passively affected by the petroleum crisis. During this period, real GDP growth decreased considerably from 8.3% in 1974 to 0.8% in 1975, while the inflation rate also rose speedily from 3.2% in 1972 to 17.3% in 1974. However, the government responded to a sharp decline in growth by enormous public investments, which rose almost three times between 1971 and 1975, and again between 1976 and 1980, providing an incentive for economic achievement. As a result, the growth rate of real GDP recovered. The more recent global financial crisis threw Malaysia into recession again. However, despite these setbacks, the Financial Sector Master plan (FSMP), launched in 2001, has guided the Malaysian financial system through 10 years of reform, serving to make it more efficient, competitive, innovative, and technology-driven. The Malaysian financial system today has become large and well diversified when compared to the relatively simple structure it had in the mid-1950s.

Chapter 3
Literature Review

3.1 Introduction

This chapter reviews the literature related to stock market development, the banking sector, Islamic and conventional insurance development, and economic growth worldwide. The chapter is divided into two main sections: the first section reviews the theoretical studies of economic development; the second section reviews the empirical evidence regarding the relationships among those factors.

3.2 Theoretical foundations

The theoretical links between fiscal development and economic growth goes back at least to the work of Schumpeter (1912). In his study, he analyses the relationship of finance growth as a supply-leading one, in which the fiscal sector can lead to economic growth by swimmingly identifying and funding high-return ventures. This depends on the idea that a fiscal system that is working well could support technological innovation by choosing and financing companies that can be expected to be successful (Waqabaca 2004).

By focusing on analysing the policies of developing countries, the McKinnon and Shaw hypothesis (1973) point out that poor distribution of resources, interest ceilings, poor investment, and a lack of efficiency are normally associated with the policy of financial repression that was widespread throughout the 1960s and 1970s in the less developed nations. Therefore, the viable alternative that promotes savings, investment, and ultimately high economic growth is likely to be financial liberalization (Ndako 2010).

On the other hand, with the idea of "finance-led growth," development of finance is seen as the handmaiden of economic development, and the negative response on the demand for fiscal services through a growing economy (Robinson, 1952; Romer, 1990; Madrid, 1989). The fiscal sector development is facilitated by the growth in the real sector of the economy. The reason behind this is that rising economic growth may lead to the demand for certain fiscal instruments and agreements and that fiscal marketplaces effectively respond to these demands and alterations (Choong, Yusop et al. 2005).

The third view is called the feedback hypothesis and proposes a mutual causal correlation between finance and growth. According to this hypothesis, a nation with a well-developed system of finance is able to support high levels of economic growth by technological changes and innovation in products and services (Schumpeter, 1912). This may create high level of demand on the services and fiscal arrangements (Levin, 1997). When banking organizations effectively response to these demands, these changes will spur better economic growth. Thus, both economic growth and fiscal development may be positively interrelated and feedback causality can be the result of their relationship (Enisan and Olufisayo 2009).

Pagano (1993) presents a simple model to illustrate the way that financial intermediation can influence economic growth. He shows that through the fraction of savings channelled to investment and the social marginal yield of investment, fiscal development can positively influence economic growth. Greenwood and Jovanovic (1989) present a model in which financial intermediation and the rate of economic growth are endogenously determined. The model demonstrates that fiscal intermediation can enhance economic growth because it allows the channelling of funds to high-yield investments and, in turn, growth makes possible the implementation of costly financial structures. Levine (1990) presents an endogenous growth

model that incorporates the role of stock markets in the growth process. His model reveals that the stock market can accelerate economic growth through the ownership of firms that can be traded without disrupting the production process and by the reduction of investment risk by offering opportunities for investors to diversify portfolios. Atje and Jovanovic (1993), in their model, explain that financial systems can accelerate economic growth by insuring investors against idiosyncratic risk and by providing information on investment ventures and guiding investors towards investments that are most beneficial for the economy. The Berthelemy and Vardoulakis (1996) model multiple steady-state equilibriums due to external factors exchanged between the banking sector and the real sector. A boost in economic growth leads to an expansion in banking, and subsequently, the boost in banking sector competition increases the net return on savings and promotes capital accumulation and growth.

3.3 Empirical Literature

This section reviews the empirical evidence regarding the association among stock market development, the Islamic banking sector and conventional insurance development, and economic growth. The section is divided into four subsections: the causality between financial development and economic growth, the relationship between finance and growth based on banks, the association among securities market development and growth and the relationship between growth and insurance, and, finally, the relationship between finance and growth based on non-banking (i.e. financial intermediaries) sector development.

3.3.1 The causal relationship between finance and growth

Most empirical investigations between fiscal development and economic growth have

been conducted in one of three ways: first in the form of country comparisons, second in the form of panel studies, and the third as time-series investigations. The results from these empirical studies, however, remain conflicting and inconclusive. While the focus of this subsection is on the relationship between finance and growth in terms of time-series studies, attempts are made briefly to review some of the important comparative and panel studies.

King and Levine (1993a) used a study involving a sample of eighty nations over the period from 1960 to 1989 to examine the relationship between among economic growth and fiscal development. Their findings show that fiscal development has a positive impact on economic growth. De Gregorio and Guidotti (1995), used large a multi-country sample and panel data for Latin America to investigate the empirical correlation between fiscal development and economic growth in the long run. They use total bank credit to the private sector as a proxy for fiscal development and gross domestic product as a proxy for economic growth. Their findings show that there is a significant association between fiscal development and economic development in a large multi-country sample, with effects varying from country to country, whereas the effect is negative using panel data for Latin America. They also show that efficiency was the most important channel of transmission from fiscal development to economic development. Beck, Levine et al. (2000) examined the relationship between financial development and growth over the period from 1960 to 1995 The analysis was conducted using the generalised-method-of-moments (GMM) technique and the results obtained show that financial development is positively related to both per capita GDP growth and total factor productivity growth. Iyare and Moore (2009) utilize annual observations for four countries: (Barbados, Jamaica, Singapore, and Trinidad and Tobago) to investigate causal association between fiscal development and economic growth in both the long and short run through the

period from 1960 to 2003. The analysis was conducted using vector error correction model specifications. The results of Granger causality tests were mixed; while the authors found bi-directional relationships among finance and growth in one country (Barbados), they found a unidirectional relationship in the other three countries.

Lartey (2010) uses panel data techniques and allows for the response of growth to vary with the level of fiscal development to examine the linkage between fiscal development and economic growth. His results show that fiscal development has a positive effect on growth and that its impact does not vary with the level of fiscal development, which contradicts the results in Rioja and Valev (2004). Rachdi (2010) takes panel data and applied the GMM for ten countries. Six countries were from the Organization for Economic Co-Operation and Development (OECD) region and four countries were from the Middle East and North Africa (MENA) region in the period from 1990 to 2006. They were chosen in order to examine the causality correlation between fiscal development and economic development in terms of direction of influence. The findings obtained suggest the existence of a long-run correlation between finance and growth for both the OECD and the MENA countries. In addition, by utilizing the GMM system, they suggested that there is a positive and strong relationship among fiscal development and real GDP per capita. The Granger causality test model, based on the error correction model, illustrated that the causality among finance and growth runs in two ways in the OECD countries and only one way in MENA countries. Fowowe (2011) uses data from 17 nations and employs an assortment of causality tests to study the causal correlation between fiscal development and economic growth. The findings indicate that causation runs two ways; fiscal development causes economic growth, and vice versa. Blanco (2009) examines the relationship between fiscal development and economic growth in 18 Latin American nations for the period 1962 to 2005. The analysis used

the Granger causality test and impulse response functions in a panel vector autoregression (VAR) model. The results of the full sample indicated that economic growth causes fiscal development and not vice versa, with the exception of some nations with strong rule of law and creditor rights and a group of middle-income countries where the relationship indicated bi-directional causality between fiscal development and economic growth.

Hassan, Sanchez et al. (2011) present a proof regarding the role played by fiscal development in enhancing economic growth in both low- and middle-income nations classified by geographic region. They estimate both panel regressions and variance decompositions of annual GDP per capita growth rates in this study for the following reasons: first, to examine the linkage between finance and growth; second, to investigate the importance of variables of fiscal development in accounting for economic development and how they contribute to an explanation of economic growth in all geographic areas and income groups. Their results indicated that there is a significant correlation among fiscal development and economic development in developing countries. The findings of the Granger causality tests were mixed; while the authors found bi-directional relationships between finance and growth for a large number of areas, they found a unidirectional relationship for two of the poorest areas. Moreover, both trade and government expenditure variables played significant roles in the process of economic development. Christopoulos and Tsionas (2004) examine the correlation among fiscal depth and economic growth in terms of long-term for ten developed countries. They apply panel unit root tests and panel cointegration analyses. In addition, they utilize threshold cointegration tests and a dynamic panel model and fully modified ordinary last squares (OLS) to estimate the long-run relationship. The authors' findings indicate that there is a single, balanced correlation among fiscal depth, economic development, and subsidiary variables, and unidirectional causality runs from fiscal

depth to growth. Seetanah, Ramessur et al. (2009) use static and dynamic panel data covering a period of twenty-two years for twenty island economies to test the hypothesis that there exists a considerable correlation between fiscal development and economic growth. They apply the system of Generalized Method of Moments GMM techniques, and their findings show that fiscal development significantly contributed to the level of growth in island economies. Al-Awad and Harb (2005) use panel cointegration and popular time series methodologies to look at ten Middle East countries to study the correlation between fiscal development and economic growth. The authors report that unidirectional causality exists from economic development to financial growth in the short run, whereas in the long run fiscal development and economic growth might interrelate at a certain level. Khalifa Al-Yousif (2002) employ time series and plane data for thirty developing nations in order to investigate the correlation among finance and growth in terms of direction from 1970 to 1999. Most of their findings strongly support the view that finance causes growth and vice versa. Others have presented some support of views existing in the literature (finance-led growth, growth-led finance, and no relationship). In addition, the results of this study confirm the view of the World Bank and other empirical work that the correlation between fiscal development and economic growth cannot be generalized in all countries because the development of financial systems and the rate of growth vary from country to country.

Goaied and Sassi (2010) focus on three main objectives: their first goal is to provide answers about the theoretical benefits of Islamic banking and the principal features of developing methods of funding; their second objective is to examine the correlation between finance and growth in some nations in the MENA region; finally, they test the potential impact of the Islamic finance sector on economic development. To achieve their goals, they take incomplete panel data

from sixteen MENA nations and employ a dynamic panel model with GMM estimators, using total bank credit to the private sector as a proxy of Islamic financial development. Their findings showed an insignificant correlation among banking and growth, which supports the view that banks do not stimulate economic development. They also show that some of bank indicators are negatively correlated with growth. In addition, they indicate that the correlation among Islamic banks and economic development is weak. Moreover, they reveal that the linkage between fiscal development and growth varies from country to country: it appears to be negative in petroleum-exporting MENA Countries and positive in the other MENA countries. Habibullah and Eng (2006) use panel data for thirteen developing Asian nations to examine the causality between fiscal development and economic growth. They applied the system GMM technique and the Granger causality test. Their findings indicate that fiscal development enhances growth, thus supporting the "supply-leading" hypothesis. Lartey and Farka (2011) examine whether the influence of growth crises varies across different levels of financial development, applying both panel data and dynamic panel techniques. Their results indicated that financial crises strongly and negatively influence growth and that these effects vary by the level of fiscal development. For example, this influence is negative in countries characterized by well-developed financial systems, whereas the influence is less clear in those countries that have less-developed systems. Zang and Kim (2007) use a large-panel date-set and employed Sims-Geweke causality tests to examine the causal correlation between finance and growth. Contrary to the conclusions reached in several recent studies, the results of the study showed that there is no proof of any significant unidirectional line from fiscal development to economic growth.

Demirhan, Aydemir et al. (2011) investigate the causal correlation between fiscal development and economic growth in Turkey using data covering the period from the first

quarter of 1987 to the fourth quarter of 2006. They take total bank credit to the private sector and total market capitalization as proxies for financial development and GDP as a proxy for economic growth. In this context, the vector error-correction model (VECM) and impulse response functions (IRF) were used to demonstrate possible casual associations among variables. Their findings indicate that there is a bidirectional causal connection among variables. While the development of the securities market and banking sector have caused economic growth, economic growth has also been brought about by the stock market and banking sector developments in Turkey during the same period. Moreover, the contribution of the banking sector to economic growth has been larger than that of the stock market. Calderón and Liu (2003) examined the direction of causality between fiscal development and economic growth. They took pooled data of 109 developing and developed nations from 1960 to 1994. The result of the study showed bi-directional causality between fiscal development and economic growth. However, in the case of developing nations, financial development tends to contribute more to the causal relationship., while in the case of developed countries, economic growth contributes more than fiscal development to that relationship. Demetriades and Hussein (1996) used data for 16 nations and employed two ratios—the proportion of credit to the private sector to GDP and the proportion of bank deposit liabilities to GDP—as indicators of fiscal development. Most of their findings indicate bidirectional causality between fiscal development and economic growth. Others have shown only unidirectional causality from economic growth to financial development. Georgantopoulos and Tsamis (2011) examine the causality relationship between economic growth and foreign direct investment (FDI) for Greece, an EU and EMU member country, over the period from 1970 to 2009. The analysis was conducted using cointegration tests and the Granger causality test. The results obtained from cointegration indicated that there is a

stable relationship between economic growth and foreign direct investment over the long term. Moreover, the results of the Granger causality test show a unidirectional causality between economic development and FDI running from the former to the latter.

The causal correlation between fiscal development and economic growth in Turkey is examined by Acaravci, Ozturk et al. (2007) over the long and short terms in the period from the first quarter of 1986 through the fourth quarter of 2006. They used dynamic time-series models and a VAR framework. Their findings indicated that causation runs one way from fiscal development to economic growth. They also provide proof that no long-term correlation between fiscal development and economic growth exists. Kar and Pentecost (2000) investigate causality correlations between fiscal development and economic growth in Turkey using five variables for financial development. The analysis was performed using cointegration and Granger causality tests. Their findings indicated that the direction of causality among finance and growth was sensitive to the choice of variables used for fiscal development. For instance, the causal correlation between the two runs both ways. Fiscal development leads to economic growth when the money-to-income ratio was used as a proxy for fiscal development, and vice versa when other variables were used. Yucel (2009) investigated the causal correlation among fiscal development, trade liberalization, and economic growth in Turkey. The econometric methodologies used included the augmented Dickey-Fuller (ADF), cointegration, and Granger causality tests. The results indicated trade liberalization has a significant impact on growth, whereas fiscal development has an insignificant impact on growth. Moreover, the findings of the Granger causality test indicate that there is bidirectional causality among the three factors, suggesting that economic policies for fiscal development and trade liberalization have a considerable effect on economic development. Kar, Peker et al. (2008) obtain similar results after

testing the potential effect of trade liberalization and fiscal development on economic growth in Turkey over the period from 1960 to 2004. They applied the principal components test in order to build better indicators for trade openness, fiscal development, and the joint impacts of both. Their findings showed that trade liberalization and fiscal developments have a significant effect on economic growth and played a vital role in development of the Turkish economy. Abu Bader and Abu Qarn (2008) used data for six countries and four proxies for financial development, namely: percentage of money stock, M2, to nominal gross domestic product; percentage of M2 minus currency to gross domestic product; percentage of bank lending to the private sector to nominal gross domestic product; and the ratio of credit issued to nonfinancial private firms to total domestic credit. This was done to explore the causality relationship between finance and growth. The results showed that fiscal development causes economic development in five out of six nations. They also showed come support in one country (Israel) for a one-way causal relationship running from economic growth to fiscal development.

In Asia, Singh (2008) employed time series data for India to investigate the correlation between fiscal development and economic growth for the period from 1951-52 to 1995-96. Using bivariate reduced VAR, impulse responses, and variance decomposition, the findings obtained indicated that there is bidirectional causality between fiscal development and economic growth. Sinha and Macri (2001) employed time-series data for eight Asian nations to investigate the correlation between fiscal and economic development. Using multivariate causality tests, the findings obtained from regression indicate that there is a positive and significant relationship among proxies of income and proxies of financial development in four countries (India, Malaysia, Pakistan and Sri Lanka). However, the findings obtained from the multivariate causality tests indicated that causation between the income and the financial variables runs both

ways in two countries (India and Malaysia), one way from fiscal proxies to income proxies in two others (Japan and Thailand), and that the causal direction reverses for South Korea, Pakistan, and the Philippines. Masih, Al-Elg et al. (2009) tested the potential directions of causality between fiscal development and economic growth, which was described by Patrick (1966) as the premise of supply and demand; they took the Kingdom of Saudi Arabia as a case study. The analysis was conducted using the error correction and variance decomposition techniques, including the latest long-term development of structural models (LRSM). Their results, based on those techniques, tend to the conclusion that causality between fiscal development and economic growth is related to supply rather than demand, as expected in the early phase of development. Ang (2007) examines the role of fiscal deepening in the process of economic improvement in Malaysia for the period between 1996 and 2003. The findings rely on the autoregressive-distributed lag (ARDL) bounds method and reveal a very strong long-term connection among total output and the determinants of shares of private and public capital, workforce, and fiscal development. Ang (2007) also offered proof that development in the fiscal system leads to greater economic development in the long term, though no short-term impact of fiscal development was demonstrated. Sofia and Ghulam (2010) study the role of the fiscal sector in the process of economic improvement in Pakistan between 1973 and 2007. Their aim was to investigate the causal correlation between fiscal sector development and sustainable economic growth in the long-term. The analysis was conducted using the ARDL bound-testing technique. Their findings indicated that the fiscal sector had a significant impact on sustainable growth in both the short long terms, thus supporting the "supply-leading" hypothesis.

Jalil and Ma (2008) investigated the correlation among fiscal development and economic development in the long term in two countries, China and Pakistan, during the period from 1960

to 2005. To perform this analysis, they employed two different variables of fiscal development and applied the ARDL approach using cointegration. The findings of the study showed that the deposit liability rate and credit to the private sector had a positive effect on the growth of Pakistan's economy but that they had a negative effect on China's growth. Chiou-Wei, Zhu et al. (2010) used South Korea as a case study to examine the effect of fiscal development on economic growth. The econometric methodology employed was through an error-correction model and a nonlinear smooth transition error-correction technique. Their findings indicate that there is a stable long-term correlation between fiscal development and economic growth, whereas the effect of fiscal development on economic growth was unstable in the short term. Jalil and Feridun (2011) used a proxy of fiscal depth and employed the ARDL bounds test for Pakistan in order to study the impact of finance on growth for the period between 1975 and 2008. The findings showed the existence of a positive and significant relationship between fiscal development and economic growth. Shan and Morris (2002) took quarterly data from 19 OECD nations and China to examine the link, if any, between fiscal development and economic growth. They also considered the effect of fiscal development on investment and yield, and applied the Toda and Yamamoto (1995) and causality tests. Their results indicated that there is weak evidence that a leading supply response could be dominant, either directly or indirectly. The aim of their paper was to study whether finance led growth, or vice versa in Malaysia during the period from 1960 to 2001. The econometric methodology used was the cointegration and Granger causality tests; real interest rates and fiscal repression were taken into account. The authors' findings presented proof that financial liberalization, by eliminating suppressive policies, has a positive impact in promoting fiscal sector development. They also found that there is a significant correlation between fiscal depth and growth; however, in contrast to other recent

empirical work, the findings support Robinson's view that growth appears to lead higher fiscal depth in particular, especially in terms of the long run (Ang and McKibbin 2007). Afzal, Ur Rehman et al. (2008) empirically re-examined the causality relationship among exports and economic growth for Pakistan over the period from 1970-71 to 2007-08. The econometric methodology employed was an error-correction model and the VAR for causality developed by Toda and Yamamoto (1995). The findings suggested the existence of a stable relationship between three proxies in over the long and short terms and showed unidirectional causality running from GDP to exports and from debt servicing to GDP. Chang (2002) used quarterly data covering the period from 1987 to 1999 for Mainland China to examine whether finance leads growth or vice versa. The VAR technique was applied. Empirical results from the cointegration test revealed that there exists only one cointegrating vector among GDP, finance, and the degree of openness. The findings of the Granger causality test suggested independence between finance and growth, and thus do not support either of the hypotheses noted above.

In the African context, Ndako (2010) used annual time series data covering the period from 1951-52 to 1995-96 for Nigeria to study the long-run correlation between fiscal development and economic growth. The VAR technique was applied and the results indicated bidirectional causality between fiscal development and economic growth. Others have shown unidirectional causality from economic growth to fiscal development. (Ghirmay 2004) examined the causality relationship among levels of fiscal development and economic growth in thirteen sub-Saharan African nations. The methods applied are a VAR framework based on the theory of cointegration and error-correction representation of cointegrated variables. His findings present two pieces of evidence: the first conclusion is that there is a long-term relationship between

fiscal development and economic growth in twelve out of thirteen countries. The second proof is that bidirectional causal relations occurred in six countries. His results also showed that fiscal development played a fundamental role in economic growth in eight nations. Odhiambo (2007) took data for three sub-Saharan nations and three measures of fiscal development and GDP per capita as a measure for economic growth to examine the causal links between finance and growth in terms of the direction. The econometric methodology employed was the cointegration and error-correction model. The results indicated that the direction of causality among finance and growth is sensitive to the choice of measurement for fiscal development. Moreover, the strength and clarity of the evidence of causality varied from country to country and over time. A demand-following response was most powerful in Kenya and South Africa, while in Tanzania a leading supply response was found to be dominant. Tunisia was used as a case study by Ghali (1999) to examine causality correlation between fiscal development and economic growth in order to discriminate among several alternative theoretical hypotheses. His findings indicate that there is a stable long-term correlation between fiscal development and the improvement of per capita real output, and this, in turn, confirms that financial development in Tunisia leads growth sector development. Egypt is taken as a sample by Abu-Bader and Abu-Qarn (2005), who used a variety of measures of financial development to investigate the causality correlation between fiscal development and economic growth from 1960 to 2001. The analysis was conducted using the cointegration and Granger causality tests. Their findings showed that causation runs in one way; fiscal development causes economic growth, whether by boosting investment efficiency or by boosting resources for investment. Omoke's (2010) aim was to study the causal correlation among fiscal development, trade liberalization, and economic growth in Nigeria during the period from 1970 to 2005. The econometric methodology used was the cointegration and

Granger causality tests. The findings of the Granger causality test showed evidence suggesting that trade liberalization and fiscal development had causal effects on economic growth; however, growth also had a causal effect on trade and fiscal development. Domestic credit, private credit, and money supply as a percentage of GDP showed no causal effects on economic growth. Furthermore, the money supply was the only instrument of fiscal development, which was due to trade liberalization. Odhiambo (2010) used two models to examine the association between fiscal development and economic growth in South Africa. The first model evaluated the effect of interest rate reforms on fiscal development. The second model examined the causal correlation between fiscal development and economic growth, taking into account investment as an irregular variable in the bivariate setting. The results showed that interest rate reform is positively related to the degree of financial depth in South Africa. However, in contrast to the findings of some previous studies, this study found that fiscal development, resulting from reforms to the interest rate does not increase investment and economic growth. Moreover, the study found a unidirectional causal flow of investment to fiscal development and a prima facie causal flow of investment to economic growth.

3.3.2 The correlation between finance and growth in regards to banks

Since this second subsection is focused on time-series studies, the focus of attention is on related studies. However, a brief review of some of the important comparative and panel studies are also examined.

Levine and Zervos (1998) used cross-country regressions for a sample of 47 nations over the period from 1976 to 1993 to examine the correlation between economic growth and fiscal development using bank variables. Their results indicated that banking development is significantly linked with long-term economic growth productivity growth, and capital

accumulation. Liang and Reichert (2011) took cross-country data for both advanced and emerging nations with the modified Odedokun economic growth model to evaluate the effect of banking. The authors' findings presented proof that banking could have a positive effect on economic growth. In another study, the correlation between the banking market structure and growth for 42 countries, most of which were industrial, was examined by Citronella and Gambera (2001). Their findings presented evidence that bank focus encourages the growth of industrial sectors, especially in terms of external finance. They also found a general depressing effect on growth associated with a concentrated banking sector, which affected all sectors and companies without discrimination. Beck and Levine (2004) examined a panel dataset covering 40 countries from 1976 to 1998 to look at the effect of banks on economic growth. The analysis was conducted utilizing GMM techniques. The results of their study showed that banks had significant effects on economic growth. Seetanah, Sannassee et al. (2010) used panel data covering 27 emerging nations from 1991 to 2007 in order to explore the correlation between bank development, and economic development. The analysis was conducted using rigorous panel VAR procedures. Their results indicated that bank development is a significant element of growth. Jamil (2010) took incomplete panel data for 76 nations and various measures of banking to examine the causal correlation between fiscal development and economic growth over the period from 1980 to 2006. In addition, this paper tried to identify the effect of banking sector development on the level of GDP per capita. The analysis was conducted using recently-developed panel causality tests and the Arellano-Bond model. The result of the causality test showed bidirectional causality between development of the banking sector and economic growth. The empirical findings also indicated a significant role for the bank sector and its impacts on both high- and low-income countries. Islam (2010) examined the influences of bank

development on economic growth for a sample of 80 nations from 1973 to 2002. He used a dynamic panel analysis with GMM estimators. The findings of his study showed that banks had significant aggregate effects on economic growth, and, therefore contributed to accelerated growth in developing countries, especially in the long term. Furthermore, it showed a non-linear correlation between financial development and economic growth. Cole, Moshirian et al. (2008) examined the linkage between banking industry stock returns and future economic growth for 18 developed and 18 developing markets. They employed both panel data and dynamic panel techniques. They concluded that bank stock returns correlated with future GDP growth positively and significantly. In addition, they found that bank stock returns captured most of the information contained in bank accounts and stock returns through country-specific characteristics and institutions, including accounting rules of banking secrecy, banking crises, internal enforcement, and the state ownership of banks. Wu, Hou et al. (2010) used panel data covering 13 nations in the European Union (EU) from 1976 to 2005 to evaluate the effect of fiscal institutions on economic growth. Their findings suggest the existence of a stable long-run correlation between banking development and economic development; they also indicated that commercial banks, through improved diversification and risk analysis of information, showed stable economic growth.

Arestis, Demetriades et al. (2001) used quarterly data and various indicators of financial development; this study examined the association between bank development and economic growth in 5 developed nations. They concluded that bank development enhances economic growth. Cheng and Degryse (2010) presented proof about the correlation between financial development and economic growth in China as an example of a rapidly growing country. They took data from 27 Chinese regions, covering the period from 1995 to 2003, in order to study the

linkages between finance and growth. In particular, they focused on banks and non-bank financial organizations and their effect on local economic growth. Their results indicated that banking and fiscal institutions could have a statistically considerable effect on economic growth. Sweden is used as a case study by Sanisberg (1978) to investigate the associations between economic growth and banking. He utilized the quantitative measures which are presented by Cameron and Goldsmith for international comparisons. The results of the study indicated that at all phases of early manufacturing; Sweden has a strong and effective banking system. This, in turn, was largely the result of a long experience in the general population with the banking system and paper money, as well as generally high levels of literacy and education.

The causality correlation between fiscal development, credit markets, and economic growth in Greece was examined by Dritsaki and Dritsaki-Bargiota (2005) over the period from 1988 to 2002. The analysis was conducted using the trivariate VAR model. The cointegration findings indicated that there is one cointegrated vector between the functions of the bank sector and economic growth. Granger causality results showed that there is a bidirectional causality correlation between bank development and economic development. Thangavelu and Beng Jiunn (2004) used quarterly data and employed a VECM for Australia to study the linkage between finance and growth for the period 1960 to 1999, focusing in particular on banks. The results showed the existence of unidirectional causality from economic growth to the development of banks. Asante, Agyapong et al. (2011) used time series data covering the period from 1992 to 2009 for Ghana to study the correlation between bank competition and economic growth in both the long and short terms. The econometric methodology employed was the ARDL and dynamic OLS approach. They concluded that there is a causal relationship between bank competition and growth. Naceur and Ghazouani (2007) used bank indictors to explore the relevance between

finance sector development and economic growth for 10 Middle East and North Africa (MDNA) notions. They used a dynamic panel model with GMM estimators and concluded that there was no significant connection between banking development and economic growth.

3.3.3 The relationship between stock market development and growth

Wong and Zhou (2011) used cross-country panel data for a sample of five nations (China, USA, United Kingdom, Japan, and Hong Kong) from 1988 to 2008 in order to examine the question of whether stock market development is an important factor in economic growth, using the recognized stock market indicators. Their results indicated that securities market development in all the sample countries had a strongly significant relationship with their economic growth.

Adjasi and Biekpe (2006) used a dynamic panel data model for 14 African nations to evaluate the impact of securities market development on economic growth. In addition, they investigated the level of economic growth and securities market capitalization. The authors' findings indicated that there is a significant impact of securities market development on economic growth in some countries classified as upper-middle income economies. They also showed the important role that is played by the stock market in the process of economic growth. In general, it was shown that some countries characterized by low incomes and an undeveloped financial system need to improve their gross domestic product per capita and reform their financial systems in order to improve their economies. Low, Kew et al. (2011) examined the impact of liquidity in the stock market on economic growth, utilizing a panel data analysis for 64 countries during the period from 1988 to 2005. The paper notes that stock markets have positive impacts on growth, specifically in changing the size of the relationship, depending on whether the country is developed or developing. Results suggest that the reduction in liquidity is due to

evolve more. Filer, Hanousek et al. (2010) empirically examined the question of whether fiscal development causes economic growth or is itself a consequence of increased economic activity. The paper focuses on the causal link between securities market development and economic growth using Granger causality tests. The results presented proof of positive and significant causal relationships between the securities market and economic growth, ranging from securities market development to economic growth, especially in less developed countries. Levine and Zervos (1998) used securities market variables to examine the correlation between economic growth and fiscal development. Their results indicated that securities market liquidity is significantly linked to long-term economic growth, productivity growth, and capital accumulation. Beck and Levine (2004) also looked at the effect of securities markets on economic growth in 40 countries from 1976 to 1998. The results of their study showed that the development of the securities market had significant effects on economic growth. Seetanah, Sannassee et al. (2010) report similar results when they used securities market variables in order to explore the relationship between stock market and economic development. Their results indicated that securities market development is a significant element of growth. Jamil (2010) also examined the causal correlation among securities market development, securities market volatility, and economic growth over the period from 1980 to 2006. In addition, he tried to identify the effect of stock market development and securities market volatility on the level of GDP per capita. His results showed unidirectional causality from securities market development to economic growth for the MCR indicator. Other indicators related to the securities market showed bidirectional causality between securities market development and economic growth. The empirical findings also indicated the significant role of the securities market and its impacts in both high- and low-income countries. They revealed that stock market volatility does not have

any effect on economic growth. Islam (2010) obtained similar results when he examined the influences of stock markets on economic growth. The findings of his study showed that the development of the stock market had significant aggregate effects on economic growth, and thus contributed to accelerated growth in developing countries, especially in the long term. Furthermore, it shows a non-linear correlation between financial development and economic growth. Wu, Hou et al. (2010) used panel data covering 13 nations in the European Union (EU) from 1976 to 2005 to evaluate the effect of stock market development on economic growth. Their findings suggest the existence of a stable long-run correlation between stock market development and economic development; they also indicated that both stock market capitalization and liquidity had a positive effect on growth in the long term, whereas stock market liquidity had an insignificant effect on economic growth in the short run. Moreover, financial depth negatively affected real output in the long-term.

Matthew, Sannassee et al. (2012) employed semi-annual time series data for Mauritius to examine the correlation between securities market development and economic growth for the period from 1989 to 2010. In this context, the ARDL framework was used to explain potential causal relationships among variables in the long and short terms. Their results indicated that there is a robust positive link between securities market and economic growth in both the short and long terms. Tachiwou (2010) used time series data and various stock market indicators to examine the influence of securities market development on growth in the West African Monetary Union for the period from 1995 to 2006, again with focus on both short-term and long-term relationships. The VECM was applied, with the results indicating that securities market development significantly impacted economic growth in the West African Monetary Union in both timeframes. Caporale, Howells et al. (2005) used the Toda and Yamamoto (1995) causality

testing procedure to investigate the correlation between securities market development and economic growth. They also provide a theoretical basis for the establishment of a channel through which the securities markets affect economic growth in the long term. Moreover, they consider the effect of financial development on the level of investment and productivity. The results of this study provide evidence from a sample of four countries—Chile, Korea, Malaysia, and the Philippines—and indicate that investment productivity is the channel through which the development of the securities market promotes the growth rate over the long term. Nieuwerburgh, Buelens et al. (2006) used a variety of measures of securities market development to examine the long-run correlation between financial market development and economic development in Belgium. The results of their study presented strong proof that securities market development caused economic growth in that country, especially in the period from 1873 to 1935. Institutional changes that affected the securities market illustrate the time-varying nature of the correlation between the securities market and economic development. Caporale, Howells et al. (2004) looked at a sample of seven countries (Argentina, Chile, Greece, Korea, Malaysia, Philippines, and Portugal) and used a variety of measures of fiscal development to study the causal correlation among securities market development, fiscal development, and economic development. The econometric methodology employed was VAR for causality, as developed by Toda and Yamamoto (1995. The results indicate that well developed securities markets contributed to accelerated growth in the long term.

Boubakari and Jin (2010) examined the causal linkages between the securities market and economic growth in five European countries (Belgium, France, Portugal, Netherlands, and the UK) during the period from 1995 to 2008. In this paper, the Granger causality test was used to explore these relationships, and the findings indicated a positive correlation between the

securities market and economic growth in some countries where the securities market had highly liquid assets. Nonetheless, causation was not found in countries where the securities market is much smaller and less liquid. The causal association between credit market development and economic growth was examined by Adamopoulos (2010) from 1976 to 2007, using a VECM. The aim of this study was to examine the correlation among bank lending, GDP, and inflation rates, over the long and short terms, using the Johannes cointegration test. The finding of the study showed that while economic growth and investment have a significant impact on the credit market, inflation's impact is insignificant impact. Bank development is measured by the ratio of bank credit to the private sector at the time of decrease inflation rate, thus boosting economic growth Ireland was used as a case study by Antonios (2010) to investigate the causality correlation among credit market development and economic growth in the long- and short-terms from 1978 to 2007, taking into account the rate of inflation. The analysis was performed using cointegration and the VECM. For this purpose, both unit root tests and panel unit root tests were performed, respectively. The findings showed unidirectional causality among credit market development and economic growth in Ireland. Olweny and Kimani (2011) used quarterly secondary data for Kenya covering the period from 2001 to 2010 in order to explore the causality correlation among securities market performance and economic growth. The econometric methodology employed was the Granger causality test based on the VAR model. The findings showed a one-way causality relationship running from securities market performance to economic growth. Antonios (2010) obtained similar results after examined the causal association between the securities market and economic growth in the long-term for Germany between 1965 and 2007. He employed Johansen cointegration analysis based on the classical unit roots tests and a VECM; his findings showed a one-way causal relationship running from the securities

market to economic growth. Hossain and Kamal (2010) used the Engle-Granger causality and maximum likelihood tests to examine the long-term, causal association between securities market development and economic growth in Bangladesh. In addition, they used modern econometric techniques in order to examine non-stationarity in the series. Results obtained indicate that there is strong effect of securities market development on economic growth. In addition, the results of the causality test showed unidirectional causality from securities market development to economic growth. They also illustrated all the proxies were integrated of order 1, and share the same stochastic trends in the economy of Bangladesh.

Enisan and Olufisayo (2009) used ARDL tests to investigate the long-term, causal association between securities market development and economic growth of seven sub-Saharan Africa countries. Their results indicated that the development of the securities market is correlated with economic growth in Egypt and South Africa. In addition, they suggested that the development of the securities market had a major positive effect on long-term economic growth. The Granger causality test model, based on the VECM also illustrated that the causality between the securities market and economic growth runs from the securities market to economic growth in those two countries. In contract, Granger causality in the context of VAR reveals that there is a bidirectional correlation between the securities market and economic growth in four nations: Ivory Coast, Kenya, Morocco, and Zimbabwe. In Nigeria, there is strong evidence for the financing of economic growth driven by market magnitude as an index of securities market development. Based on these findings, the study argued that markets could help to enhance growth in Africa. Nevertheless, to reach this objective, the African market values should be developed through macroeconomic and regulatory policies. The casualty relationship between securities market development and economic growth was investigated critically and empirically

by Salisu and Ajide (2010) in Nigeria, looking at the period from 1970 to 2004. The stock market indicators used were market value and the ratio of total value of shares traded and the turnover rate, while the rate of growth of GDP to indicate economic growth. Empirical evidence, using the Granger causality test in the assessment process, suggested bidirectional causality between rotation rate and economic growth. The correlation with capital market economic growth was one-way, and a causal relationship was lacking between the index of the total value of traded shares and economic growth. These results an indicated that the test results were sensitive to the choice of causal variables used as an alternative to stock market development. In general, the Granger causality test result appears to indicate that the development of the securities market promotes economic growth. Ake and Ognaligui (2012) employed time series data for Cameroon to investigate the causal correlation between securities markets and economic growth for 2006 to 2010. The analysis was conducted using Granger causality tests. In contrast to the results of some previous studies such as Robert King and Ross Levine (1993) and Patrick (1966), this study did not find any impact of stock markets on economic growth, though they did obtain systematic evidence that market capitalization has a positive impact on economic growth. Arestis, Demetriades et al. (2001) used quarterly data and their results indicated that securities market development enhances economic growth. The causality correlation among fiscal development, stock markets, and economic growth also was examined in Greece by Dritsaki and Dritsaki-Bargiota (2005) and their results indicated a unidirectional causal relationship between economic development and the securities market. Thangavelu and Beng Jiunn (2004) used quarterly data in order to examine the causal relationship between the market's financial structure and economic growth in Australia. Their results showed that the causality for fiscal markets and growth nexuses running from fiscal markets to economic growth; there was no evidence of

bidirectional causality. Asante, Agyapong et al. (2011) found a causal relationship between stock markets and economic growth after using time series data covering the period from 1992 to 2009 for Ghana. Naceur and Ghazouani (2007) obtained similar results when they used stock market indicators to explore the relevance between finance development and economic growth. They concluded that there was no significant connection between securities market development and economic growth.

3.3.4 The relationship between growth and insurance sector

Nguyen, Avram et al. (2010) used a multi-country study with a sample of 93 developed and developing nations from 1980 to 2006 in order to study the correlation between insurance and economic growth, particularly focusing on life and non-life insurance. In this context, cross-sectional estimations and dynamic panel data techniques were used in order to explore the relationships among the variables. The results obtained indicate that both life and non-life insurance significantly and positively correlated with economic growth. In addition, while they found meagre evidence that might affect this relation (which is tied to the stage of development in the country), they found strong evidence that the quality of a country's legal system and protection of property rights was significantly correlated with insurance growth. Webb, Grace, et al. (2002) looked at the causal association between banks, life, and non-life insurance activity and economic growth for 55 nations over the period from 1980 to 1996. The percentage of bank credit to GDP, the percentage of non-life insurance premiums to GDP, and the percentage of life insurance premiums to GDP were considered as measures for financial intermediation. After applying a revised Solow-Swan model, the results showed that the exogenous components of the banking and life insurance variables were robustly predictive of increased economic growth.

They also found evidence of synergy among banks and insurers, thus producing greater benefits jointly than suggested by the sum of their individual contributions. Outreville (1990) empirically explored the linkage among property-liability insurance premiums and economic and fiscal development for a cross-section of 55 developing nations. The findings of the study obtained showed the significance of fiscal development, and thus the leading-supply outlook is found to be dominant; in such a case, one should give more consideration to providing strength to insurance markets.

Haiss and Sümegi (2008) examined panel data with an endogenous growth model for 29 European countries over the period 1992 to 2005 to evaluate the effect of insurance investment and premiums on GDP growth. Their results showed that life insurance positively influences GDP growth in the EU-15 countries and that there is a larger influence for liability insurance in Central and Eastern Europe New Member State countries. In addition, they highlighted the effect of the real interest rate and the level of economic growth for the insurance-growth nexus. Njegomir and Stojić (2010) used country-specific fixed effects models for panel data over the period from 2004 to 2008; this study aimed at investigating the effects of insurance on economic growth. In addition, they examined the interaction of insurance and banking in enhancing the economies of five former Yugoslavian countries (Bosnia and Herzegovina, Croatia, FYR Macedonia, Serbia, and Slovenia). The paper notes that insurers have positive impacts on growth. Arena (2008) focused on life and non-life insurance to examine the causality relevance between market activity of insurance and economic growth for 55 nations using panel data covering the period from 1976 to 2004. The analysis was conducted using GMM for dynamic models. The result of this study provided strong evidence that the market activity of insurance has a positive and significant causal impact on economic growth. Han, Li et al. (2010) focused

on life and non-life insurance in order to examine the relevance between insurance development and economic growth for 77 developed and developing nations with panel data covering the period from 1994 to 2005. The analysis was performed using GMM for dynamic models. The results of this study indicated that insurance development and economic growth are significantly linked. The general trend in results showed that the role played by life and non-life insurance development in enhancing growth in emerging countries is greater than in advanced countries. Azman-Saini and Smith (2011) present new proof that sheds light on the influences of insurance sector development on output growth, capital accumulation, and productivity improvement. They used panel data from 1981 to 2005 for 51 developed and developing nations. The findings illustrated that insurance sector development can affect productivity and capital accumulation in both advanced and emerging countries, leading to economic growth. Chen, Lee et al. (2011) examined the effect of life insurance on economic growth, taking into account some factors that may affect the relationship among insurance and economic growth. These include: the level of fiscal development, private savings rates, interest rates, social security expenditures, income, young-dependency ratio, life expectancy, and geographic region. Their results indicated that life insurance development positively influences economic growth, though the link among insurance and economic growth varies from country to country. For instance, significant effects of insurance on growth are higher in middle-income countries, but considerably lower in low-income countries.

Ching, Kogid et al. (2010) investigated the causal relationship between the life insurance sector and economic growth in Malaysia. In this context, the Johansen cointegration test and the Granger causality test based on the VECM were used to demonstrate potential causal relationships among variables. The findings indicated the existence of a long-term correlation

between the life insurance variable and economic growth. Others have shown unidirectional causality exists from real GDP to the life insurance indicator over the short term. The results indicated that the Malaysian life insurance sector may have a positive and significant impact on financial intermediation to engender long-term savings to finance capital investments, which in turn would lead to economic development. Kugler and Ofoghi (2005) took the elements of insurance premiums to examine association among development in insurance market magnitude and economic growth in terms of a long-run relationship. Cointegration and Granger causality tests were used to evaluate this relation. The findings indicated the existence of a long-term correlation between the insurance market magnitude and economic growth for most of the sample. Islam and bin Osman (2004) investigated the development effects of non-bank financial intermediaries on economic growth in the case of Malaysia from 1974 to 2004. The bounds testing approach to cointegration and error-correction mechanisms were used to examine the existence of a stable long-term correlation between non-bank financial intermediaries and economic growth. The results found evidence of a cointegrating correlation between financial intermediaries on economic growth over the long-term and that financial intermediaries have a positive and significant effect on the Malaysian economy. Nigeria was used as a case study by Mojekwu, Agwuegbo et al. (2011) to investigate the influence of insurance contributions on economic growth from 1981 to 2008, using a dynamic factor model. They also examined the functional correlation between the volume of insurance contributions and economic development in terms of underlying. Their findings showed that the functional correlation between the volume of insurance contributions and the Nigerian economy was a first-order VAR model.

Ching, Kogid et al. (2011) investigated the causal association between general insurance and economic development in Malaysia, looking at the period from 1997 to 2008. The ARDL

bound and the Granger causality tests, based on the ECM-ARDL and Toda-Yamamoto (1995) procedures, were used in order to explain the possible cointegration and causal relationships between variables in the long-term and short-term, respectively. The findings presented adequate proof to support a long-term relationship between indicators of general insurance and indicators of economic development. No short-term causality relationship was proved. Horng, Chang et al. (2012) examined the dynamic relationships among insurance demand, fiscal development, and economic growth in Taiwan for the period between 1961 and 2006. In addition, competing hypotheses were empirically tested: the demand-following and supply-leading hypothesis, using the VAR model. Their findings indicated that there is a stable relationship among demand, fiscal development, and economic growth. Others have shown that while economic growth causes insurance demand, fiscal development causes economic growth in the short-term. Garcia (2012) empirically examined the association among property-liability insurance premiums and growth and fiscal development, using Portugal as a case study. The analysis was performed using OLS estimations. His results indicated that the rate of property-liability insurance demand can only be explained by the GDP rate in Portugal. Ward and Zurbruegg (2000) took annual data for nine OECD countries to investigate the casual linkages between finance and growth in the insurance industry over the period from 1961 to 1996. In particular, they focused on the short- as opposed to the long-term relationships. A cointegration analysis and Granger causality test were used. Findings indicated that the insurance industry caused economic growth in some countries, while the reverse causation was found in others. The causal correlation between fiscal development and economic development was investigated by Boon (2005) in Singapore, who looked at the period from 1985 to 2002. Financial variables used were bank loans, stock market capitalization value, and insurance funds, while real gross domestic product per capita and real gross fixed capital

formation per capita were used as variables of economic development. The findings obtained showed that the direction of causality between fiscal development and economic development is sensitive to the choice of proxy used for fiscal development. For instance, when fiscal development is measured by the loan market, growth is found to lead financial development, and vice versa when the insurance market is used to proxy fiscal development. Moreover, when the stock market is used as a proxy of fiscal development, a demand-following response was found in the short term; while in the long-term a supply-driven response is found to be dominant. Adams, Andersson et al (2009) used time series data for Sweden to study the relationship among commercial bank lending, insurance, and economic income for the period from 1830 to 1998. After applying the Toda and Yamamoto procedure and Granger causality test, findings revealed that insurance caused economic growth and bank lending. They also indicated that there was no causal correlation among bank lending and growth in insurance or economic growth.

3.3.5 The correlation between finance and growth in regards to non-banking sector financial intermediaries

Levine, Loayza et al (2000) used instrumental-variables regression and GMM panel estimation on 47 countries. Their results showed that the exogenous components of financial intermediary development are significantly linked with economic growth. Akimov, Wijeweera et al. (2009) obtained similar results after they took both panel data and an endogenous growth model covering 27 notions from 1989 to 2004 to investigate the impacts of fiscal intermediation on economic growth. Their results indicated that the financial and growth nexus was positively strong. Korea was taken as a case study by Choe and Moosa (1999) to observe the association between fiscal development and economic growth, in terms of fiscal intermediaries and capital

markets and their influences on the portfolio behaviour of both household and business sectors. The authors' findings indicated that fiscal development in general leads to economic growth. They also found that intermediaries of financial development are better than capital markets in terms of their impact. Rousseau and Vuthipadadorn (2005) used a time series approach to examine whether the intensity of financial intermediary development enhanced investment and growth for ten Asian countries during the period from 1950 to 2000. VARs and VECMs were applied, and the results indicated that funding has not, in general, served as a driving force behind investment. In addition, little evidence appeared about the role played by financial factors in output. Moreover, all the results were consistent with the accumulation channel factor as a key mechanism that affected the financial sector's macroeconomic performance in these countries. In their paper, Barakat and Waller (2010) examined the association between fiscal intermediation and economic growth in Middle Eastern nations. They concluded that financial development does influence economic growth. However, there were some factors related to market that could influence the size and importance of this effect. Allen and Ndikumana (2000) looked at the Southern African Development Community (SADC), utilizing a variety of measures of fiscal development to examine the important role played by fiscal intermediation in the growth process. Their findings indicated that there is a significant correlation between fiscal development and the growth rate of real per capita GDP. This association was more obvious in regressions that utilized pooled statistics than those that used yearly statistics.

Liang and Reichert (2011) took multi-country data for both advanced and emerging nations with the modified Odedokun economic growth model to evaluate the effect of non-banking fiscal institutions on growth. The authors' findings presented proof that non-banking fiscal institutions could have a statistically significant harmful effect on economic growth. Mohapi and Motelle

(2007) took time series data for Lesotho, as well as five measures of fiscal intermediation and GDP per capita as a measure for economic growth, in order to explore the causal link between fiscal intermediation and economic growth. The analysis was conducted using the Granger causality test and the VECM causality test. Their results indicated that four out of five variables turned out not to be cointegrated with economic development. They also indicated that only one out of five variables in the Granger test causes economic development, and there is no causality between the remaining four variables and economic development in either direction.

Chapter 4
Methodology

4.1 Introduction

The aim of this study is to examine the causal relationship among bank development, stock market development, conventional insurance, Islamic insurance, and economic growth in Malaysia during the period from 1975 to 2012. In this study, we have taken dependent variables that represented economic growth for all of the models. Some of these variables are gross domestic product (GDP) per capita and fixed capital formations, with the exception of secondary variables that represented the economic growth (fixed capital formation) where it is used as an independent variable when studying the causal relationship between bank development and economic growth. The rest of the variables represented are bank development, stock market development, conventional insurance, and Islamic insurance, all used as independent variables. Inflation is represented by the consumer price index and the openness trade, used as control variables. At the outset, we took the annual data of all the dependent and independent variables from 1975 to 2012. Each variable was examined with respect to its descriptive statistics, before all the raw data were converted into natural logarithms. All of the dependent and independent variable date series were tested for their stationarity. Four unit root tests were applied: the augmented Dickey-Fuller (ADF) test, the detruded Dickey-Fuller (DF-GLS) test, the Phillips-Perron (PP) test, and the Kwiatkowski, Phillips, Schmidt, and Shin (KPSS) test. The four unit root tests were carried out using constants and trends for all variables in the models and using the variables' firsts and differences. The multivariate VAR framework was then applied, in order to evaluate the long-term relationships among bank development, stock market development,

conventional insurance, Islamic insurance, real GDP per capita, fixed capital formation, trade openness, and the consumer price index. In addition, a residual diagnostic test was applied by examining the Breusch-Godfrey serial correlation Lagrange multiplier test. Finally, the study applied the vector error correction model (VECM) based on causality tests to establish long- and short-run causality relationships among bank development, stock market development, conventional insurance, Islamic insurance, and economic growth. The use of these techniques to estimate time models that involve two or more variables avoids the traditional problems linked with the regression employed in previous studies on the subject. Moreover, this method allows the researcher to differentiate between short- and -term Granger causalities Adamopoulos (2010).

Following this introduction, Section 2 will consist of data, measurement, and the specification of the model as well as research questions and hypotheses. The unit root test will be conducted in Section 3, and the Johansen cointegration will be used in Section 4. The VECM will be used in Section 5. The Granger causality test will be studied in Section 6.

4.2 Data and specification of the model

4.2.1 Data

This study examines the causal relationship among bank development, stock market development, conventional insurance, Islamic insurance, and economic growth in Malaysia. It employs annual time series data from 1975–2012, 1989–2012, 1982–2012, and 1986–2012 for the variables of bank development, stock market development, conventional insurance, and Islamic insurance, respectively. Bank development indicators used are the ratio of the commercial bank assets divided by commercial bank assets plus central bank assets (BTOT), liquid liabilities (M3); domestic lending to the private sector (DCP); and bank deposit liabilities (LBDL). Total value

traded ratio (VT), turnover ratio (TR), no listed companies (LC), market capitalization (MC) and total capital raised in the primary market (IPOs)are used as indicators for the stock market. Conventional insurance is represented by five variables, including gross premium income (life insurance), gross premium income (non-life insurance), life insurance penetration, non-life insurance penetration, and non-life insurance density. Islamic insurance is represented by three variables: the assets of the family *takaful* fund (AFTF), the assets of general *takaful* funds (AGTF), and the total contributions by participants in the family *takaful* fund (CPFT). There are two reasons behind the choice of all the variables used in this study. The first is that through reviewing the literature, we found that all the indicators that represent bank development, stock market development, conventional insurance, and economic growth are widely used in the literature as measures for financial development and economic growth. The second is that the majority of Malaysian are Muslims and prefer to deal with the Islamic insurance system. Thus, this study chose indicators representing Islamic insurance in order to explore their impact on the Malaysian economy. All data are obtained from Bank Negara Malaysia, the World Development Indicators (WDI), and the DataStream of the University of New England; all data series were transformed into logarithms.

The first measure of economic development utilized in this study is real GDP per capita (GDPPC) (RM), the gross value added by all resident producers in an economy, including any product taxes, and excluding any subsidies that are not included in the value of products. GDP is calculated without making deductions for the depreciation of fabricated assets or for the depletion and degradation of natural resources. The data are consistently given in the local currency (Ang and McKibbin 2007). The second measure of economic growth is fixed capital formation (FCF), and understands gross capital formation (formerly gross domestic investment)

to refer to outlays on additions to the fixed assets of an economy plus net changes in its levels of inventory. Fixed assets include land improvements (e.g., fences, ditches, drains, etc.), plants, machinery, equipment purchases, as well as the construction of roads, railways, schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings (Ang and McKibbin 2007). The third measure is openness (TO), a measure of global trade that refers to a country's total trade (exports plus imports) as a portion of its GDP (Ang and McKibbin 2007). The fourth measure is the consumer price index (CPI), the most frequently used indicator of inflation that serves to reflect changes in the cost of acquiring a fixed basket of goods and services by the average consumer. The weights used for the CPI are usually derived from household expenditures (Al-Tammam 2005).

The first measure of bank development used in this study is the ratio of the commercial bank assets divided by the commercial bank plus the central bank assets (BTOT). According to (Ang and McKibbin 2007), the idea behind this proxy is that the commercial banks are able to use funds in a more efficient and productive way compared to central banks, due to their ability to identify profitable investment opportunities. The second measure of bank development is liquid liabilities (M3), used as a measure of financial deepening because the monetary aggregates, such as M1 or M2, are not good proxies for financial development. These variables reflect the full extent of transactional services offered by the financial system instead of the ability of the financial system to channel funds from depositors into to opportunities for investment (Ang and McKibbin 2007). The third measure of bank development is the DCP, measured as a DCP sector divided by the GDP. This variable is preferred to any other monetary aggregate as a measure for credit market development. Though it excludes bank loans for the

public sector, it represents a more precise role of financial intermediaries in directing funds to participants in the private market **(**Antonios 2010**)** The fourth measure of bank development used in this study is bank deposit liabilities (LBDL)., which is preferable to the M2 ratio because an increasing M2 ratio might simply reflect the fact that more currency is being used (i.e., there is more monetisation) rather than an increase in bank deposits. Thus, the ratio of deposit liabilities to the GDP provides more direct information on the extent of the financial intermediation (Fowowe 2011)**.**

VT is the first measure of stock market development. This measure is widely used in the literature. For example, (Ndako 2010), (Rousseau and Wachtel 2000), and(Beck and Levine 2004) used VT, measured as the value of shares traded in domestic exchanges divided by the GDP. The value traded has two weaknesses: (1) "it does not measure the liquidity of the market, it just measures trading relative to the size of the economy," and (2) "also since value traded is the product of quantity and price, this means that it can rise without an increase in the number of transaction" (Ndako, 2010). The second measure of stock market development used in this study is the TR. The third measure is MC, which equals the value of listed shares divided by the GDP. Its main shortcoming is that the theory does not suggest the mere listing of the shares will influence the resource allocation and growth. (Levine and Zervos 1998) show that MC is not a good predictor of economic growth. The fourth measure of the stock market is LC, which equals a listed domestic company, referring to a domestically incorporated company that is listed on a country's stock exchange at the end of a given year. This indicator does not include investment companies, mutual funds, or other collective investment vehicles.

The first measure of conventional insurance is the gross premium income (life insurance), which equals the total sum of the premium income from the life insurance businesses calculated

in US dollars using prices from the year 2000. The second measure of conventional insurance is gross premium income (non-life insurance), which equals the total sum of the premium income from non-life insurance businesses calculated in US dollars using prices from the year 2000. The third measure of conventional insurance is life insurance penetration, which equals the ratio of the percentage of total life insurance premiums (in US dollars) to the GDP. The fourth measure of conventional insurance is non-life insurance penetration, which equals the ratio of the percentage of total insurance premiums (in US dollars) to the GDP. The fifth measure of conventional insurance is non-life insurance density, which equals the ratio of total non-life insurance premiums (in US dollars) to the total population.

Islamic insurance (*takaful*) is represented using three variables. The first measure is the AFTF, the second measure is the AGTF, and the third measure is total CPFT.

Ang and McKibbin (2007) report that there is no clear consensus among economics scholars as to which proxies of financial development are the best measures and highly correlated with each other. Thus, constructing an index through analysis of the principal components is necessary in order to resolve the problem of multicollinearity among the variables. This study follows Ang and McKibbin's approach to build a financial development index through principal component analysis using four bank development proxies, namely BTOT, M3, DCP, and LBDL and the five stock market proxies of VT, TR, LC, MC, and IPOs. It also employs five conventional insurance proxies—GPILF, GPINLF, NLIP, NLID, and LIP—and the three Islamic insurance proxies of AFTF, AGTF, and CPFT. Other measures include inflation as indicated by the consumer price index and trade openness, defined as the ratio of imports plus exports divided by real GDPPC.

Table 1 summarizes the results of the principal component analysis. The first Eigen values indicate that 94.6% of variation is captured by the first principal component, while the second principal component explain 4.7% of total variation. The third principal component shows 0.42% of total variation. The last principal component account for only 0.19% of total variation. Table 1 thus demonstrates that the first principal component is the best measure of the index since it captures about 94.6% of the information from theses proxies. It also shows that the first vector has almost equal weight, indicating a similar pattern.

Table 1: Principal component analysis for the bank development index

	PC 1	PC 2	PC 3	PC 4
Eigen values	3.784492	0.190910	0.016989	0.007610
Proportion%	0.9461	0.0477	0.0042	0.0019
Cumulative%	0.9461	0.9939	0.9981	1.0000
	Vector 1	Vector 2	Vector 3	Vector 4
BTOT	0.505969	-0.372137	0.107287	0.770714
M3	0.510437	-0.110314	-0.806899	-0.276040
LBDL	0.506745	-0.326869	0.559705	-0.568416
DCP	0.476087	0.861686	0.155350	0.081888

Table 2 summarizes the results of the principal component analysis for the stock market development index. The first Eigen values indicate that 50.08% of variation is captured by the first principal component and that the second principal component explain 36.75% of total variation. The third principal component shows 9.5% of total variation, while the fourth principal component accounts for 0.19% of total variation. Finally, the fifth principal component account for only 0.44% of total variation. Table 2 shows that the first principal component is the best measure of the index since it captures about 50.08% of the information from theses proxies. It also shows that the first vector has almost equal weight, indicating a similar pattern.

Table 2: Principal component analysis for the stock market development index

	PC 1	PC 2	PC 3	PC 4	PC 5
Eigen values	2.504108	1.837447	0.474896	0.161455	0.022093
Proportion%	0.5008	0.3675	0.0950	0.0323	0.0044
Cumulative%	0.5008	0.8683	0.9633	0.9956	1.0000
	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5
VT	0.610136	0.134789	-0.213990	0.039826	-0.749792
TR	0.580912	0.136556	-0.484166	0.048861	0.638036
LC	-0.079613	0.700785	0.044959	-0.707407	0.010789
MC	0.515057	-0.023276	0.838553	-0.025071	0.174284
IPOS	-0.136578	0.686690	0.120827	0.703544	0.015192

Table 3 summarizes the results obtained from the principal component analysis of conventional insurance development index. The first Eigen values indicate that 57.46% of variation is captured by the first principal component, the second principal component explains 19.98% of total variation, and the third principal component shows 17.22% of total variation. The fourth principal component accounts for 5.25% of total variation, while the fifth principal component account for only 0.02% of the total variation. Table 3 shows that the first principal component is the best measure of the index since it captures about 57.46% of the information from theses proxies. It also shows the first vector with almost equal weight, indicating a similar pattern.

Table 3: Principal component analysis for the conventional insurance development index

	PC 1	PC 2	PC 3	PC 4	PC 5
Eigen values	2.873021	0.998833	0.864747	0.262284	0.001114
Proportion%	0.5746	0.1998	0.1729	0.0525	0.0002
Cumulative%	0.5746	0.7744	0.9473	0.9998	1.0000
	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5
GPILF	0.485665	-0.271902	0.334657	-0.760383	0.004607
GPINLF	0.572204	0.095460	0.111823	0.384849	0.709124
LIP	-0.283961	-0.536211	0.723600	0.328893	0.008716
NLIP	-0.180774	0.784573	0.575021	-0.142774	0.027062
NLID	0.568682	0.117812	0.145787	0.380989	-0.704496

Table 4 represents the results of the principal component analysis for the Islamic insurance development index. The first Eigen values indicate that 98.12% of variation is captured by the first principal component, while the second principal component explains 1.74% of total variation. The last principal component shows 0.15% of total variation.

Table 4: Principal component analysis for the Islamic insurance development index

	PC 1	PC 2	PC 3
Eigen values	2.943509	0.052084	0.004407
Proportion%	0.9812	0.0174	0.0015
Cumulative%	0.9812	0.9985	1.0000
	Vector 1	Vector 2	Vector 3
AFTF	0.581649	-0.161953	-0.797155
AGTF	0.573548	0.776574	0.260721
CPFT	0.576825	-0.608855	0.544581

4.2.2 Model specification

In order to analyse the relationships among bank development, stock market development, conventional insurance, Islamic insurance, and economic growth in Malaysia the following multivariate models are to be estimated:

GDPPC =f (BTOT, TO, CPI) ---------- (1)

GDPPC =f (M3, TO, CPI) ---------- (2)

GDPPC =f (DCP, TO, CPI) ---------- ---(3)

GDPPC =f (LBDL, TO, CPI) ---------- (4)

BTOT =f (FCF, TO, CPI) ---------- --(5)

M3 =f (FCF, TO, CPI) ---------- -(6)

DCP =f (FCF, TO, CPI) ---------- (7)

LBDL =f (FCF, TO, CPI) ---------- --(8)

GDPPC =f (VT, TO, CPI) ----------(9)

GDPPC =f (TR, TO, CPI) ---------- (10)

GDPPC =f (LC, TO, CPI) ---------- (11)

GDPPC =f (MC, TO, CPI) ----------(12)

GDPPC =f (IPOs, TO, CPI) ----------(13)

FCF =f (VT,TO, CPI) ---------- (14)

FCF =f (TR,TO, CPI) ----------(15)

FCF =f (LC,TO, CPI) ----------(16)

FCF =f (MC,TO, CPI) ---------- (17)

FCF =f (IPOs, TO, CPI) ---------- (18)

GDPPC =f (GPILF, TO, CPI) ---------- (19)

GDPPC =f (GPINLF, TO, CPI) ---------- (20)

GDPPC =f (LIP, TO, CPI) ---------- ----(21)

GDPPC =f (NLIP, TO, CPI) ---------- --(22)

GDPPC =f (NLID, TO, CPI) ---------- (23)

FCF =f (GPILF, TO, CPI) ---------- --- (24)

FCF =f (GPINLF, TO, CPI) ---------- - (25)

FCF =f (LIP, TO, CPI) ---------- ------- (26)

FCF =f (NLIP, TO, CPI) ---------- ----- (27)

FCF =f (NLID, TO, CPI) ---------- ---- (28)

GDPPC =f (AFTF, TO, CPI) ----------(29)

GDPPC =f (AGTF, TO, CPI) ---------- (30)

GDPPC =f (CPFT, TO, CPI) ---------- (31)

FCF =f (AFTF, TO, CPI) ---------- (32)

FCF =f (AGTF, TO, CPI) ---------- (33)

FCF =f (CPFT, TO, CPI) ---------- (34)

The functions above can also be represented in a log linear econometric format.

4. 3 Research questions and hypotheses

4.3.1 Research questions

This study examines the causal relationship among the development of banks, stock market development, the development of Islamic and conventional insurance institutions, and economic growth. Therefore, the main question to be explored is:

Is there a causal relationship among the development of banks, the securities market, Islamic and conventional insurance institutions, and economic growth in Malaysia?

To answer this question, the following questions will be addressed:

RSQ1: Does the development of banking, cause economic growth?

RSQ2: Does the development of the securities market, cause economic growth?

RSQ3: Does the development of conventional insurance institutions , cause economic growth?

RSQ4: Does the development of Islamic insurance institutions , cause economic growth?

RSQ5: Does economic growth cause the development of banks?

RSQ6: Does economic growth cause securities market development?

RSQ7: Does economic growth cause, the development of conventional insurance

institutions?

RSQ8: Does economic growth cause, the development of Islamic insurance institutions?

RSQ9: Is there a long-term correlation between the development of banks, and economic growth?

RSQ10: Is there a long-term relationship between securities market development, and economic growth?

RSQ11: Is there a long-term relationship between the development of conventional insurance institutions and economic growth?

RSQ12: Is there a long-term relationship between the development of Islamic insurance institutions and economic growth?

RSQ13: Is there a short-term association between the development of banks, and economic growth?

RSQ14: Is there a short-term association between securities market development, and economic growth?

RSQ15: Is there a short-term association between conventional insurance development, and economic growth?

RSQ16: Is there a short-term association between Islamic insurance development, and economic growth?

4.3.2 Hypotheses

There are two hypotheses in this research study:

H1: The development of banks, securities market development, and the development of Islamic

and conventional insurance institutions cause economic growth.

H1a: The development of banks, cause economic growth.

H1b: securities market development, cause economic growth.

H1c: the development of conventional insurance institutions, cause economic growth.

H1d: the development of Islamic insurance institutions, cause economic growth.

H2: Economic growth causes the development of banks, securities market development, and Islamic and conventional insurance institutions.

H2a: Economic growth causes the development of banks

H2b: Economic growth causes, securities market development.

H2c: Economic growth causes conventional insurance development.

H2d: Economic growth causes Islamic insurance development.

The alternative hypothesis between both H1 and H2 is that there is no causation.

4.4 Estimation technique

4.4.1 Unit root test

Since most of the economic time series have unit root tests, many studies indicated that most of the time series are non-stationary (Dilrukshini 2004, Vazakidis and Adamopoulos 2011), (Al-Qudair 2005). Four unit root tests are applied to investigate the order of integration of the individual time series. The unit root tests are the ADF test (Dickey and Fuller, 1979), the PP test (Phillips, 1987; Phillips-Perron, 1988), and the KPSS unit root test (Kwiatkowski, Phillips, Schmidt, and Shin, 1992). If the first difference of a non-stationary variable is stationary, that variable is said to be integrated of order one, I (1). If second differences are required to achieve stationary, the variable is integrated of order two, I (2). The ADF test involves the estimation of one of the following equations:

$$\Delta X_t = \alpha_0 + \beta X_{t-1} + \sum_{t-1}^{\rho} \delta \Delta x_{t-1} + \varepsilon \quad \text{(equation1) intercept only} \quad (35)$$

$$\Delta X_t = \alpha_0 + \alpha_1 + \beta X_{t-1} + \sum_{t-1}^{\rho} \delta \Delta x_{t-1} + \varepsilon \quad \text{(equation2) trend and intercept} \quad (36)$$

$$\Delta X_t = \beta X_{t-1} + \sum_{t-1}^{\rho} \delta \Delta x_{t-1} + \varepsilon \quad \text{(equation3) no trend, no intercept} \quad (37)$$

In the null hypothesis, the variable H0 is not stationary and does not have a unit root. If the calculated ADF statistic is higher than McKinnon's critical values, then the null hypothesis (H0) is not rejected and the series is non-stationary or not integrated of the order zero I (0). The alternative is H1: stationary. Failure to reject the null hypothesis leads to conducting the test on the difference of the series. Further differencing is conducted until stationarity is reached and the null hypothesis is rejected (Antonios 2010). In the event that the ADF and PP tests have less power to test the stationarity of the series, the KPSS test is to be applied. The KPSS test has the null hypothesis of stationarity contrary to the ADF and PP tests. If the calculated test statistics exceed the critical values, the null hypothesis of stationarity is rejected against the non-stationary alternative (Demirhan, Aydemir et al. 2011).

4.4.2 Cointegration test

Upon completion of the unit root test and after confirming that all of the variables were stationary of order one, the next step of the study was to examine the issue of cointegration among the study's variables in order to determine whether a long-term relationship existed among them. The cointegration test can be conducted using two alternative ways: the Eagle-Granger two-step (1978) and the maximum likelihood method developed by Johansen. The Johansen technique is preferred over the Eagle-Granger two-step for two reasons. The first is that the Johansen cointegration test can be performed if there are more than two time series involved. The second reason is that the Johansen cointegration techniques can be performed in only one

step, while the Eagle-Granger two-step method requires, as it name suggests, two steps and accomplishing it in one step generates fewer errors (Al-Tammam 2005). Therefore, the Johansen cointegration technique will be as follows:

$$Yt=\mu+yt\text{-}1+\text{----------}+\Delta\rho\ yt\text{-}\rho+\varepsilon t \qquad (38)$$

Yt is an nx1 vector of variables that is integrated of the order commonly donated (1) and εt.

This VAR can be rewritten as:

$$\Delta y_t=\mu+\eta_{1\Delta}y_{t\text{-}1}+\eta_{2\Delta}y_{t\text{-}2+}\ldots\ldots\ \eta_{\rho\_1\Delta}y_{t\_\rho+1}+\text{Л}\ y_{t\text{-}1+}\varepsilon_1 \qquad (39)$$

Where y_t=(GDP, BD, TO, CPI) is a 4x1 vector of variables that is integrated in the order, η are 4x4 coefficient matrices, and ε_1 is the vector of disturbance or white noise residuals. GDP represents the GDPPC and BD is bank development, which in this study is represented by BTOT, M3, DCP, and LBDL, while TO is openness and CPI is the consumer price index. All these variables are in logarithm form.

This technique provides two different likelihood ratio tests based on the trace statistics and the maximum eigenvalue statistics. In the trace and maximum eigenvalue tests, the null hypothesis is that the number of cointegrating vectors is less than or equal to r, where r is 0, 1, or 2. When performing the λ_{ace} and the λ_{max} test, the null hypothesis is tested against at least r + 1 Cointegration vectors and r + 1 cointegrating vectors, respectively. The trace test (λ_{rac}) suggested by Johansen and Juselius is (Demirhan, Aydemir et al. 2011):

$$\lambda race\ (r) = -T \sum_{i=r+1}^{P} \text{In}(1\text{-}\lambda\dot{t}) \qquad (40)$$

Alternatively, the maximum eigenvalue (λmax) statistic as suggested by Johansen and Juselius is:

$$\lambda\max\ (r,r+1)= -T\ \ \text{In}\ (1\text{-}\lambda r+1) \qquad (41)$$

4.4.3 Granger Causality Test

After testing the cointegration relationships of the study's variables and confirming all of the variables to be cointegrated, the next step was to examine the short- and long-run causal relationships between Islamic insurance and economic growth using a VECM. The error correction method for the choice of the variables in the model is specified below:

$$\Delta LGDPpct = a_1 + \sum_{i=1}^{P} \beta 1\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 1 i\, \Delta L\mathrm{BTOT}t - i + \sum_{i=1}^{P} \lambda 1\, i\, \Delta L\mathrm{M3}t - i + \sum_{i=1}^{P} \varphi 1\, i\, \Delta L\mathrm{DCP}t - i + \sum_{i=1}^{P} \gamma 1\, i\, \Delta L\mathrm{LBDL}t - i + \sum_{i=1}^{P} \delta 1 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 1 i\, \Delta L\mathrm{CPI}t - i + + \theta 1 ectt - 1 + \epsilon 1t \quad (42)$$

$$\Delta L\mathrm{BTOT}t = a_2 + \sum_{i=1}^{P} \beta 2\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 2 i\, \Delta L\mathrm{BTOT}t - i + \sum_{i=1}^{P} \lambda 2\, i\, \Delta L\mathrm{M3}t - i + \sum_{i=1}^{P} \varphi 2\, i\, \Delta L\mathrm{DCP}t - i + \sum_{i=1}^{P} \gamma 2\, i\, \Delta L\mathrm{LBDL}t - i + \sum_{i=1}^{P} \delta 2\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 2 i\, \Delta L\mathrm{CPI}t - i + + \theta 2 ectt - 1 + \epsilon 1t \quad (43)$$

$$\Delta L\mathrm{M3}t = a_3 + \sum_{i=1}^{P} \beta 3\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 3 i\, \Delta L\mathrm{BTOT}t - i + \sum_{i=1}^{P} \lambda 3\, i\, \Delta L\mathrm{M3}t - i + \sum_{i=1}^{P} \varphi 3\, i\, \Delta L\mathrm{DCP}t - i + \sum_{i=1}^{P} \gamma 3\, i\, \Delta L\mathrm{LBDL}t - i + \sum_{i=1}^{P} \delta 3 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 3 i\, \Delta L\mathrm{CPI}t - i + \theta 3 ectt - 1 + \epsilon 1t \quad (44)$$

$$\Delta L\mathrm{DCP} = a_4 + \sum_{i=1}^{P} \beta 4\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 4 i\, \Delta L\mathrm{BTOT}t - i + \sum_{i=1}^{P} \lambda 4\, i\, \Delta L\mathrm{M3}t - i + \sum_{i=1}^{P} \varphi 4\, i\, \Delta L\mathrm{DCP}t - i + \sum_{i=1}^{P} \gamma 4\, i\, \Delta L\mathrm{LBDL}t - i + \sum_{i=1}^{P} \delta 4 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 4 i\, \Delta L\mathrm{CPI}t - i + \theta 4 ectt - 1 + \epsilon 1t \quad (45)$$

$$\Delta L\mathrm{LBDL}t = a_5 + \sum_{i=1}^{P} \beta 5\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 5 i\, \Delta L\mathrm{BTOT}t - i + \sum_{i=1}^{P} \lambda 5\, i\, \Delta L\mathrm{M3}t - i + \sum_{i=1}^{P} \varphi 5\, i\, \Delta L\mathrm{DCP}t - i + \sum_{i=1}^{P} \gamma 5\, i\, \Delta L\mathrm{LBDL}t - i + \sum_{i=1}^{P} \delta 5 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 5 i\, \Delta L\mathrm{CPI}t - i + \theta 5 ectt - 1 + \epsilon 1t \quad (46)$$

$$\Delta LGDPpct = a_6 + \sum_{i=1}^{P} \beta 6\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 6 i\, \Delta L\mathrm{VT}t - i + \sum_{i=1}^{P} \lambda 6\, i\, \Delta L\mathrm{TR}t - i + \sum_{i=1}^{P} \varphi 6\, i\, \Delta L\mathrm{LC}t - i + \sum_{i=1}^{P} \gamma 6\, i\, \Delta L\mathrm{MC}t - i + \sum_{i=1}^{P} \delta 11 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 6 i\, \Delta L\mathrm{CPI}t - i + + \theta 6 ectt - 1 + \epsilon 1t \quad (47)$$

$$\Delta L\mathrm{VT}t = a_7 + \sum_{i=1}^{P} \beta 7\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 7 i\, \Delta L\mathrm{VT}t - i + \sum_{i=1}^{P} \lambda 7\, i\, \Delta L\mathrm{TR}t - i + \sum_{i=1}^{P} \varphi 7\, i\, \Delta L\mathrm{LC}t - i + \sum_{i=1}^{P} \gamma 7\, i\, \Delta L\mathrm{MC}t - i + \sum_{i=1}^{P} \delta 7 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 7 i\, \Delta L\mathrm{CPI}t - i + + \theta 7 ectt - 1 + \epsilon 1t \quad (48)$$

$$\Delta L\mathrm{TR}t = a_8 + \sum_{i=1}^{P} \beta 8\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 8 i\, \Delta LVTt - i + \sum_{i=1}^{P} \lambda 8\, i\, \Delta L\mathrm{TR}t - i + \sum_{i=1}^{P} \varphi 8\, i\, \Delta L\mathrm{LC}t - i +$$

$$\sum_{i=1}^{P} \gamma 8\, i\, \Delta L\mathrm{MC}t - i + \sum_{i=1}^{P} \delta 8 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 8 i\, \Delta L\mathrm{CPI}t - i + + \theta 8 ectt - 1 + \boldsymbol{\epsilon} 1t \quad (49)$$

$$\Delta L\mathrm{LC} = a_9 + \sum_{i=1}^{P} \beta 9\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 9 i\, \Delta LVTt - i + \sum_{i=1}^{P} \lambda 9\, i\, \Delta L\mathrm{TR}t - i + \sum_{i=1}^{P} \varphi 9\, i\, \Delta L\mathrm{LC}t - i +$$

$$\sum_{i=1}^{P} \gamma 9\, i\, \Delta L\mathrm{MC}t - i + \sum_{i=1}^{P} \delta 9 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 9 i\, \Delta L\mathrm{CPI}t - i + + \theta 9 ectt - 1 + \boldsymbol{\epsilon} 1t \quad (50)$$

$$\Delta L\mathrm{MC}t = a_{10} + \sum_{i=1}^{P} \beta 10\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 10 i\, \Delta LVTt - i + \sum_{i=1}^{P} \lambda 10\, i\, \Delta L\mathrm{TR}t - i + \sum_{i=1}^{P} \varphi 10\, i\, \Delta L\mathrm{LC}t - i +$$

$$\sum_{i=1}^{P} \gamma 10\, i\, \Delta L\mathrm{MC}t - i + \sum_{i=1}^{P} \delta 10 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 10 i\, \Delta L\mathrm{CPI}t - i + + \theta 10 ectt - 1 + \boldsymbol{\epsilon} 1t \quad (51)$$

$$\Delta\Delta LGDPpct = a_{11} + \sum_{i=1}^{P} \beta 11\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 11 i\, \Delta L\mathrm{GPILF}t - i + \sum_{i=1}^{P} \lambda 11\, i\, \Delta L\mathrm{GPINLF}t - i + \sum_{i=1}^{P} \varphi 11\, i\, \Delta L\mathrm{LIP}t - i$$

$$+ \sum_{i=1}^{P} \gamma 11\, i\, \Delta L\mathrm{NLIP}t - i + \sum_{i=1}^{P} \eta 11 i\, \Delta L\mathrm{NLID}t - i + \sum_{i=1}^{P} \delta 11 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 11 i\, \Delta L\mathrm{CPI}t - i +$$

$$+ \theta 11 ectt - 1 + \boldsymbol{\epsilon} 1t \quad (52)$$

$$\Delta L\mathrm{GPILF}t \quad a_{12} + \sum_{i=1}^{P} \beta 12\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 12 i\, \Delta L\mathrm{GPILF}t - i + \sum_{i=1}^{P} \lambda 12\, i\, \Delta L\mathrm{GPINLF}t - i + \sum_{i=1}^{P} \varphi 12\, i\, \Delta L\mathrm{LIP}t - i$$

$$+ \sum_{i=1}^{P} \gamma 12\, i\, \Delta L\mathrm{NLIP}t - i + \sum_{i=1}^{P} \eta 12 i\, \Delta L\mathrm{NLID}t - i \sum_{i=1}^{P} \delta 12 i\, \Delta L\mathrm{TO}t - i + \sum_{i=1}^{P} \psi 12 i\, \Delta L\mathrm{CPI}t - i + \theta 12 ectt$$

$$- + \boldsymbol{\epsilon} 1t \quad (53)$$

$$\Delta L\mathrm{GPINLF}t = a_{13} + \sum_{i=1}^{P} \beta 13\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 13 i\, \Delta L\mathrm{GPILF}t - i + \sum_{i=1}^{P} \lambda 13\, i\, \Delta L\mathrm{GPINLF}t - i + \sum_{i=1}^{P} \varphi 13\, i\, \Delta L\mathrm{LIP}t - i$$

$$+ \sum_{i=1}^{P} \gamma 13\, i\, \Delta L\mathrm{NLIP}t - i + \sum_{i=1}^{P} \eta 13 i\, \Delta L\mathrm{NLID}t - i + \sum_{i=1}^{P} \delta 13 i\, \Delta L\mathrm{TO}t - i + + \theta 13 ectt - 1$$

$$+ \boldsymbol{\epsilon} 1t \quad (54)$$

$$\Delta L\text{LIP} = a_{14} + \sum_{i=1}^{P} \beta 14\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 14 i\, \Delta L\text{GPILF}t - i + \sum_{i=1}^{P} \lambda 14\, i\, \Delta L\text{GPINLF}t - i + \sum_{i=1}^{P} \varphi 14\, i\, \Delta L\text{LIP}t - i$$
$$+ \sum_{i=1}^{P} \gamma 14\, i\, \Delta L\text{NLIP}t - i + \sum_{i=1}^{P} \eta 14 i\, \Delta L\text{NLID}t - i + \sum_{i=1}^{P} \delta 14 i\, \Delta L\text{TO}t - i + \sum_{i=1}^{P} \psi 14 i\, \Delta L\text{CPI}t - i +$$
$$+ \theta 14 ectt - 1 + \boldsymbol{\epsilon} 1t \quad (55)$$

$$\Delta L\text{NLIP}t = a_{15} + \sum_{i=1}^{P} \beta 15\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 15 i\, \Delta L\text{GPILF}t - i + \sum_{i=1}^{P} \lambda 15\, i\, \Delta L\text{GPINLF}t - i + \sum_{i=1}^{P} \varphi 15\, i\, \Delta L\text{LIP}t - i$$
$$+ \sum_{i=1}^{P} \gamma 15\, i\, \Delta L\text{NLIP}t - i + \sum_{i=1}^{P} \eta 15 i\, \Delta L\text{NLID}t - i + \sum_{i=1}^{P} \delta 15 i\, \Delta L\text{TO}t - i + \sum_{i=1}^{P} \psi 15 i\, \Delta L\text{CPI}t - i +$$
$$+ \theta 15 ectt - 1 + \boldsymbol{\epsilon} 1t \quad (56)$$

$$\Delta L\text{NLID}t = a_{16} + \sum_{i=1}^{P} \beta 16\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 16 i\, \Delta L\text{GPILF}t - i + \sum_{i=1}^{P} \lambda 16\, i\, \Delta L\text{GPINLF}t - i + \sum_{i=1}^{P} \varphi 16\, i\, \Delta L\text{LIP}t - i$$
$$+ \sum_{i=1}^{P} \gamma 16\, i\, \Delta L\text{NLIP}t - i + \sum_{i=1}^{P} \eta 16 i\, \Delta L\text{NLID}t - i + \sum_{i=1}^{P} \delta 16 i\, \Delta L\text{TO}t - i + \sum_{i=1}^{P} \psi 16 i\, \Delta L\text{CPI}t - i +$$
$$+ \theta 16 ectt - 1 + \boldsymbol{\epsilon} 1t \quad (57)$$

$$\Delta LGDPpct = a_{17} + \sum_{i=1}^{P} \beta 17\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 17 i\, \Delta L\text{AFTF}t - i + \sum_{i=1}^{P} \lambda 17\, i\, \Delta L\text{LAGTF}t - i$$
$$+ \sum_{i=1}^{P} \varphi 17\, i\, \Delta L\text{CPFT}t - i + + \sum_{i=1}^{P} \delta 17 i\, \Delta L\text{TO}t - i + \sum_{i=1}^{P} \psi 17 i\, \Delta L\text{CPI}t - i + + \theta 17 ectt - 1$$
$$+ \boldsymbol{\epsilon} 1t \quad (58)$$

$$\Delta L\text{AFTF}t = a_{18} + \sum_{i=1}^{P} \beta 18\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 18 i\, \Delta L\text{AFTF}t - i + \sum_{i=1}^{P} \lambda 18\, i\, \Delta L\text{LAGTF}t - i$$
$$+ \sum_{i=1}^{P} \varphi 18\, i\, \Delta L\text{CPFT}t - i + + \sum_{i=1}^{P} \delta 18 i\, \Delta L\text{TO}t - i + \sum_{i=1}^{P} \psi 18 i\, \Delta L\text{CPI}t - i + + \theta 18 ectt - 1$$
$$+ \boldsymbol{\epsilon} 1t \quad (59)$$

$$\Delta L\text{LAGTF}t = a_{19} + \sum_{i=1}^{P} \beta 19\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 19 i\, \Delta L\text{AFTF}t - i + \sum_{i=1}^{P} \lambda 19\, i\, \Delta L\text{LAGTF}t - i$$
$$+ \sum_{i=1}^{P} \varphi 19\, i\, \Delta L\text{CPFT}t - i + + \sum_{i=1}^{P} \delta 19 i\, \Delta L\text{TO}t - i + \sum_{i=1}^{P} \psi 19 i\, \Delta L\text{CPI}t - i + + \theta 19 ectt - 1$$
$$+ \boldsymbol{\epsilon} 1t \quad (60)$$

$$\Delta L\text{CPFT}t = a_{20} + \sum_{i=1}^{P} \beta 20\, i \Delta LGDPpct - i + \sum_{i=1}^{P} \mu 20i\, \Delta L\text{AFTF}t - i + \sum_{i=1}^{P} \lambda 20\, i\, \Delta L\text{LAGTF}t - i$$

$$+ \sum_{i=1}^{P} \varphi 20\, i\, \Delta L\text{CPFT}t - i\ + + \sum_{i=1}^{P} \delta 20i\, \Delta L\text{TO}t - i + \sum_{i=1}^{P} \psi 20i\, \Delta L\text{CPI}t - i + \ + \theta 20 ectt - 1$$

$$+ \boldsymbol{\epsilon} 1t \qquad (61)$$

Where Δ is the difference operator, $\boldsymbol{\epsilon} 1t$ is zero mean, serially uncorrelated random error terms, P represents the number of lags, and $ectt - 1$ is the error correction term, which is the lagged values of the error term derived from the long estimated long run cointegration relationship. The error correction term indicates short-run deviations from the long-run equilibrium and its size shows the speed of adjustment of any disequilibrium towards long-run equilibrium. There are two sources of causality: the first is through the error correction term, which shows the causality relationship in the long run, while the coefficient of lagged difference terms shows the causality relationship in the short run (Ang and McKibbin (2007)).

Wald statistics can be used to analyse the short-run causality between finance and economic variables. For example, in equation 42, if we want to test that $\Delta L\text{BTOT}$ does not Granger cause $\Delta LGDPpct$ in the short run, we can test the lagged dynamic terms under the null hypothesis Ho: all $\mu 1i = 0$ if the null is not rejected, it means that bank development represented by BTOT does not Granger cause economic growth. In addition, the statistical significance of the coefficient on the error correction term also shows the Granger causality between variables. In this context, statistical significance of all $\theta 1$ indicates a long-run relationship between bank development and economic growth.

Chapter 5
Empirical results

In this chapter, the empirical relationship between bank development, stock market development, conventional insurance, Islamic insurance, and economic growth in Malaysia will be evaluated. The chapter is divided into six sections. An analysis of the study's economic growth variables and other determinants of growth are presented in the first section. Section two presents the causal relationship between bank development and economic growth. In section three, the causal relationship between stock market development and economic growth is presented. Section four discusses the causal relationship between conventional insurance and economic growth, while the causal relationship between Islamic insurance and economic growth is reported in the fifth section, and lastly the conclusion appears in the final section.

5.1 Empirical results

5.1.1 Introduction

To evaluate the causal relationships between bank development, stock market development, conventional insurance, and Islamic insurance in Malaysia in this study, three steps were followed. First, the study began with a unit root test, which is necessary for cointegration analysis. Following the unit root test, a cointegration test was performed using the maximum likelihood procedure of Johansen (1988) and Johansen and Juselius (1992). Finally, long-run tests of the causal relationships among bank development, stock market development, insurance development, Islamic insurance, and economic growth and other determinants of growth in Malaysia were performed. Short-run Granger causal tests were also performed using the Wald test.

5.1.2 Unit root test

This study began its analysis of the empirical results by using four unit root tests: ADF, DF-GLS, PP, and KPSS tests. The four unit root tests were carried out using constants and trends for all variables in the models, and then using the variables' firsts differences as follows. The lag order selection is based on the Akaike information criterion (AIC), Modified Akaike (MA) and Newey-West Bandwidth. From the results of these tests, the null hypothesis of this study is that its variables contain unit roots and are non-stationary. The alternative hypothesis is that its variables do not contain unit roots and are stationary.

5.1.3 Economic growth indicators

5.1.3.1 Unit root test

In this section, the four unit root tests mentioned above are detailed in order to establish the order of integration for GDPPC, FCF, TO, and CPI, respectively, during the period from1975 to 2012. The results presented in Table 5 reveal that the non-financial variables GDPPC, FCF, TO, and CPI are non-stationary at the level, and they are stationary at the first difference .It can be concluded that all variables are I (1) series.

Table 5: Unit root test economic indicators

Variable	ADF		DF		Pp		KPPS	
	LEVEL	First and difference	LEVEL	First and difference	LEVEL	First and difference	LEVEL	First and difference
	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend
GDPPC critical values p-values	-3.436775 -3.536601 0.0619	-5.361757* -3.540328 0.0005	-2.418916** -3.190000 0.0207	-4.940667* -3.190000 0.0000	-3.471454 -3.536601 0.0575	-5.352618* -3.540328 0.0005	0.065674 0.146000	0.080836 0.146000
FCF critical values P-values.	-1.762357 -3.557759 0.6992	-3.843668** -3.562882 0.0274	-2.687224** -3.190000 0.0118	-3.901420* -3.190000 0.0005	-2.024531 -3.557759 0.5663	-3.783788** -3.562882 0.0312	0.184003 146000	0.057081 0.146000
TO critical values p-values	0.540268 -3.536601 0.9990	-3.877602** -3.540328 0.0235	-0.424794 -3.190000 0.6735	-3.793078* -3.190000 0.0006	0.448526 -3.536601 0.9987	-3.877602** -3.540328 0.0235	0.172354 0.146000	0.122480 0.146000
CPI critical values p-values	-3.079126 -3.557759 0.1282	-4.010416** -3.557759 0.0185	-1.722049 -3.190000 0.0961	-4.054230* -3.190000 0.0004	-1.892065 -3.536601 0.6384	-3.923453** -3.540328 0.0212	0.156502 0.146000	0.051505 0.146000

* and ** imply 1% and 5% levels of significance respectively.

5.1.4 The causal relationship between bank development and economic growth

5.1.4.1 Introduction

The objective of this section is to examine the causal relationship between bank development and economic growth using four indicators of bank development: BTOT, M3, DCP, and LBDL and two variables of economic growth, GDPPC and FCF through a VAR approach. The analysis of empirical results began with a unit root test, which was then followed by performing a Johansen test. The next step of the study was to examine the short- and long-run causal relationships between bank development and economic growth using a VECM.

5.1.4.2 Unit root test

The first step of this phase of the study was to test whether indicators of bank development in Malaysia are stationary, and to determine their orders of integration. For this, we used the ADF, DF-GLS, and the Phillips-Perron PP, and KPSS tests to discern the existence of a unit root in each of the time series.

The results presented in Table 7 reveal that the bank variables BTOT, M3, LBDL, and DCP are non-stationary at the level and stationary after the first difference. Therefore, it can be concluded that all the variables are I (1) series.

Table 6 present descriptive statistics on bank development and economic growth in Malaysia

Table 6: Descriptive statistics

	GDPPC	BTOT	M3	LBDL	DCP	TO	CPI
Mean	11787.61	1556195	4085103	3572036	95.33158	430404.4	67.19211
Median	9244.5	1025328	2334305	1389376	102.65	274242.2	65.55
Maximum	32083	5704141	15745686	15935784	158.5	1273167	104.9
Minimum	1816	4836.1	11322.7	8099.5	31.9	17761.3	33.3
Std. Dev.	8680.709	1836288	4454052	4523650	35.03921	408759.4	21.46267
Skewness	0.825784	1.060805	1.028587	1.288777	-0.2455	0.67028	0.11965
Kurtosis	2.568135	2.789585	3.036046	3.544992	2.319279	2.041559	1.839549
Jarque-Bera	4.614123	7.19704	6.702664	10.9896	1.115401	4.299871	2.22286
Probability	0.099553	0.027364	0.035038	0.004108	0.572524	0.116492	0.329088
Sum	447929	59135410	1.55E+08	1.36E+08	3622.6	16355369	2553.3
Observation	38	38	38	38	38	38	38

Table 7 Unit root test bank development indicators

Variable	ADF		DF		Pp		KPPS	
	LEVEL	First difference	LEVEL	First difference	LEVEL	First difference	LEVEL	First difference
	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend
BTOT critical values p-values	-0.976685 -3.536601 0.9352	-6.110086* -3.540328 0.0001	-1.155306 -3.190000 0.2556	-6.283044* -3.190000 0.0000	-0.966675 -3.536601 0.9366	-6.149884* -3.540328 0.0001	0.166036 0.146000	0.089323 0.146000
M3 critical values p-values	-1.389887 -3.536601 0.8475	-6.226532* -3.540328 0.0000	-1.386894 -3.190000 0.1740	-6.387865* -3.190000 0.0000	-1.309320 -3.536601 0.8700	-6.507059* -3.540328 0.0000	0.178867 0.146000	0.082017 0.146000
LBDL critical values p-values	-1.400994 -3.544284 0.8431	-6.939114* -3.540328 0.0000	-1.044576 -3.190000 0.3032	-7.128762* -3.190000 0.0000	-0.772408 -3.536601 0.9592	-6.911206* -3.540328 0.0000	0.174372 0.146000	0.073352 0.146000
DCP critical values p-values	-1.457318 -3.536601 0.8262	-5.571464* -3.540328 0.0003	-1.219900 -3.190000 0.2304	-5.462601* -3.190000 0.0000	-1.479237 -3.536601 0.8188	-5.560361* -3.540328 0.0003	0.174514 0.146000	0.057554 0.146000

* and ** imply 1% and 5% levels of significance respectively.

5.1.4.3 Johansen cointegration test

Upon completion of the above steps and confirming that all variables were stationary of order one, the next step of the study was to examine the issue of cointegration among the study's variables in order to determine whether or not a long-run relationship existed among them. For this purpose, a Johansen cointegration test was employed. The lag order selection was based on sequential modified LR test statistic (LR), final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC), and Hannan-Quinn information criterion (HR), the results of which are presented in the following tables.

Table 8 shows the results of the Johansen multivariate cointegration test using BTOT as an indicator for bank development and a lag length of five. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of $r \leq 0$ was rejected against the alternative $r \geq 1$ at a 1%

level of significance. The results indicate evidence of three cointegrating vectors in the equation, based on the trace statistics and the maximum eigenvalue statistics. Therefore, it can be said that there is a long-run equilibrium relation between the variables in the equation.

Table 8 Johansen cointegration Results for Model 1

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	1≥1	119.7057*	47.85613	54.63152*	27.58434
r≤ 1	r≥2	65.07415*	29.79707	44.40202*	21.13162
r≤2	r≥3	20.67213*	15.49471	20.59100*	14.26460
r≤3	r≥4	0.081128	3.841466	0.081128	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively.

Table 9 shows the results of the Johansen multivariate cointegration test using M3 as an indicator of bank development. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 (no cointegration) was rejected in favour of r ≥1 at 1% and 5% levels of significance. The results suggest evidence of four cointegrating vectors among the variables of the equation in both tests. Thus, it is possible to say that there is a long-run equilibrium relation between the variables of the equation.

Table 9 Johansen cointegration Results for Model 2

Null	Alternative	λTrace	5%critical value	λ max	5%critical value
r=0	r≥1	170.6659*	47.85613	73.14615*	27.58434
r ≤1	r≥2	97.51973*	29.79707	60.75187*	21.13162
r≤2	r≥3	36.76786*	15.49471	32.14129*	14.26460
r≤3	r=4	4.626571**	3.841466	4.626571**	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively.

Table 10 shows the results of the cointegration test using LBDL as an indicator of bank development. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r

≤ 0 was rejected in favour of r ≥1 at a 5% level of significance. The results of the trace test suggest evidence of one cointegration vector among the variables of the equation. Thus, it can be concluded that there is a long-run association between the variables of the equation.

Table 10 Johansen cointegration Results for Model 3

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	52.07348**	47.85613	23.61611	27.58434
r ≤1	r≥2	28.45737	29.79707	18.59578	21.13162
r≤2	r≥3	9.861588	15.49471	8.521487	14.26460
r≤3	r=4	1.340101	3.841466	1.340101	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively.

Table 11shows the results of the Johansen multivariate cointegration test using DCP as an indicator for bank development and a lag-length of one. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 was rejected against the alternative r ≥1 at a 5% level of significance. No cointegrating vector was found among the variables of the equation.

Table 11 Johansen cointegration Results for Model 4

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	47.05354	47.85613	21.80447	27.58434
r ≤1	r≥2	25.24907	29.79707	12.39257	21.13162
r≤2	r≥3	12.85650	15.49471	10.25384	14.26460
r≤3	r=4	2.602661	3.841466	2.602661	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 12 shows the results of the cointegration test using BTOT as an indicator for bank development. Based on the trace test and maximum eigenvalue statistics, no cointegrating vectors were found to exist among the variables of the equation.

Table 12 Johansen cointegration Results for Model 5

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	45.97318	47.85613	24.96210	27.58434
r ≤1	r≥2	21.01108	29.79707	13.21934	21.13162
r≤2	r≥3	7.791743	15.49471	6.371008	14.26460
r≤3	r=4	1.420735	3.841466	1.420735	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 13 shows the results of the Johansen multivariate cointegration test using M3 as an indicator for bank development. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 (no cointegration) was rejected in favour of the alternative r ≥1 at a 5% level of significance. No cointegrating vector was found among the variables of the equation.

Table 13 Johansen cointegration Results for Model 6

Null	Alternative	λ Trace	%critical value	λ max	5%critical value
r=0	r≥1	45.28354	47.85613	20.74726	27.58434
r ≤1	r≥2	24.53627	29.79707	14.61482	21.13162
r≤2	r≥3	9.921456	15.49471	9.093520	14.26460
r≤3	r=4	0.827936	3.841466	0.827936	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 14 shows the results of the cointegration test using LBDL as an indicator of bank development. Both the trace test and maximum eigenvalue statistic had values larger than the critical values at a 5% level of significance. Therefore, the null hypothesis of no cointegrating vectors (r ≤ 0) was rejected in favour of the alternative r ≥1. The trace test and maximum eigenvalue statistic indicate four and three cointegrating vectors, respectively, at 1% and 5% significance levels. Thus, it is possible to say that there is a long-run equilibrium relation among the variables of the equation.

Table 14 Johansen cointegration Results for Model 7

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	96.84663*	47.85613	53.38313*	27.58434
r ≤1	r≥2	43.46350*	29.79707	20.86762	21.13162
r≤2	r≥3	22.59588*	15.49471	17.64310**	14.26460
r≤3	r=4	4.952785**	3.841466	4.952785**	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 15 presents the results of the Johansen multivariate cointegration test using DCP as an indicator of bank development. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 (no cointegrating vectors) was rejected in favour of the alternative r ≥1 at a 1% level of significance, as it suggested evidence of one cointegrating vector among the variables used.

Table 15 Johansen cointegration Results for Model 8

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	73.33522*	47.85613	50.22935*	27.58434
r ≤1	r≥2	23.10587	29.79707	15.32776	21.13162
r≤2	r≥3	7.778111	15.49471	7.307127	14.26460
r≤3	r=4	0.470984	3.841466	0.470984	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 16 presents the long-run coefficients of cointegrating vectors normalising on GDPPC in only three different models (1,2, 3); model 4 is dropped from the table since the results of both the trace test and maximum eigenvalue statistics in Table 7 indicate no evidence of cointegrating vector among the variables used. Model 1 shows a positive relationship between economic growth (represented by real GDPPC) and banking development (represented by BTOT) that is not statistically significant. However, the relationship among real GDPPC, trade openness, and the CPI is found to be negative, though not statistically significant so. The

adjustment or long-run elasticity of the GDPPC is -0.284285, or 28.4%, and has the correct sign. Model 2 takes liquid liabilities as a proxy for bank development and shows GDPPC, M3, TO, and the CPI to be negatively related. The error correction coefficient in this model is correctly signed and not statistically significant at a 5% level, and the adjustment speed of the cointegrating vector in the model is 54%. The negative relationship between economic growth represented by GDPPC and bank development represented by M3 is in line with Waqabaca's empirical findings (2004). On TO, the results are also consistent with the empirical findings of Omoke (2010). Model 3 uses LBDL as a proxy for bank development and the results show that the variables of GDPPC, LBDL, and TO in the model are positively related. However, the relationship between real GDPPC and CPI is found to be negative; the adjustment or long-run elasticity of GDPPC is 0.159314or 15%, and the error correction coefficient is incorrectly signed (positive) and not statistically significant. The LBDL results are consistent with the findings of Ghali (1999) and Ndako (2010).

Table 16: Long-run multivariate cointegrating vector normalised on GDPPC

Model 1	GDPPC	BTOT	TO	CPI
	1	0.013906	-0.050358	-2.361924
		(0.02057)	(0.07541)	(0.28343)
Model 2	GDPPC	M3	TO	CPI
	1	-0.019314	-0.249000	-1.156017
		(0.00849)	(0.02929)	(0.15322)
Model 3	GDPPC	LBDL	TO	CPI
	1	0.085110	0.136088	-3.837999
		(0.05691)	(0.17234)	(0.58731)

Table 17 presents the long-run coefficients of cointegrating vectors normalising LBDL and DCP in each of the two models. However, models 5 and 6 are dropped from Table 13 since the results of both the trace test and maximum eigenvalue statistics in Tables 8 and 9 indicate no

evidence of cointegrating vectors among the variables used. Model 7 uses LBDL as a proxy for bank development and shows a positive relationship between LBDL and TO. All of the cointegrating coefficients are statistically significant. On the other hand, the relationship among LBDL, CPI, and FCF is negative and also statistically significant. The adjustment or long-run elasticity of LBDL is -0.871373, or 87.13%, and the error correction coefficient is correctly signed (negative). Model 8 uses DCP as a proxy for bank development and shows a negative relationship between DCP and FCF. The relationship between CPI and TO is positive and statistically significant at a 5% level. The adjustment or long-run elasticity of DCP is -0.266196, or 26.6%, and has the correct sign (negative).

Table 17: Long-run multivariate cointegrating vector normalised on LBDL and DCP

Model 7	LBDL	FCF	TO	CPI
	1	-2.374292	1.556368	-3.005533
		(0.32350)	(0.67737)	(2.81489)
Model 8	DCP	FCF	TO	CPI
	1	-2.471785	0.139179	7.132878
		(0.26377)	(0.45279)	(1.90005)

This study carried out misspecification tests for serial correlation (the Lagrange multiplier), as well as normality and heteroskedasticity tests for Models 1–8. The results obtained from the three tests are summarized in Table 18, which shows that two models passed serial correlation However; the other six models (1,2, 4, 5, 6 and 8) failed to pass the serial correlation, with probability of less than 5%. Seven of the models passed the normality tests, which were conducted using joint Jarque-Bera statistics. However, only one model (3) failed to pass the normality test. As for the heteroskedasticity test, the results show that all models from 1 to 8 passed the test.

Table 18
Test on VEC

	Serial Correlation LM Test		Jarque Bera Normality Test		Heteroskedasticity Test	
	Chi-Square	Prob	Jarque Bera Stat	Prob	Chi-Square	Prob
Model 1	22.58008	0.0004	0.352562	0.838383	28.33487	0.2462
Model 2	24.38941	0.0002	0.442248	0.801617	25.03242	0.4040
Model 3	0.142396	0.7059	11.87226	0.002642	8.248866	0.4095
Model 4	26.84444	0.0001	5.589724	0.061123	19.58522	0.7201
Model 5	26.53772	0.0000	3.608575	0.164592	18.84460	0.5319
Model 6	15.32203	0.0041	1.813246	0.803886	19.92839	0.4624
Model 7	7.225225	0.1245	3.789471	0.150358	13.88768	0.8361
Model 8	8.518757	0.0141	2.671347	0.262981	11.44766	0.4910

5.1.4.4 Causality test

The results of the Johansen multivariate cointegration tests indicated that there were cointegration vectors in existence among the variables that represented bank development and economic growth. Following this discovery, Granger causality tests were performed. Models 4, 5, and 6, however, are omitted from causality tests since there is no evidence of cointegration. The results of the short- and long-run Granger causality tests are given in Tables 19–28.

The results of the short-run tests in Table 19 show no Granger causality between BTOT and GDPPC or between TO and GDPPC as indicators of economic development. However, they indicate Granger causality between GDDPC and CPI in the short run. As for the long-run Granger causality tests, the results in Table 20 show unidirectional Granger causality in terms of BTOT, TO, CPI, and GDPPC. In general, the study found unidirectional Granger causality between bank development as represented by BTOT and economic growth as represented by

GDPPC in the long run only. This arises from the probability values reported in Tables 19 and 20: the null hypothesis that BTOT does not Granger cause GDPPC or GDPPC cannot be rejected. The null hypothesis that BTOT, TO, and CPI do not cause GDPPC cannot be rejected but the null hypothesis that GDPPC, TO, and CPI do not cause BTOT can be rejected. This shows that Granger causality runs in one direction from BTOT, TO, and CPI to GDPPC.

Table 19: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
BTOT does not Granger Cause GDPPC	3.100799	0.6844
GDPPC does not Granger Cause BTOT	7.200706	0.2061
TO does not Granger Cause GDPPC	9.520742	0.0900
GDPPC does not Granger Cause TO	6.985575	0.2217
CPI does not Granger Cause GDPPC	20.43830*	0.0010
GDPPC does not Granger Cause CPI	10.31758	0.0667

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 20: Long -run Granger causality

Null Hypothesis:	ECT	Probability
BTOT , TO, CPI does not cause GDPPC	-1.004430	0.0277**
GDPPC TO, CPI does not cause BTOT	-0.284285	0.7432

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality tests reported in Tables 21 and 22 indicate no short-run Granger causality between GDPPC and M3. However, they indicate Granger causality between GDDPC and CPI and between GDDPC and TO in the short run. The long-run causality tests indicate that there is unidirectional causality among M3, TO, CPI, and GDPPC. Overall, the study found a causal relationship between bank development in the form of M3 and economic growth as represented by GDPPC only in the long run. This arises from the fact that, based on the probability values reported in Tables 21 and 22, the null hypothesis that M3 does not Granger cause GDPPC or GDPPC does not Granger cause M3 cannot be rejected. The null hypothesis that M3, TO, and CPI do not cause GDPPC cannot be rejected, but the null hypothesis that

GDPPC, TO, and CPI does not cause M3 can be rejected. This shows that Granger causality runs in one direction from M3, TO, and CPI to GDPPC.

Table 21: Short-run Granger causality

Null Hypothesis:	Chi-square	Probability
M3 does not Granger Cause GDPPC	5.546916	0.3528
GDPPC does not Granger Cause M3	6.860053	0.2313
TO does not Granger Cause GDPPC	48.00147*	0.0000
GDPPC does not Granger Cause TO	6.970080	0.2229
CPI does not Granger Cause GDPPC	44.20922*	0.0000
GDPPC does not Granger Cause CPI	10.62931	0.0592

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 22: Long -run Granger causality

Null Hypothesis:	ECT	Probability
M3 , TO, CPI does not cause GDPPC	-0.849122**	0.0170
GDPPC , TO, CPI does not cause M3	-0.544093	0.5888

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality tests given in Tables 23 and 24 indicate no short-run Granger causality between LBDL and GDPPC or between TO and GDDPC. However, they indicate Granger causality between GDDPC and CPI in the short run. The results suggest that there is no Granger causality among LBDL, TO, CPI, and GDPPC in the long-run tests. Overall, the study found no Granger causality between bank development (represented by LBDL) and economic growth (represented by real GDPPC) in short- and long-run tests.

Table 23: Short-run Granger causality

Null Hypothesis:	Chi-square	Probability
LBDL does not Granger Cause GDPPC	0.897499	0.3435
GDPPC does not Granger Cause LBDL	0.154652	0.6941
TO does not Granger Cause GDPPC	5.922492**	0.0149
GDPPC does not Granger Cause TO	0.163285	0.6862
CPI does not Granger Cause GDPPC	2.179550	0.1399
GDPPC does not Granger Cause CPI	0.592728	0.4414

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 24: Long -run Granger causality

Null Hypothesis:	ECT	Probability
LBDL , TO, CPI does not cause GDPPC	0.159314	0.1015
GDPPC , TO, CPI does not cause LBDL	0.016877	0.6190

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality tests given in Tables 25 and 26 suggest that there is Granger causality between FCF and LBDL and between CPI and LBDL in the short run. They also indicate that there is bidirectional causality between TO and LBDL. As for the long-run tests, the results in Table 25 show there to be a long-run bidirectional relationship among LBDL, TO, CPI, and FCF. Overall, the study found Granger causality between bank development (as represented by LBDL) and economic growth (as represented by FCF) in the short-run tests, and found bidirectional causality in the long-run tests. Based on the probability values reported in Tables 25 and 26, the null hypothesis that LBDL does not Granger cause FCF can be rejected, but the null hypothesis that FCF does not Granger cause LBDL cannot be rejected. The null hypothesis that LBDL, TO, and CPI do not cause FCF and the null hypothesis that FCF, TO, and CPI do not cause LBDL can both be rejected. This shows Granger causality to run in both directions from LBDL, TO, and CPI to FCF and from FCF, TO, and CPI to LBDL.

Table 25: Short-run Granger causality

Null Hypothesis:	Chi-square	Probability
FCF does not Granger Cause LBDL	3.827467	0.4299
LBDL does not Granger Cause FCF	17.53996**	0.0015
TO does not Granger Cause LBDL	11.57229**	0.0208
LBDL does not Granger Cause TO	12.43186**	0.0144
CPI does not Granger Cause LBDL	2.839700	0.5850
LBDL does not Granger Cause CPI	20.41798*	0.0004

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 26: Long -run Granger causality

Null Hypothesis:	ECT	Probability
FCF , TO, CPI does not cause LBDL	-0.766979**	0.0544
LBDL, TO, CPI does not cause FCF	-0.871373**	0.0015

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality tests in Tables 27 and 28 indicate a negative short-run causality among CPI, TO, and DCP and a positive short-run causality between FCF and DCP; they also indicate a positive long-run causality that runs in one direction from DCP, TO, and CPI to FCF. Overall, the study found causality between bank development (as represented by DCP) and economic growth (as represented by FCF). In addition, evidence of a unidirectional long-run causality was found. Based on the probability values reported in the Tables 27 and 28, the null hypothesis that FCF does not Granger cause DCP is not rejected, but the null hypothesis DCP does not Granger Cause FCF is rejected. The null hypothesis that FCF, TO, and CPI do not cause DCP is not rejected, while the null hypothesis that DCP, TO, and CPI do not cause FCF is rejected.

Table 27: Short-run Granger causality

Null Hypothesis:	Chi-square	Probability
FCF does not Granger Cause DCP	0.459742	0.7946
DCP does not Granger Cause FCF	8.366380**	0.0152
TO does not Granger Cause DCP	4.498470	0.1055
DCP does not Granger Cause TO	3.769463	0.1519
CPI does not Granger Cause DCP	0.727611	0.6950
DCP does not Granger Cause CPI	0.235165	0.8891

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 28: Long -run Granger causality

Null	ECT	Probability
FCF , TO, CPI does not cause DCP	-0.347677	0.1767
DCP, TO, CPI does not cause FCF	-0.266196*	0.0001

(*) and (**) indicate level of significance at 1% and 5% respectively.

5.1.4.5 Conclusion

The objective of this section is to examine the causal relationship between bank development and economic growth using annual time series data from 1975 to 2012. VECM-based causality tests are used in this section in order to establish the link between bank development represented by BTOT, M3, DCP, and LBDL and economic growth. The empirical results suggests that there is short-run unidirectional causality between bank development and economic growth using LBDL and DCP as indicators for bank development and using FCF as an indicator for economic growth. However, when bank development is represented by BTOT, M3, or LBDL, the results obtained indicate no short-run causality between bank development and economic growth. As for the long run, there is evidence that bank development leads to growth when BTOT, M3, LBDL, and DCP are used, thereby supporting the finance-led growth hypothesis.

5.1.5 The causal relationship between stock market development and economic growth.

5.1.5.1 Introduction

This section begins with an analysis of the empirical results via a unit root test, which is then followed by a Johansen test. Following this, the short- and long-run causal relationships between stock market development and economic growth is examined using a VECM. The study uses eight models based on the four indictors of stock market development employed. The first five models (9, 10, 11,12 and 13) apply VT, TR, LC, MC and IPOs. Other variables included in the first four models are: GDPPC, TO, and CPI. The second set of five models (14, 15, 16, 17, 18) uses the same stock market variables mentioned above, but the other variables included in the models are FCF, TO, and CPI.

5.1.5.2 Unit root test

The results in Table 30 reveal the stock market variables (VT, TR, LC, MC and IPOs) to be non-stationary at the level and stationary after the first difference, expect for VT, TR, and MC which are I(0) based on the KPSS test. Meanwhile, since three out four unit roots tests for VT, TR, and MC indicate I (1) series, it can therefore be concluded that all variables are I (1). Table 29 present descriptive statistics on the stock market and economic growth in Malaysia.

Table 29: Descriptive statistic

	GDPPC	FCF	VT	TR	LC	MC	IPOs	TO	CPI
Mean	16401.08	107706.7	65.37667	38.38167	735.5000	160.2292	41262.13	650450.4	16401.08
Median	14892.50	95415.50	41.26500	32.53000	803.5000	140.9500	32762.00	637516.7	14892.50
Maximum	32083.00	241733.0	229.7100	97.87000	1036.000	328.9000	137435.0	1273167.	32083.00
Minimum	5958.000	30599.00	17.73000	17.53000	251.0000	81.00000	6821.000	128682.6	5958.000
Std. Dev.	7759.236	52001.24	56.66715	19.39850	261.0036	64.32703	33116.36	362414.1	7759.236
Skewne	0.526219	0.786635	1.682779	1.627352	-0.596843	1.396882	1.469788	0.168680	0.526219
Kurtoss	2.178813	3.188457	4.660461	5.127120	1.929809	4.051746	4.582887	1.764266	2.178813
Jarque Bera	1.781975	2.510692	14.08412	15.11773	2.570194	8.911287	11.14664	1.64085	1.155649
Probability	0.410251	0.284977	0.000874	0.000521	0.276624	0.011613	0.003798	0.440245	0.561118
Sum	393626.0	2584960.	1569.040	921.1600	17652.00	3845.500	990291.0	15610810	1925.900
Observation	24	24	24	24	24	24	24	24	24

Table 30 : Unit root test stock market indicators

Variable	ADF		DF		Pp		KPPS	
	LEVEL	First and difference	LEVEL	First and difference	LEVEL	First and difference	LEVEL	First and difference
	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend
VT critical values p-values	-3.411749 -3.690814 0.0811	-5.416001* -3.644963 0.0015	-1.903454 -3.190000 0.0731	-5.722214* -3.190000 0.0000	-3.318666 -3.622033 0.0882	-7.764593* -3.632896 0.0000	0.103465 0.146000	
TR critical values p-values	-3.551034 -3.733200 0.0677	-6.831668 -3.644963 0.0001	-2.918664** -3.190000 0.0112	-7.200668* -3.190000 0.0000	-3.294906 -3.622033 0.0920	-5.479831* -3.632896 0.0011	0.100507 0.146000	
LC critical values p-values	-0.339360 -3.622033 0.9838	-3.924218** -3.673616 0.0316	-1.195663 -3.190000 0.2458	-3.582161* -3.190000 0.0018	-0.388480 -3.622033 0.9817	-6.128221* -3.644963 0.0003	0.188561 0.146000	0.051755 0.146000
MC critical values p-values	-3.394438 -3.622033 0.0768	-4.736069* -3.644963 0.0058	-2.192736** -3.190000 0.0417	-4.995134* -3.190000 0.0001	-3.281960 -3.622033 0.0942	-7.087356* -3.632896 0.0000	0.087873 0.146000	
IPOS critical values p-values	-1.910509 -3.622033 0.6166	-5.161072* -3.644963 0.0024	-2.384590** -3.190000 0.0261	-4.852740* -3.190000 0.0001	-1.623630 -3.622033 0.7515	-9.292987* -3.632896 0.0000	0.171207 0.146000	0.127825 0.146000

(*) and (**) indicate level of significance at 1% and 5% respectively.

5.1.5.3 Johansen cointegration test

After finishing the first steps and confirming that all variables were stationary of order one, the next step was to examine the issue of cointegration among the variables in order to answer whether or not a long-run relationship exists among the variables. For this purpose, the Johansen cointegration method was employed. The lag order selection was based on sequential modified LR test statistic (LR), final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC), and Hannan-Quinn information criterion (HR), the results of which are presented in the following tables. Table 31 represents the results of the Johansen multivariate cointegration test using VT as an indicator of stock market development. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of $r \leq 0$ (no cointegrating)

was rejected in favour of the alternative r ≥1 at a1% and 5% level of significance The results indicate evidence of three cointegrating vectors in the equation, based on the trace statistics and the maximum eigenvalue statistics. Therefore, it can be said that there is a long-run equilibrium relation between the variables in the equation.

Table 31 Johansen cointegration Results for Model 9

Null	Alternative	λTrace	5%critical value	λ max	5%critical value
r=0	r≥1	111.6741*	47.85613	67.40640*	27.58434
r ≤1	r≥2	44.26766*	29.79707	24.95193**	21.13162
r≤2	r≥3	19.31573**	15.49471	19.21429*	14.26460
r≤3	r=4	0.101436	3.841466	0.101436	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 32 shows the results of the Johansen multivariate cointegration test using TR as an indicator of stock market development. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 was rejected in favour of the alternative r ≥1 at a 1% and 5% level of significance. The results suggest evidence of three cointegrating vectors among the variables of the equation in both tests. Thus, it is possible to say that there is a long-run equilibrium relation between the variables of the equation.

Table 32 Johansen cointegration Results for Model 10

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	98.36588*	47.85613	60.70097*	27.58434
r ≤1	r≥2	37.66490*	29.79707	22.08616**	21.13162
r≤2	r≥3	15.57874**	15.49471	15.56083**	14.26460
r≤3	r=4	0.017909	3.841466	0.017909	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 33 presents the results of the cointegration test using LC as an indicator of stock market development. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of $r \leq 0$ (no cointegrating) was rejected in favour of the alternative $r \geq 1$ at a 1% and 5% level of significance. The results of the trace test suggest one cointegrating vector to exist among the variables of the equation. The maximum eigenvalue test indicates two cointegrating vectors to be in existence among the variables of the equation. Thus, it can be concluded that there is a long-run association between the variables of the equation.

Table 33 Johansen cointegration Results for Model 11

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	78.25051*	47.85613	44.89680*	27.58434
r ≤1	r≥2	33.35371**	29.79707	22.00393**	21.13162
r≤2	r≥3	11.34978	15.49471	10.29269	14.26460
r≤3	r=4	1.057084	3.841466	1.057084	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 34 shows the results of Johansen multivariate cointegration test using MC as an indicator of stock market development. Based on the trace test and maximum eigenvalue statistics, no cointegrating vector was found among the variables of the equation.

Table 34 Johansen cointegration Results for Model 12

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	42.11582	47.85613	21.74022	27.58434
r ≤1	r≥2	20.37560	29.79707	13.90340	21.13162
r≤2	r≥3	6.472202	15.49471	6.207287	14.26460
r≤3	r=4	0.264915	3.841466	0.264915	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 35 presents the results of the cointegration test using IPOs as an indicator of stock market development. Both the trace test and maximum eigenvalue statistics have values larger

than the critical values at a 5% level of significance. Therefore, the null hypotheses of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1. The results of the trace test suggest evidence of one cointegration vector among the variables of the equation. Thus, it can be concluded that there is a long-run association between the variables of the equation.

Table 35 Johansen cointegration Results for Model 13

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	50.46694**	47.85613	24.49533	27.58434
r ≤1	r≥2	25.97161	29.79707	18.08576	21.13162
r≤2	r≥3	7.885848	15.49471	7.370547	14.26460
r≤3	r=4	0.515301	3.841466	0.515301	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 36 presents the results of the cointegration test using VT as an indicator of stock market development. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of the cointegrating vector r ≤ 0 was rejected in favour of the alternative r ≥ 1 at a1% and 5% level of significance. The results indicated there were two cointegrating vectors in existence among the variables of the equation. Thus, it is possible to say that there is a long-run equilibrium relation among the variables of the equation.

Table 36 Johansen cointegration Results for Model 14

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	76.31910*	47.85613	42.62459*	27.58434
r ≤1	r≥2	33.69451**	29.79707	22.09659**	21.13162
r≤2	r≥3	11.59792	15.49471	11.34939	14.26460
r≤3	r=4	0.248531	3.841466	0.248531	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 37 presents the results of the cointegration test using TR as an indicator of stock

market development. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1 at a 1% and 5% level of significance, as it suggested evidence of two cointegrating vector among the variables used.

Table 37 Johansen cointegration Results for Model 15

Null	Alternative	λTrace	5%critical value	λ max	5%critical value
r=0	r≥1	72.44598*	47.85613	42.03969*	27.58434
r ≤1	r≥2	30.40629**	29.79707	21.48860**	21.13162
r≤2	r≥3	8.917693	15.49471	8.898655	14.26460
r≤3	r=4	0.019038	3.841466	0.019038	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 38 presents the results of the Johansen multivariate cointegration test using LC as an indicator of stock market development. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1 at a 1% and 5% level of significance. The results of both the tract and maximum eigenvalue tests indicate evidence of two cointegrating vector among the variables that is significant at 1% and 5%.

Table 38 Johansen cointegration Results for Model 16

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	66.22596*	47.85613	33.70898*	27.58434
r ≤1	r≥2	32.51698**	29.79707	24.09975**	21.13162
r≤2	r≥3	8.417223	15.49471	8.160417	14.26460
r≤3	r=4	0.256806	3.841466	0.256806	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 39 presents the results of the cointegration test using MC as an indicator of stock

market development. Both the trace test and maximum eigenvalue statistics have values larger than the critical values at a 5% level of significance. Therefore, the null hypotheses of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1. The trace test indicates one cointegrating vectors at a 5% significance level. Thus, it can be said that there is a long-run equilibrium relation between the variables of the equation.

Table 39 Johansen cointegration Results for Model 17

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	49.74479**	47.85613	25.90384	27.58434
r ≤1	r≥2	23.84094	29.79707	14.61077	21.13162
r≤2	r≥3	9.230170	15.49471	9.229315	14.26460
r≤3	r=4	0.000855	3.841466	0.000855	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 40 presents the results of the cointegration test using IPOs as an indicator of stock market development. Both the trace test and maximum eigenvalue statistics have values larger than the critical values at a 5% level of significance. Therefore, the null hypotheses of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1. The trace test indicates one cointegrating vectors at a 5% significance level. Thus, it can be said that there is a long-run equilibrium relation between the variables of the equation.

Table 40 Johansen cointegration Results for Model 18

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	49.58131**	47.85613	24.13714	27.58434
r ≤1	r≥2	25.44417	29.79707	14.98312	21.13162
r≤2	r≥3	10.46105	15.49471	9.995682	14.26460
r≤3	r=4	0.465364	3.841466	0.465364	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 41 presents the long-run coefficients of cointegrating vectors normalising on GDPPC in four different models. Model 12 is dropped from the table since the results of both trace test and maximum eigenvalue statistics in Table 34 indicate no evidence of cointegrating vector among the variables used. Model 9 uses VT as a proxy for stock market development. GDPPC shows a positive relationship with VT and TO, while the relationship between GDPPC and CPI is negative. The long-run elasticity of GDPPC is 0.952703. The error correction coefficient is incorrectly signed (positive) and statistically significant. Model 10 uses TR as a proxy for stock market development. GDPPC shows a positive relationship with TR and TO, while the relationship between GDPPC and CPI is negative. The long-run elasticity of the GDPPC is 0.887599. The error correction coefficient is incorrectly signed (positive) and not statistically significant. The positive relationship between stock market development and economic growth is in line with the empirical results of Beck and Levine (2004) and Choong, Yusop et al. (2005). Model 11 uses LC as a proxy for stock market development. GDPPC shows a positive relationship with no listed companies, but GDPPC, TO, and CPI are negatively related and not statistically significant. The adjustment or long-run elasticity of GDPPC is 0.197446 and has an incorrect sign (positive). Model 13 uses IPOs as a proxy for stock market development. It shows that the relationship among GDPPC, IPOs, and CPI and TO is negative and not statistically significant. The adjustment or long-run elasticity of GDPPC is 0.379677, or 37%, and has the incorrect sign (positive).

Table 41: Long-run multivariate cointegrating vector normalised on GDPPC

Model 9	GDPPC	TR	TO	CPI
	1	0.017011	0.309300	-3.916180
		(0.00578)	(0.03144)	(0.11797)
Model 10	GDPPC	TR	TO	CPI
	1	0.010383	0.201700	-3.021538
		(0.01100)	(0.02747)	(0.03731)
Model 11	GDPPC	LC	TO	CPI
	1	0.191222	-0.196206	-3.296619
		(0.11894)	(0.14338)	(0.17905)
Model 13	GDPPC	IPOs	TO	CPI
	1	-0.089703	-0.003442	-2.414281
		(0.03639)	(0.07715)	(0.34274)

Table 42 presents the long-run coefficients of cointegrating vectors normalising on FCF in four different models. Model 14 uses VT as a proxy for stock market development and indicates a negative relationship among FCF, VT, and CPI. All cointegrating coefficients are statistically significant. On the other hand, the model shows a positive relationship between FCF and TO. The error correction coefficient is correctly signed with an adjustment of -125.8%. Model 15 uses TR as a proxy for stock market development with similar results to model 14. FCF indicates a negative relationship with TR and CPI, while the relationship between FCF and TO is positive. The error correction coefficient is correctly signed (negative) and not statistically significant with an adjustment speed of -101.51%. Model 16 shows a positive association between the stock market as represented by LC and economic growth as represented by FCF that is not statistically significant. The relationship among FCF, TO, and CPI is negative and also not statistically significant. The adjustment or long-run elasticity of model 16 is -0.363311, or 36.3%, and has the correct sign. Model 17 uses market capitalization as a proxy for stock market development and shows FCF, MC, and CPI to be negatively related. The relationship between

FCF and TO is positive. The error correction coefficient is correctly signed and statistically significant. The adjustment or long-run elasticity of model 17 is -0.591220. Model 18 uses IPOs as a proxy for stock market development and shows FCF, IPOs, and TO to be negatively related. The relationship between FCF and CPI is positive. The error correction coefficient is incorrectly signed and not statistically significant. The adjustment or long-run elasticity of Model 17 is 0.070615.

Table 42: Long-run multivariate cointegrating vector normalised on FCF

Model 14	FCF	VT	TO	CPI
	1	-0.184005	0.998201	-4.179420
		(0.02558)	(0.14587)	(0.18464)
Model 15	FCF	TR	TO	CPI
	1	-0.403389	0.990596	-4.120105
		(0.05183)	(0.14822)	(0.19089)
Model 16	FCF	LC	TO	CPI
	1	3.741724	-3.307346	-1.138875
		(0.61573)	(0.73392)	(1.57412)
Model 17	FCF	MC	TO	CPI
	1	-0.472532	0.502239	-4.701123
		(0.08025)	(0.24046)	(0.90362)
Model 18	FCF	IPOs	TO	CPI
	1	-1.261468	-0.497982	2.964965
		(0.22799)	(0.47667)	(2.14081)

The study carried out misspecification tests for serial correlation (the Lagrange multiplier), as well as normality and heteroskedasticity tests for Models 9–18. The results of the three tests are summarized in Table 43, which indicates that all variables representative of the stock market in Models 9–18 passed serial correlation with the exception of four models (9, 10, 11, and 12), which had a probability of less than 5%. As for the normality test, which was conducted through joint Jarque-Bera statistics, the test indicated all models to have passed with the exception of model 18. Finally, with regard to the heteroskedasticity test, all models from 9-

18 passed the test.

Table 43
test on VEC

	Serial Correlation LM Test		Jarque Bera Normality Test		Heteroskedasticity Test	
	Chi-Square	Prob	Jarque Bera Stat	Prob	Chi-Square	Prob
Model 9	6.961928	0.0308	0.851479	0.653286	14.96473	0.2434
Model 10	6.669641	0.0356	0.187810	0.910369	14.21551	0.2872
Model 11	6.713807	0.0348	0.335259	0.845667	12.94813	0.3728
Model 12	8.361981	0.0153	1.726298	0.421832	15.48948	0.2158
Model 13	1.566418	0.2107	1.1887754	0.389116	6.522300	0.5889
Model 14	2.606780	0.2716	1.416461	0.492515	8.709565	0.7275
Model 15	4.011919	0.1345	0.917213	0.632164	7.690410	0.8088
Model 16	0.526456	0.4681	0.049993	0.975313	9.469283	0.3043
Model 17	2.899480	0.0886	1.172760	0.556337	9.114463	0.3327
Model 18	0.442248	0.5060	52.42774	0.000000	6.178825	0.6272

5.1.5.4 Causality test

The results of Johansen multivariate cointegration indicated that there was cointegration vector existence among the variables representing the stock market or the determinants of economic growth. The Granger causality test is detailed in this section. The results of the short- and long-run causality tests are reported in Tables 44–61.

The results obtained from the Granger causality test presented in Tables 44 and 45 show short-run causality between VT and GDPPC and CPI and GDPPC, respectively, in single direction, and bidirectional short-run causality between TO and GDPPC. The long-run causality tests indicate there to be long run causality among VT, TO, CPI, and GDPPC. Overall, the study

found causality between stock market development (as represented by VT) and economic growth (as represented by GDPPC) in short- and long-run tests. This arises from the probability values reported tables 44,45: the null hypothesis that VT does not Granger Cause GDPPC is not rejected but, GDPPC does not Granger Cause VT is rejected. The null hypothesis that VT , TO, CPI does not cause GDPPC is rejected but, the null hypothesis that GDPPC TO, CPI does not cause VT is not rejected. This shows that Granger causality runs in one direction from GDPPC, TO, CPI, to VT.

Table 44: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
VT does not Granger Cause GDPPC	0.551058	0.7592
GDPPC does not Granger Cause VT	13.00525*	0.0015
TO does not Granger Cause GDPPC	22.82059*	0.0000
GDPPC does not Granger Cause TO	15.56615*	0.0004
CPI does not Granger Cause GDPPC	12.40867*	0.0020
GDPPC does not Granger Cause CPI	1.375517	0.5027

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 45: Long -run Granger causality

Null Hypothesis:	ECT	Probability
VT , TO, CPI does not cause GDPPC	-0.505962**	0.0401
GDPPC TO, CPI does not cause VT	0.952703**	0.0238

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results obtained from the Granger causality test presented in Tables 46 and 47 show short-run causality between TR and GDPPC and CPI and GDPPC, respectively, in single direction, and bidirectional short-run causality between TO and GDPPC. The long-run causality tests indicate there to be long run causality among TR, TO, CPI, and GDPPC. Overall, the study found causality between stock market development (as represented by TR) and economic growth (as represented by GDPPC) in short- and long-run tests. This arises from the probability values

reported in tables 46,47: the null hypothesis that TR does not Granger Cause GDPPC is not rejected but, GDPPC does not Granger Cause TR is rejected. The null hypothesis that TR , TO, CPI does not cause GDPPC is rejected but, the null hypothesis that GDPPC TO, CPI does not cause TR is not rejected. This show Granger causality to run in one way from TR, TO, CPI, to GDPPC.

Table 46: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
TR does not Granger Cause GDPPC	1.207340	0.5468
GDPPC does not Granger Cause TR	5.703548	0.0577
TO does not Granger Cause GDPPC	14.62557*	0.0007
GDPPC does not Granger Cause TO	8.829903**	0.0121
CPI does not Granger Cause GDPPC	12.53478*	0.0019
GDPPC does not Granger Cause CPI	0.480730	0.7863

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 47: Long -run Granger causality

Null Hypothesis:	ECT	Probability
TR , TO, CPI does not cause GDPPC	-0.681364**	0.0431
GDPPC TO, CPI does not cause TR	0.954854**	0.0508

(*) and (**) indicate level of significance at 1% and 5% respectively.

Tables 48 and 49 present the results of the Granger causality test and show no short-run Granger causality exists between LC as a proxy of stock market and GDPPC as a proxy of economic development and between TO and CPI and economic development. The long-run causality test indicates there to be no long-run causality among LC, TO, CPI, and GDPPC. Overall, the study found no causality between stock market (as represented by LC) and economic growth (as represented by GDPPC) in both the short- and long-run tests.

Table 48: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
LC does not Granger Cause GDPPC	0.407385	0.8157
GDPPC does not Granger Cause LC	0.371925	0.8303
TO does not Granger Cause GDPPC	5.672910	0.0586
GDPPC does not Granger Cause TO	1.794783	0.4076
CPI does not Granger Cause GDPPC	2.913490	0.2330
GDPPC does not Granger Cause CPI	1.739180	0.4191

(*) and (**) indicate level of significance at 1% and 5% respectively

Table 49: Long -run Granger causality

Null Hypothesis:	ECT	Probability
LC , TO, CPI does not cause GDPPC	-0.166345	0.5452
GDPPC TO, CPI does not cause LC	-0.010899	0.9891

(*) and (**) indicate level of significance at 1% and 5% respectively

The results obtained from the Granger causality test presented in Tables 50, 51 and shows there to be Granger causality between TO, CPI and GDPPC, in single direction . However, they indicated that no causality between IPOs and GDPPC in short run .The long-run causality tests indicate there to be no long run causality among GDPPC, TO, CPI, and IPOs . Overall, the study found no causality between stock market development (as represented by IPOs) and economic growth (as represented by GDPPC) in short- and long-run tests.

Table 50: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
IPOs does not Granger Cause GDPPC	1.185326	0.2763
GDPPC does not Granger Cause IPOs	0.408234	0.5229
TO does not Granger Cause GDPPC	10.79737**	0.010
GDPPC does not Granger Cause TO	1.038163	0.3082
CPI does not Granger Cause GDPPC	7.537589*	0.0060
GDPPC does not Granger Cause CPI	2.140621	0.1434

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 51: Long -run Granger causality

Null Hypothesis:	ECT	Probability
IPOs , TO, CPI does not cause GDPPC	0.148616	0.4544
GDPPC TO, CPI does not cause IPOs	0.379677	0.2487

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality test given in Tables 52 and 53 indicate that there is short-run causality between VT and FCF and CPI and FCF, respectively, and short-run unidirectional Granger causality between TO and FCF. In terms of the long run, the relationship is positive, and the causality among FCF, TO, CPI, and VT runs in one direction. In general, the study found causality between stock market (as represented by VT) and economic growth (as represented by FCF) in the short-run test. The long-run test shows unidirectional causality between VT and FCF. Also it found that the null hypothesis that VT does not Granger Cause FCF is not rejected at 5% level of significant while the null hypothesis that FCF does not Granger Cause VT is rejected. The null hypothesis that VT , TO, CPI does not cause FCF is not rejected but, the null hypothesis that FCF TO, CPI does not cause VT is rejected. This show Granger causality to run in one way from FCF, TO, CPI, to VT.

Table 52: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
VT does not Granger Cause FCF	2.360895	0.3071
FCF does not Granger Cause VT	5.842752	0.0539
TO does not Granger Cause FCF	1.544013	0.4621
FCF does not Granger Cause TO	19.28096*	0.0001
CPI does not Granger Cause FCF	5.565368	0.0619
FCF does not Granger Cause CPI	0.003721	0.9981

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 53: Long -run Granger causality

Null	ECT	Probability
VT , TO, CPI does not cause FCF	-0.229314	0.7300
FCF, TO, CPI does not cause VT	-1.258409**	0.0168

(*) and (**) indicate level of significance at 1% and 5% respectively.

Tables 54 and 55 presents the results of the Granger causality test and show no short-run Granger causality between TO and FCF and CPI and FCF, respectively, but do show short-run unidirectional Granger causality between TR and economic development (FCF). The long-run causality test indicates no causality among TR, TO, CPI, and FCF. In general, the study found causality between stock market (as represented by TR) and economic growth (as represented by FCF) in the short run. The long-run test indicates no Granger causality. This arises from the probability values reported in tables 54 and55: the null hypothesis that TR does not Granger Cause FCF is rejected with stock market variable (TR) while the null hypothesis that FCF does not Granger Cause TR is not rejected at 5% level of significant . The null hypothesis that TR , TO, CPI does not cause FCF and FCF TO, CPI does not cause TR is not rejected.

Table 54: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
TR does not Granger Cause FCF	12.77552**	0.0017
FCF does not Granger Cause TR	3.576264	0.1673
TO does not Granger Cause FCF	2.203725	0.3323
FCF does not Granger Cause TO	0.480506	0.7864
CPI does not Granger Cause FCF	2.029669	0.3625
FCF does not Granger Cause CPI	3.316579	0.1905

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 55: Long -run Granger causality

Null	ECT	Probability
TR , TO, CPI does not cause FCF	-1.030846	0.2283
FCF TO, CPI does not cause TR	-1.015103	0.0668

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality test given in Tables 56 and 57 indicate there to be short-run causality between LC and FCF, and no short-run causality among CPI, TO, and FCF. The long-run causality test indicates no Granger causality between LC, TO, CPI, and FCF. In general, the study found no causality between the stock market (as represented by LC) and

economic growth (as represented by FCF) in the long run. The short run indicates evidence of unidirectional causality between LC and FCF. This arises from the probability values reported in the tables 56 , 57 : the null hypothesis that LC does not Granger Cause FCF is rejected but ,the null hypothesis FCF does not Granger Cause LC is not rejected. The null hypothesis that LC , TO, CPI does not cause FCF and FCF, TO, CPI does not cause LC is not rejected.

Table 56: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
LC does not Granger Cause FCF	0.859842	0.3538
FCF does not Granger Cause LC	5.408939**	0.0200
TO does not Granger Cause FCF	0.506103	0.4768
FCF does not Granger Cause TO	2.407568	0.1207
CPI does not Granger Cause FCF	0.464251	0.4956
FCF does not Granger Cause CPI	0.292146	0.5888

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 57: Long -run Granger causality

Null	ECT	Probability
LC , TO, CPI does not cause FCF	1.089571**	0.0210
FCF, TO, CPI does not cause LC	0.363311	0.1136

(*) and (**) indicate level of significance at 1% and 5% respectively.

Tables 58 and 59 present the Granger causality test results and show no Granger causality among MC, (representing the stock market), FCF (representing economic growth) and TO CPI in the short run. However, they suggest that there is short-run causality between CPI and FCF. In terms of the long run the results indicate there to be Granger causality among FCF, TO, CPI, and MC. In general, the study found causality between the stock market as represented by MC and economic growth as represented by FCF in the long run only. In addition , it found that the null hypothesis that MC does not Granger Cause FCF and FCF does not Granger Cause MC is not rejected. The null hypothesis that MC ,TO, CPI does not cause FCF is not rejected but, the null

hypothesis that FCF TO, CPI does not cause MC is rejected. This show Granger causality runs in one direction from FCF, TO, CPI, to MC.

Table 58: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
MC does not Granger Cause FCF	0.128821	0.7197
FCF does not Granger Cause MC	0.967488	0.3253
TO does not Granger Cause FCF	1.349886	0.2453
FCF does not Granger Cause TO	0.038443	0.8446
CPI does not Granger Cause FCF	0.136684	0.7116
FCF does not Granger Cause CPI	4.070387**	0.0436

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 59: Long -run Granger causality

Null Hypothesis:	ECT	Probability
MC , TO, CPI does not cause FCF	-0.116892	0.7331
FCF TO, CPI does not cause MC	-0.591220*	0.0019

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality tests given in Tables 60 and 61 indicate no short-run Granger causality between IPOs and GDPPC or among TO, CPI and FCF. As for the long-run tests, they suggest there to be no Granger causality among IPOs, TO, CPI, and FCF. Overall, the study found no causality between stock market (represented by IPOs) and economic growth (represented by FCF) in the short and long terms.

Table 60: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
IPOs does not Granger Cause FCF	0.583535	0.4449
FCF does not Granger Cause IPOs	1.020911	0.3123
TO does not Granger Cause FCF	2.947573	0.0860
FCF does not Granger Cause TO	0.102516	0.7488
CPI does not Granger Cause FCF	0.748627	0.3869
FCF does not Granger Cause CPI	0.101684	0.7498

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 61: Long -run Granger causality

Null	ECT	Probability
IPOs , TO, CPI does not cause FCF	-0.658785	0.1449
FCF ,TO, CPI does not cause IPOs	0.070615	0.6500

(*) and (**) indicate level of significance at 1% and 5% respectively.

5.1.5.5 Conclusion

The objective of this section is to examine the causal relationship between stock market development and economic growth using annual time series data from 1989 to 2012. VECM-based causality tests are used in order to establish the link between stock market developments represented by VT, TR, LC, MC, and IPOs and economic growth. Empirical investigation suggests that there is short-run Granger causality between stock market development and economic growth when TR, MC, and VT are used. However, with LC and IPOs the results indicate no short-run causality between stock market and economic growth. In the long run, the results indicates no Granger causality between the stock market (in the form of LC and IPOs) and economic growth (in the form of GDPPC), which is consistent with the empirical finding of Boubakari and Jin (2010). However, there is evidence of unidirectional causality between the stock market, when VT, TR, and MC are used, and economic growth.

5.1.6 The causal relationship between conventional insurance and economic growth

5.1.6.1 Introduction:

This section begins with the analysis of empirical results in a unit root test, followed by a Johansen test. It examines the short- and long-run causal relationships between conventional insurance and economic growth using a VECM. The study uses twelve models based on the five indicators of conventional insurance employed. The first five models (19, 20, 21, 22, 23,) apply

gross premium income (life insurance, GPILF), gross premium income (non-life insurance, GPINLF), life insurance penetration (LIP), non-life insurance penetration (NLIP), and non-life insurance density (NLID), respectively. Other variables included in models are: GDPPC, TO, and CPI. The second five models (24, 25, 26, 27, 28) use the same conventional insurance variables noted above, but the other variables include FCF, TO, and CPI in the models.

5.1.6.2 Unit root test

The results in Table 63 reveal the conventional insurance variables (represented by GPILF, GPINLF, LIP, NLIP, and NLID) to be non-stationary at the level and stationary after the first difference, respectively, expect for GPILF, which is I(0) based on the PP test, and LIP , which is I(0) based on the KPSS test. Meanwhile, since three out of four unit roots tests for GPILF and LIP indicate I (1) series. It can be concluded that all variables are I (1) series. Table 62 presents descriptive statistics for conventional insurance and economic growth in Malaysia.

Table 62: Descriptive statistics

	GPILF	GPINLF	LIP	NLIP	NLID	TO	CPI
Mean	15103.35	5350.648	0.351484	0.015935	0.217774	496744.1	73.77419
Median	8825.700	5416.700	0.037000	0.016000	0.236000	394305.9	73.40000
Maximum	83871.90	12792.90	2.710000	0.021000	0.436000	1273167.	104.9000
Minimum	1089.700	1006.600	0.010000	0.010000	0.060000	53713.20	48.10000
Std. Dev.	16969.96	3628.082	0.703538	0.004008	0.118471	407400.0	17.92748
Skewness	2.286379	0.366874	1.997753	-0.334096	0.064316	0.508458	0.157551
Kurtosis	9.650120	1.953628	5.864959	1.666976	1.702021	1.859456	1.733813
Jarque-Bera	84.13170	2.109654	31.22225	2.871936	2.197508	3.015986	2.199085
Probability	0.000000	0.348253	0.000000	0.237885	0.333286	0.221354	0.333023
Sum	468204.0	165870.1	10.89600	0.494000	6.751000	15399067	2287.000
Observations	31	31	31	31	31	31	31

Table 63: Unit root test insurance indicators

Variable	ADF		DF		Pp		KPPS	
	LEVEL	First difference	LEVEL	First difference	LEVEL	First difference	LEVEL	First difference
	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend
GPILF	-0.746779	-5.106619*	-3.106881*	-3.479136*	-3.857913**		16.18355	0.059187
critical values	-3.580623	-3.632896	-3.190000	-3.190000	-3.568379		0.146000	0.146000
p-values	0.9590	0.0025	0.0050	0.0019	0.0270			
GPINLF	-1.438527	-5.490909*	-1.564099	-5.665815*	-1.526718	-5.490909*	0.158326	0.061266
critical values	-3.568379	-3.574244	-3.190000	-3.190000	-3.568379	-3.574244	0.146000	0.146000
p-values	0.8281	0.0006	0.1286	0.0000	0.7974	0.0006		
LIP	-3.317699	-4.982182*	-2.442171**	-7.849185*	-3.246763	-11.53282*	0.118427	
critical values	-3.568379	-3.580623	-3.190000	-3.190000	-3.568379	3.574244	0.146000	
p-values	0.0827	0.0022	0.0214	0.0000	0.0948	0.0000		
NLIP	-1.481357	-5.879903*	-1.589500	-6.001042*	-1.481357	-6.043595*	0.162646	0.094671
critical values	-3.568379	3.574244	-3.190000	-3.190000	-3.568379	-3.574244	0.146000	0.146000
p-values	0.8137	0.0002	0.1228	0.0000	0.8137	0.0002		
NLID	-1.539295	-5.761413*	-1.643924	-5.913103*	-1.629131	-5.755730*	0.140813	0.068252
critical values	-3.568379	-3.574244	-3.190000	-3.190000	-3.568379	-3.574244	0.146000	0.146000
p-values	0.7927	0.0003	0.1110	0.0000	0.7570	0.0003		

(*) and (**) indicate level of significance at 1% and 5% respectively.

5.1.6.3 Johansen cointegration test

Upon completion of the first steps and confirming that all variables were stationary of order one, the next procedure in the study was to examine the issue of cointegration among the variables used in order to answer whether or not a long-run relationship existed among the variables. For this purpose, the Johansen cointegration method was employed. The lag order selection is based on sequential modified test statistic(LR) , Final prediction error(FPE) , Akaike

information criterion (AIC), Schwarz information criterion (SC), and Hannan-Quinn information criterion (HR) criteria. Table 64 shows the results of the cointegration test using GPILF as an indicator of conventional insurance. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of $r \leq 0$ was rejected in favour of the alternative $r \geq 1$ at a 1% level of significance. The results suggest evidence of three cointegrating vectors among the variables of the equation.

Table 64 Johansen cointegration Results for Model 19

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	170.0478*	47.85613	92.48768*	27.58434
r ≤1	r≥2	77.56014*	29.79707	54.96526*	21.13162
r≤2	r≥3	22.59488*	15.49471	22.47682*	14.26460
r≤3	r=4	0.118063	3.841466	0.118063	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 65 presents the results of the cointegration test using GPINLF as an indicator of conventional insurance. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of $r \leq 0$ (no cointegration) was rejected in favour of the alternative $r \geq 1$ at a 1% level of significance. Thus, both statistics indicate three cointegrating vectors at a 1% significance level.

Table 65 Johansen cointegration Results for Model 20

Null	Alternative	λTrace	5%critical value	λ max	5%critical value
r=0	r≥1	153.8296*	47.85613	89.51657*	27.58434
r ≤1	r≥2	64.31307*	29.79707	36.06534*	21.13162
r≤2	r≥3	28.24773*	15.49471	28.22451*	14.26460
r≤3	r=4	0.023216	3.841466	0.023216	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 66 presents the results of the cointegration for LIP as an indicator for conventional insurance. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of $r \leq 0$ (no cointegrating) was rejected in favour of the alternative $r \geq 1$ at a 1% and 5% level of significance, suggesting two cointegrating vectors to exist among the variables of the equation. Therefore, it can be concluded that there is a long-run relationship among the variables of the equation.

Table 66 Johansen cointegration Results for Model 21

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	66.81672*	47.85613	33.32048*	27.58434
r ≤1	r≥2	33.49625**	29.79707	26.60932*	21.13162
r≤2	r≥3	6.886926	15.49471	6.790001	14.26460
r≤3	r=4	0.096925	3.841466	0.096925	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 67 presents the results of the Johansen multivariate cointegration test using NLIP as an indicator of conventional insurance. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of $r \leq 0$ was rejected in favour of the alternative $r \geq 1$ at a 5% level of significance. While the results of trace test suggest no evidence of cointegrating vectors, the maximum eigenvalue statistics the results indicate evidence of one cointegrating vectors at a 5% significance level. Therefore, it is possible to say that there is a long-run equilibrium relation among the variables of the equation.

Table 67 Johansen cointegration Results for Model 22

Null	Alternative	λTrace	5%critical value	λmax	5%critical value
r=0	r≥1	47.46871	47.85613	29.29487**	27.58434
r ≤1	r≥2	18.17384	29.79707	11.97430	21.13162
r≤2	r≥3	6.199543	15.49471	5.497614	14.26460
r≤3	r=4	0.701929	3.841466	0.701929	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 68 presents the results of the cointegration test using NLID as an indicator of conventional insurance. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥ 1 at a 5% level of significance. The results of the trace test indicates one cointegrating vectors among the variables of the equation. Therefore, it can be said that there is a long-run equilibrium relation among the variables of the equation.

Table 68 Johansen cointegration Results for Model 23

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	48.54029**	47.85613	25.87709	27.58434
r ≤1	r≥2	22.66320	29.79707	16.16200	21.13162
r≤2	r≥3	6.501201	15.49471	5.772111	14.26460
r≤3	r=4	0.729091	3.841466	0.729091	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 69 presents the results of the Johansen multivariate cointegration test using GPILF as an indicator for conventional insurance. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 was rejected in favour of the alternative r ≥1 at a 5% level of significance. The results suggest evidence of one cointegrating vector at a 1% and 5% significance level. Therefore, it can be said that there is a long-run equilibrium relation among

the variables of the equation.

Table 69 Johansen cointegration Results for Model 24

Null	Alternative	λTrace	5%critical value	λ max	5%critical value
r=0	r≥1	56.07872*	47.85613	32.47889**	27.58434
r ≤1	r≥2	23.59983	29.79707	14.44971	21.13162
r≤2	r≥3	9.150112	15.49471	9.124600	14.26460
r≤3	r=4	0.025512	3.841466	0.025512	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 70 shows the results of the cointegration test using GPINLF as an indicator of conventional insurance. Both the trace test and maximum eigenvalue statistics have values larger than the critical values at a 5% level of significance. Therefore, the null hypotheses of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1. Both statistics test indicate one cointegrating vector at a 1% and 5% significance level. Thus, it is possible to say that there is a long-run equilibrium relation among the variables of the equation.

Table 70 Johansen cointegration Results for Model 25

Null	Alternative	λTrace	5%critical value	λ max	5%critical value
r=0	r≥1	57.21286*	47.85613	30.12439**	27.58434
r ≤1	r≥2	27.08847	29.79707	19.77240	21.13162
r≤2	r≥3	7.316073	15.49471	7.157945	14.26460
r≤3	r=4	0.158127	3.841466	0.158127	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 71 shows the results of the cointegration test using LIP as an indicator of conventional insurance. Both the trace test and maximum eigenvalue statistics have values greater than the critical values at a 1% and 5% level of significance. Therefore, the null hypotheses of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1. Accordingly, one cointegrating vector was found to exist among the variables of the equation. Thus, it can be

said that there is a long-run relationship among the variables of the equation.

Table 71 Johansen cointegration Results for Model 26

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	49.65263*	47.85613	29.88918**	27.58434
r ≤1	r≥2	19.76345	29.79707	13.36106	21.13162
r≤2	r≥3	6.402389	15.49471	6.001327	14.26460
r≤3	r=4	0.401061	3.841466	0.401061	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 72 shows the results of the cointegration test using NLIP as an indicator of conventional insurance. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥ 1 at a 5% level of significance. The results of the trace test and the maximum eigenvalue statistics suggest one cointegrating vector among the variables of the equation. Therefore, it can be said that there is a long-run equilibrium relation among the variables of the equation.

Table 72 Johansen cointegration Results for Model 27

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	53.16031**	47.85613	32.91516*	27.58434
r ≤1	r≥2	20.24515	29.79707	16.86717	21.13162
r≤2	r≥3	3.377977	15.49471	3.266451	14.26460
r≤3	r=4	0.111525	3.841466	0.111525	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 73 shows the results of the Johansen multivariate cointegration test using NLID as an indicator of conventional insurance. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1 at a 1% and 5% level of significance. The result of trace test statistics indicates the existence

of one cointegrating vector among the variables of the equation whereas the maximum eigenvalue statistics indicate that two cointegrating vectors exist among the variables.

Table 73 Johansen cointegration Results for Model 28

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	64.12065*	47.85613	34.72008*	27.58434
r ≤1	r≥2	29.40057	29.79707	22.86389**	21.13162
r≤2	r≥3	6.536678	15.49471	6.509846	14.26460
r≤3	r=4	0.026832	3.841466	0.026832	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 74 presents the long-run coefficients of cointegrating vectors normalising on GDPPC in five different models. Model 19 indicates a positive relationship between economic growth (represented by GDPPC) and conventional insurance (represented by GPILF); however, the model shows that TO and CPI are negatively related. The long-run elasticity of GDPPC is 0.212250 and has the incorrect sign. Model 20 takes GPINLF as the proxy for conventional insurance and shows GDPPC, GPINLF, and CPI to be negatively related, though the results indicate a positive relationship between economic growth and TO. The error correction coefficient is incorrectly signed and not statistically significant. The adjustment speed in the cointegrating vector of model 18 is 8.87%.

Model 21 shows a positive association between conventional insurance (represented by LIP) and economic growth (represented by GDPPC) that is statistically significant. The relationship among GDPPC, TO, and CPI is negative and is also statistically significant. The adjustment or long-run elasticity of GDPPC is 2.098594 and has the incorrect sign. Model 22 uses NLIP as a proxy for conventional insurance and shows that GDPPC, NLIP, and CPI are negatively related. The relationship between GDPPC and TO, however, is positive. The error

correction coefficient is incorrectly signed and not statistically significant. The adjustment or long-run elasticity of model 22 is 0.514720. Model 23 shows a negative association between GDPPC and NLID. The relationship between GDPPC and CPI is negative and is also not statistically significant. However, the relationship between GDPPC and TO is positive. The adjustment or long-run elasticity is 0.657520 and has the incorrect sign. The negative relationship between GDPPC and NLID is in line with the empirical findings of Nguyen, Avram et al. (2010).

Table 74: Long-run multivariate cointegrating vector normalised on GDPPC

Model 19	GDPPC	GPILF	TO	CPI
	1	0.438200	-0.314961	-3.407016
		(0.04067)	(0.03732)	(0.11353)
Model 20	GDPPC	GPINLF	TO	CPI
	1	-0.015887	0.074543	-2.723904
		(0.01573)	(0.02271)	(0.07536)
Model 21	GDPPC	LIP	TO	CPI
	1	0.111783	-0.155890	-1.459325
		(0.02456)	(0.20947)	(0.97786)
Model 22	GDPPC	NLIP	TO	CPI
	1	-0.181314	0.685069	-5.588472
		(0.06707)	(0.17678)	(0.81076)
Model 23	GDPPC	NLID	TO	CPI
	1	-0.048848	0.270830	-3.620158
		(0.05670)	(0.07766)	(0.29316)

Table 75 presents the long-run coefficients of cointegrating vectors normalising on FCF in five different models. Model 24 reveals that FCF (as a proxy for economic growth) has a negative association with TO and CPI. On the other hand, the model also shows that FCF and GPILI (as a proxy for conventional insurance) are positively related. The error correction coefficient is incorrectly signed (negative) and not statistically significant, and the long-run elasticity of the model is 0.026920. Model 25 uses GPINLI as a proxy for conventional insurance. Both GPINLI and CPI are negatively related to FCF. On the other hand, the model

shows a positive relationship between FCF and TO. The error correction coefficient is correctly signed with an adjustment of 32.9%. Model 26 indicates a positive association among FCF, LIP (as a proxy for conventional insurance), and TO. The relationship between FCF and CPI, however, is negative. The error correction coefficient is correctly signed and is statistically significant. The adjustment or long-run elasticity of Model 26 is -0.204767.

Model 27 shows a negative relationship among economic growth (represented by FCF), conventional insurance (represented by NLIP), and CPI. There is a positive relationship, however, between FCF and TO. The long-run elasticity of GDPPC is -0.090125 and has the correct sign. Model 28 uses NLID as a proxy for conventional insurance and reveals FCF to have a negative relationship with NLID. However, FCF, TO, and CPI are positively related, though not statistically significant. The adjustment or long-run elasticity of FCF is -0.058885 and has the correct sign (negative).

Table 75: Long-run multivariate cointegrating vector normalised on FCF

Model 24	FCF	GPILI	TO	CPI
	1	42.07385	-46.41187	-6.838293
		(7.37539)	(8.50568)	(29.0344)
Model 25	FCF	GPINLI	TO	CPI
	1	-1.563478	0.885191	-1.476558
		(0.17280)	(0.18064)	(0.63440)
Model 26	FCF	LIP	TO	CPI
	1	0.351252	1.822810	-9.924005
		(0.07871)	(0.71565)	(3.24764)
Model 27	FCF	NLIP	TO	CPI
	1	-1.330907	2.784572	-15.50096
		(0.26422)	(0.64735)	(2.97445)
Model 28	FCF	NLID	TO	CPI
	1	-0.826102	0.858010	-4.739643
		(0.18152)	(0.21003)	(0.84428)

This study carried out misspecification tests for serial correlation (the Lagrange multiplier), as well as normality and heteroskedasticity tests for Models 19–28. The results

obtained from the three tests are summarized in Tables 76 and 77, which show that for all variables representing conventional insurance in Models 19–28, seven models passed serial correlation and three models failed to pass serial correlation (Model 19, 20,and 21), with - probability of less than 5%. Six of the models passed the normality tests, which were conducted using joint Jarque-Bera statistics. However, the other four models (24, 22, 25, and 27) failed to pass the normality test. As for the heteroskedasticity test, the results show that all models from 19 to 28 passed the test.

Table 76 Test on the VEC

	Serial Correlation LM Test		Jarque Bera Normality Test		Heteroskedasticity Test	
	Chi-Square	Prob	Jarque Bera Stat	Prob	Chi-Square	Prob
Model 19	21.03337	0.0001	0.898334	0.638159	17.52632	0.3524
Model 20	10.12772	0.0175	1.790026	0.408602	15.56958	0.4834
Model 21	8.511505	0.0365	1.455286	0.483086	14.34498	0.5730
Model 22	2.171678	0.3376	6.858301	0.032414	11.22801	0.5095
Model 23	1.417210	0.4923	4,703351	0.095209	17.30421	0.1385

Table 77 Test on the VEC

	Serial Correlation LM Test		Jarque Bera Normality Test		Heteroskedasticity Test	
	Chi-Square	Prob	Jarque Bera Stat	Prob	Chi-Square	Prob
Model 24	1.455878	0.4829	37.04361	0.0000	12.27475	0.4239
Model 25	1.415997	0.2341	22.20353	0.000015	8.662263	0.3716
Model 26	1.557862	0.2120	0.607048	0.738212	8.004509	0.4330
Model 27	1.101992	0.5764	18.22045	0.000111	10.80158	0.5460
Model 28	4.904164	0.0861	0.329023	0.848302	13.20862	0.3541

5.1.6.4 Causality

The results of the Johansen multivariate cointegration test indicated there to be cointegration vectors in existence among the variables that represented conventional insurance and economic growth, respectively. Following this, Granger causality tests were performed. The results of the short- and long-run Granger causality tests are given in Tables 78–97.

The results of the Granger causality test given in Tables 78 and 79 indicate there to be short-run Granger causality between GPILF and GDPPC and TO and GDPPC, respectively, and no short-run Granger causality between CPI and GDPPC. In terms of the long run, the relationship is negative among GPILF, TO, CPI, and GDPPC. In general, the study found causality between GPILF and GDPPC in the short-run test. The long-run test, though, shows no causality between GPILF and, GDPPC. This arises from the probability values reported in tables 78,79: the null hypothesis that GPILF does not Granger Cause GDPPC is rejected while , the null hypothesis that GDPPC does not Granger Cause GPILF is not rejected. The null hypothesis that GPILF , TO, CPI does not cause GDPPC and GDPPC TO, CPI does not cause GPILF is not rejected.

Table 78: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
GPILF does not Granger Cause GDPPC	13.04782*	0.0045
GDPPC does not Granger Cause GPILF	3.310469	0.3462
TO does not Granger Cause GDPPC	11.10849**	0.0112
GDPPC does not Granger Cause TO	0.541355	0.9097
CPI does not Granger Cause GDPPC	4.110473	0.2498
GDPPC does not Granger Cause CPI	2.050066	0.5621

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 79: Long -run Granger causality

Null Hypothesis:	ECT	Probability
GPILF , TO, CPI does not cause GDPPC	0.212250	0.6837
GDPPC TO, CPI does not cause GPILF	-0.573332	0.2717

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality tests given in Tables 80 and 81 indicate no short-run Granger causality between GPINLF and GDPPC or between CPI and GDDPC. The results suggest that there is Granger causality between TO and GDDPC in the short-run tests, yet no Granger causality among GPINLF, TO, CPI and GDPPC in the long-run tests. Overall, the study found no causality between GPINLF and GDPPC in the short- and long-run tests. This arises from the probability values reported in tables 80 and 81: the null hypothesis that GPINLF does not Granger Cause GDPPC and , the null hypothesis that GDPPC does not Granger Cause GPILF is not rejected. The null hypothesis that GPINLF , TO, CPI does not cause GDPPC and GDPPC TO, CPI does not cause GPINLF is not rejected.

Table 80: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
GPINLF does not Granger Cause GDPPC	1.762643	0.6231
GDPPC does not Granger Cause GPINLF	4.523963	0.2102
TO does not Granger Cause GDPPC	1.735853	0.6290
GDPPC does not Granger Cause TO	30.12048*	0.0000
CPI does not Granger Cause GDPPC	1.755460	0.6247
GDPPC does not Granger Cause CPI	3.296853	0.3481

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 81: Long -run Granger causality

Null Hypothesis:	ECT	Probability
GPINLF , TO, CPI does not cause GDPPC	-0.088788	0.9009
GDPPC TO, CPI does not cause GPINLF	-0.656929	0.1086

(*) and (**) indicate level of significance at 1% and 5% respectively.

Tables 82 and 83 present the results of the Granger causality test and show there to be

Granger causality between LIP and GDPPC and CPI and GDPPC, respectively, in the short run. They also indicated that the causality runs from GDPPC to TO. In the long run, the results show there to be no Granger causality among LIP, TO, CPI, and GDPPC. The study found causality between LIP and GDPPC in the short run only. Also , it found that the null hypothesis that LIP does not Granger Cause GDPPC is rejected while , the null hypothesis that GDPPC does not Granger Cause LIP is not rejected. The null hypothesis that LIP , TO, CPI does not cause GDPPC and GDPPC TO, CPI does not cause LIP is not rejected.

Table 82: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
LIP does not Granger Cause GDPPC	17.44864*	0.0006
GDPPC does not Granger Cause LIP	1.053185	0.7884
TO does not Granger Cause GDPPC	4.181962	0.2425
GDPPC does not Granger Cause TO	17.57113*	0.0005
CPI does not Granger Cause GDPPC	4.611955	0.2025
GDPPC does not Granger Cause CPI	8.572020**	0.0356

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 83: Long -run Granger causality

Null	ECT	Probability
LIP , TO, CPI does not cause GDPPC	2.098594	0.0194
GDPPC TO, CPI does not cause LIP	-0.712317	0.2412

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality test given in Tables 84 and 85 indicate there to be no short-run causality between NLIP and GDPPC and CPI and GDPPC, respectively, and bidirectional short-run causality between TO and GDPPC. The long-run causality tests indicate no long-run causality among GDPPC, TO, and CPI with NLIP. In general, the study found no causality between NLIP GDPPC in either short- and long-run tests. In addition , it found that the null hypothesis that NLIP does not Granger Cause GDPPC and , the null hypothesis that GDPPC does not Granger Cause NLIP is not rejected. The null hypothesis that NLIP , TO,

CPI does not cause GDPPC and GDPPC TO, CPI does not cause NLIP is not rejected.

Table 84: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
NLIP does not Granger Cause GDPPC	2.904983	0.2340
GDPPC does not Granger Cause NLIP	0.380130	0.8269
TO does not Granger Cause GDPPC	32.14167*	0.0000
GDPPC does not Granger Cause TO	6.502571**	0.0387
CPI does not Granger Cause GDPPC	3.507380	0.1731
GDPPC does not Granger Cause CPI	0.023267	0.9884

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 85: Long -run Granger causality

Null	ECT	Probability
NLIP, TO, CPI does not cause GDPPC	0.230934	0.0994
GDPPC TO, CPI does not cause NLIP	0.514720	0.0926

(*) and (**) indicate level of significance at 1% and 5% respectively.

The Granger causality test results reported in Tables 86 and 87 show there to be no Granger causality between NLID, CPI, and GDPPC in the short term. However, they indicate there to be bidirectional short run causality between GDPPC and TO. The long-run causality tests indicate no causality among NLID, TO, CPI, and GDPPC. In general, the study found no causality between NLID and GDPPC in either short- or long-run tests. Also , it found that the null hypothesis that NLID does not Granger Cause GDPPC and , the null hypothesis that GDPPC does not Granger Cause NLID is not rejected. The null hypothesis that NLID , TO, CPI does not cause GDPPC and GDPPC TO, CPI does not cause NLID is not rejected.

Table 86 Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
NLID does not Granger Cause GDPPC	1.855690	0.3954
GDPPC does not Granger Cause NLID	3.317833	0.1903
TO does not Granger Cause GDPPC	28.83471*	0.0000
GDPPC does not Granger Cause TO	7.142406**	0.0281
CPI does not Granger Cause GDPPC	3.676233	0.1591
GDPPC does not Granger Cause CPI	0.332751	0.8467

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 87: Long -run Granger causality

Null	ECT	Probability
NLID , TO, CPI does not cause GDPPC	0.051899	0.2804
GDPPC TO, CPI does not cause NLID	0.657520	0.1962

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality tests given in Tables 88 and 89 indicate no short-run Granger causality between GPILI and FCF or between CPI and FCF. The results suggest there to be bidirectional Granger causality between TO and FCF in the short-run tests. As for the long-run tests, they suggest there to be no Granger causality among GPILI, TO, CPI, and FCF. Overall, the study found no causality between conventional insurance (represented by GPILI) and economic growth (represented by fixed capital formation) in the short and long terms. This arises from the probability values reported in the tables88, 89: the null hypothesis that GPILI does not Granger Cause FCF and ,the null hypothesis FCF does not Granger Cause GPILI is not rejected. The null hypothesis that GPILI , TO, CPI does not cause FCF and FCF, TO, CPI does not cause GPILI is not rejected.

Table 88: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
GPILI does not Granger Cause FCF	5.182436	0.0749
FCF does not Granger Cause GPILI	3.654231	0.1609
TO does not Granger Cause FCF	11.27375*	0.0036
FCF does not Granger Cause TO	8.652064**	0.0132
CPI does not Granger Cause FCF	0.534864	0.7653
FCF does not Granger Cause CPI	0.741233	0.6903

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 89: Long -run Granger causality

Null	ECT	Probability
GPILI , TO, CPI does not cause FCF	0.026920*	0.0086
FCF, TO, CPI does not cause GPILI	-0.396911	0.1134

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality tests given in Table 90, 91 indicate no short-run Granger causality between GPINLI and FCF or between CPI and FCF. The results suggest there to be Granger causality between FCF and TO in the short-run tests, yet no Granger causality between GPINLI, TO, CPI to FCF in the long-run tests. Overall, the study found no causality between GPINLI and FCF in the short- or long-run tests. Granger causality show that the null hypothesis that GPINLI does not Granger Cause FCF and , the null hypothesis that FCF does not Granger Cause GPINLI is not rejected. The null hypothesis that GPINLI , TO, CPI does not cause FCF and FCF TO, CPI does not cause GPINLI is not rejected.

Table 90: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
GPINLI does not Granger Cause FCF	0.373076	0.5413
FCF does not Granger Cause GPINLI	0.489207	0.4843
TO does not Granger Cause FCF	1.817388	0.1776
FCF does not Granger Cause TO	24.73473*	0.0000
CPI does not Granger Cause FCF	0.145021	0.7033
FCF does not Granger Cause CPI	0.931335	0.3345

(*) and (**) indicate level of significance at 1% and 5% respectively

Table 91: Long -run Granger causality

Null	ECT	Probability
GPINLI , TO, CPI does not cause FCF	-0.329525	0.1301
FCF, TO, CPI does not cause GPINLI	-0.290382	0.2339

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality test given in Tables 92 and 93 indicate there to be short-run causality between LIP and FCF and among FCF, CPI, and TO. The long-run causality test indicates Granger causality among LIP, TO, CPI, and FCF. In general, the study found causality between LIP and FCF in the short and long-run tests. This from the fact that, based on the probability values reported in the tables 92 , 93 : the null hypothesis that LIP does not Granger Cause FCF and ,the null hypothesis FCF does not Granger Cause LIP is not

rejected. The null hypothesis that LIP , TO, CPI does not cause FCF and FCF, TO, CPI does not cause LIP is not rejected.

Table 92: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
LIP does not Granger Cause FCF	17.61373*	0.0000
FCF does not Granger Cause LIP	1.224380	0.2685
TO does not Granger Cause FCF	0.551683	0.4576
FCF does not Granger Cause TO	7.274991*	0.0070
CPI does not Granger Cause FCF	0.013234	0.9084
FCF does not Granger Cause CPI	4.760703**	0.0291

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 93: Long -run Granger causality

Null	ECT	Probability
LIP , TO, CPI does not cause FCF	-0.204767*	0.0000
FCF, TO, CPI does not cause LIP	-0.166380	0.3453

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality test given in Tables 94 and 95 show no Granger causality between FCF and NLIP or FCF and CPI, respectively. However, Granger causality is found between TO and FCF. The long-run causality tests indicate no causality among FCF, TO, CPI, and NLIP. In general, the study found no causality between NLIP and FCF in the short- and long-run tests. Granger causality indicated that the null hypothesis that NLIP does not Granger Cause FCF and , the null hypothesis that FCF does not Granger Cause NLIP is not rejected. As for long run show that the null hypothesis that NLIP , TO, CPI does not cause FCF and FCF TO, CPI does not cause NLIP is not rejected.

Table 94: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
NLIP does not Granger Cause FCF	0.226683	0.8928
FCF does not Granger Cause NLIP	1.567119	0.4568
TO does not Granger Cause FCF	2.238908	0.3265
FCF does not Granger Cause TO	12.50059*	0.0019
CPI does not Granger Cause FCF	0.166086	0.9203
FCF does not Granger Cause CPI	2.488971	0.2881

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 95: Long -run Granger causality

Null	ECT	Probability
NLIP , TO, CPI does not cause FCF	-0.090125	0.6504
FCF, TO, CPI does not cause NLIP	0.238815	0.3771

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality test given in Tables 96 and 97 suggest there to be no Granger causality between NLID and FCF in short-run tests. They also indicate there to be no causality between CPI and FCF. However, Granger causality is found between FCF and TO. As for the long-run tests, the results in Table 97 show there to be no long-run relationship among NLID, TO, CPI, and FCF. In general, the study found no causality between NLID and FCF in the short- or long-run tests. Granger causality show that the null hypothesis that NLID does not Granger Cause FCF and the null hypothesis that FCF does not Granger Cause NLID is not rejected. As for long run show that the null hypothesis that NLID , TO, CPI does not cause FCF and FCF TO, CPI does not cause NLID is not rejected.

Table 96: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
NLID does not Granger Cause FCF	0.574607	0.7503
FCF does not Granger Cause NLID	5.007416	0.0818
TO does not Granger Cause FCF	19.00188*	0.0001
FCF does not Granger Cause TO	8.508351**	0.0142
CPI does not Granger Cause FCF	0.360950	0.8349
FCF does not Granger Cause CPI	1.123889	0.5701

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 97: Long -run Granger causality

Null	ECT	Probability
NLID , TO, CPI does not cause FCF	-0.715508	0.1723
FCF, TO, CPI does not cause NLID	-0.058885	0.8741

(*) and (**) indicate level of significance at 1% and 5% respectively.

5.1.6.5 Conclusion

The objective of this section is to examine the causal relationship between conventional insurance and economic growth using annual time series data from 1982 to 2012. The VECM-based causality tests used in this section in order to establish the link between conventional insurance represented by gross premium income (life insurance), gross premium income (nonlife insurance), life insurance penetration, non-life insurance penetration, and non-life insurance density. The empirical results suggests there is no short-run causality between conventional insurance and economic growth, when, (GPINLF), Gross premium income (nonlife insurance), Non-life Insurance Penetration (NLIP) Non-life insurance density (NLID) are employed, the results are consistent with the empirical finding of Ching, Kogid et al. (2010) and Azman‐Saini and Smith (2011). However, the results indicates short run between conventional insurance and economic growth when conventional insurance represented by (Gross premium income (life insurance) and life Insurance Penetration (LIP) as well as economic growth represented by real GDP per capita and fixed capital formation. In the long run, the results show that the most of conventional insurance variables show no long run causality between conventional insurance and economic growth.

5.7 The causal relationship between Islamic insurance and economic growth

5.1.7.1 Introduction

This section begins its analysis of the empirical results though a unit root test, which is then followed by the analysis with a Johansen test. In the following, the short- and long-run causal relationship between Islamic insurance and economic growth is examined using a VECM.

The study uses six models based on the three indicators of Islamic insurance employed. The first three models (29, 30, 31) apply assets of family *Takaful* funds (AFTF), assets of general *Takaful* funds (LAGTF), and total contributions by participants in the family *Takaful* (*CPFT*). Other variables included in the models are GDPPC, TO, and CPI. The second three models (32, 33, 34) use the same Islamic insurance variables noted above, but the other variables included in models are FCF, TO, and CPI.

5.1.7.2 Unit root test

The results of Table 99 reveal that the Islamic insurance variables (represented by AFTF, AGTF and CPFT) are non-stationary at the level and stationary after the first difference expect for AGTF which is I (0) based on the PP test. Meanwhile, since three out four unit roots tests for AGTF indicate I (1) series, it can be concluded that all variables are I (1) series. Table 98 presents descriptive statistics for Islamic insurance and economic growth in Malaysia.

Table 98 Descriptive statistics

	GDPPC	FCF	AFTF	AGTF	CPFT	TO	CPI
Mean	15118.81	97928.41	3586.967	662.6667	706.7593	561225.3	77.22593
Median	13128.00	90140.00	607.4000	227.0000	154.6000	514687.6	79.30000
Maximum	32083.00	241733.0	16290.00	2755.800	3474.500	1273167.	104.9000
Minimum	4384.000	17904.00	0.600000	0.200000	0.800000	63642.30	52.40000
Std. Dev.	8181.506	56453.36	4937.069	856.7654	1011.259	397542.1	16.56968
Skewness	0.548152	0.631362	1.287527	1.278401	1.406536	0.338500	0.026548
Kurtosis	2.226010	2.988848	3.447172	3.301871	3.725326	1.759764	1.817261
Jarque-Bera	2.026061	1.793921	7.684725	7.456907	9.494402	2.246080	1.576901
Probability	0.363117	0.407807	0.021443	0.024030	0.008676	0.325289	0.454549
Sum	408208.0	2644067.	96848.10	17892.00	19082.50	15153083	2085.100
Observations	27	27	27	27	27	27	27

Table 99: Unit root test takaful indicators

Variable	ADF		DF		Pp		KPPS	
	LEVEL	First difference	LEVEL	First difference	LEVEL	First difference	LEVEL	First difference
	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend	Constant and trend
AFTF critical values p-values	-0.752262 -3.603202 0.9571	-3.876957** -3.603202 0.0288	-0.705625 -3.190000 0.4875	-3.489059* -3.190000 0.0019	-1.920411 -3.595026 0.6153	-3.880375** -3.603202 0.0286	0.195936 0.146000	0.069583 0.146000
AGTF critical values p-values	2.674891 -3.658446 1.0000	-3.818543** -3.622033 0.0340	-0.939761 -3.190000 0.3580	-4.269983* -3.190000 0.0003	- 8.03003* -3.595026 0.0000		0.152464 0.146000	0.144181 0.146000
CPFT critical values p-values	-1.479569 -3.595026 0.8106	-4.227849** -3.673616 0.0179	-1.460981 -3.190000 0.1678	-5.208823* -3.190000 0.0000	-1.373536 -3.595026 0.8448	-5.527023* -3.603202 0.0008	0.161792 0.146000	0.058696 0.146000

(*) and (**) indicate level of significance at 1% and 5% respectively.

5.1.7.3 Johansen cointegration test

Upon completion of the first steps and confirming that all variables are stationary of order one, the next procedure of the study was to examine the issue of cointegration among the variables used in order to answer whether or not there was a long-run relationship among the variables. For this purpose, the Johansen cointegration method was employed. For this purpose, a Johansen cointegration test was employed. The lag order selection was based on sequential modified LR test statistic (LR), final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC), and Hannan-Quinn information criterion (HR), the results of which are presented in the following tables.

Table 100 shows the results of the Johansen multivariate cointegration test using AFTF as an indicator of Islamic insurance. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of $r \leq 0$ (no cointegrating) was rejected in favour of the alternative $r \geq 1$ at a 1% level of significance. The results indicate evidence of two cointegrating vectors in the equation. Therefore, it can be said that there is a long-run equilibrium relation between the variables of the

equation.

Table 100 Johansen cointegration Results for Model 29

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	106.7027*	47.85613	59.14629*	27.58434
r ≤1	r≥2	47.55641*	29.79707	34.08841*	21.13162
r≤2	r≥3	13.46800	15.49471	13.39485	14.26460
r≤3	r=4	0.073145	3.841466	0.073145	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 101 shows the results of the cointegration test using AGTF as an indicator of Islamic insurance. Both the trace test and maximum eigenvalue statistics have values larger than the critical values at a 1% level of significance. Therefore, the null hypothesis of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1. Accordingly, one cointegrating vector is found to exist among the variables of the equation. Therefore, it can be said that there is a long-run equilibrium relation between the variables of the equation.

Table 101 Johansen cointegration Results for Model 30

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	61.84316*	47.85613	34.39040 *	27.58434
r ≤1	r≥2	27.45276	29.79707	16.84655	21.13162
r≤2	r≥3	10.60621	15.49471	9.325892	14.26460
r≤3	r=4	1.280318	3.841466	1.280318	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 102 shows the results of the Johansen multivariate cointegration test using CPFT as an indicator of Islamic insurance. Both the trace test and maximum eigenvalue statistics have values larger than the critical values at a 1% and 5% level of significance. Therefore, the null

hypothesis of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1. Both tests indicate one cointegrating vectors among the variables used. Thus, it can be said that there is a long-run equilibrium relation among the variables of the equation.

Table 102 Johansen cointegration Results for Model 31

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	56.68796*	47.85613	31.83342**	27.58434
r ≤1	r≥2	24.85454	29.79707	14.67152	21.13162
r≤2	r≥3	10.18302	15.49471	9.215832	14.26460
r≤3	r=4	0.967192	3.841466	0.967192	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 103 presents the results of the Johansen multivariate cointegration test using AFTF as an indicator of Islamic insurance. Based on the trace test and maximum eigenvalue statistics, the null hypothesis of r ≤ 0 was rejected in favour of the alternative r ≥1 at a 1% level of significance. The results suggest evidence of two cointegrating vectors at a 1% significance level. Therefore, it can be said that there is a long-run equilibrium relation among the variables in the equation.

Table 103 Johansen cointegration Results for Model 32

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	114.4355*	47.85613	71.28982*	27.58434
r ≤1	r≥2	43.14570*	29.79707	30.28274*	21.13162
r≤2	r≥3	12.86295	15.49471	12.85056	14.26460
r≤3	r=4	0.012391	3.841466	0.012391	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 104 shows the results of the Johansen multivariate cointegration test using AGTF as an indicator of Islamic insurance. Based on the trace test and maximum eigenvalue statistics,

the null hypothesis of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1 at a 1% and 5% level of significance. The results indicate evidence of three cointegrating vectors in the equation. Therefore, it can be said that there is a long-run equilibrium relation among the variables of the equation.

Table 104 Johansen cointegration Results for Model 33

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	80.98898*	47.85613	41.77303*	27.58434
r ≤1	r≥2	39.21595*	29.79707	21.63625**	21.13162
r≤2	r≥3	17.57969**	15.49471	17.23916**	14.26460
r≤3	r=4	0.340535	3.841466	0.340535	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 105 shows the results of the cointegration test using CPFT as an indicator of Islamic insurance. Both the trace test and maximum eigenvalue statistics have values larger than the critical values at a 1% level of significance. Therefore, the null hypotheses of r ≤ 0 (no cointegrating) was rejected in favour of the alternative r ≥1. Accordingly, one cointegrating vectors are shown to exist among the variables of the equation. Therefore, it can be said that there is long-run equilibrium relation between the variables of the equation.

Table 105 Johansen cointegration Results for Model 34

Null	Alternative	λ Trace	5%critical value	λ max	5%critical value
r=0	r≥1	59.44230*	47.85613	34.84451*	27.58434
r ≤1	r≥2	24.59779	29.79707	13.85736	21.13162
r≤2	r≥3	10.74043	15.49471	10.66348	14.26460
r≤3	r=4	0.076950	3.841466	0.076950	3.841466

r indicates the number of cointegrating vector. (*) and (**) indicate statistical significance at 1% and 5% levels respectively

Table 106 presents the long-run coefficients of the cointegrating vector normalising on GDPPC in three different models. Model 29 indicates GDPPC has a positive association with AFTF. However, the relationship between CPI and TO and GDPPC is found to be negative. The error correction coefficient is incorrectly signed (positive) and statistically significant. The long-run elasticity of model 29 is 1.029239. Model 30 takes AGTF as a proxy for Islamic insurance and suggests that GDPPC, AGTF, and TO are positively related. On the other hand, the model shows a negative relationship between GDPPC and CPI. The error correction coefficient is incorrectly signed with an adjustment of 100.19%. In model 31, GDPPC has a positive relationship with TO. However, the relationship among GDPPC, CPI, and CPFT is negative. The error correction coefficient is incorrectly signed and not statistically significant, with an adjustment speed of 85%.

Table 106: Long-run multivariate cointegrating vector normalised on GDPPC

Model 29	GDPPC	AFTF	TO	CPI
	1	0.166651	-0.275324	-3.629829
		(0.01534)	(0.04901)	(0.17783)
Model 30	GDPPC	AGTF	TO	CPI
	1	0.074299	0.174087	-4.076997
		(0.03428)	(0.05698)	(0.39845)
Model 31	GDPPC	CPFT	TO	CPI
	1	-0.012294	0.127089	-3.161328
		(0.02141)	(0.05504)	(0.33920)

Table 107 presents the long-run coefficients of the cointegrating vector normalising on FCF in three different models. Model 32 indicates a positive association between FCF and AFTF as a proxy for Islamic insurance. However, the relationship among FCF, TO, and CPI is negative. The error correction coefficient is correctly signed and not statistically significant. The adjustment or long-run elasticity of model 32 is 0.205738. Model 33 shows a positive relationship between economic growth in the form of FCF and AGTF, as well as a negative

relationship among FCF, TO, and CPI. The long-run elasticity of GDPPC is -0.766659 and has the correct sign. Model 34, which takes CPFT as a proxy for Islamic insurance, suggests that FCF has a positive relationship with CPFT. On the other hand, FCF, TO, and CPI are negatively related. The long-run elasticity of FCF is -0.377112. The error correction coefficient is correctly signed and statistically significant.

Table 107: Long-run multivariate cointegrating vector normalised on FCF

Model 32	FCF	AFTF	TO	CPI
	1	1.441699	-3.892739	-4.114480
		(0.07566)	(0.24328)	(0.92317)
Model 33	FCF	AGTF	TO	CPI
	1	1.706547	-0.280476	-12.90523
		(0.44789)	(0.67088)	(4.08748)
Model 34	FCF	CPFT	TO	CPI
	1	0.730621	-0.415418	-9.965227
		(0.10907)	(0.28881)	(1.48844)

The study carries out misspecification tests for serial correlation (the Lagrange multiplier), normality, and heteroskedasticity tests for Models 29–34. The results of the three tests are summarized in Table 108, which shows that all variables representing the Islamic insurance in models 29–34 passed the serial correlation with the exception of one models (33) with a probability of less than 5%. Three of the models passed the normality tests that were conducted using joint Jarque-Bera statistics, and just two model (32 and 34) failed to pass the normality test. As for the heteroskedasticity test, the results show that all models from 29 to 34 passed the test

Table 108
Test on the VCE

	Serial Correlation LM Test		Jarque Bera Normality Test		Heteroskedasticity Test	
	Chi-Square	Prob	Jarque Bera Stat	Prob	Chi-Square	Prob
Model 29	2.309697	0.3151	0.436431	0.803952	8.179273	0.7710
Model 30	2.540170	0.2808	0.338174	0.844436	14.75839	0.2549
Model 31	3.016826	0.2213	0.943628	0.558869	12.43619	0.4113
Model 32	2.819083	0.2443	53.06755	0.000000	11.18229	0.5134
Model 33	10.82790	0.0127	0.484473	0.784871	18.06287	0.3202
Model 34	1.967583	0.1607	6.391210	0.040942	10.26578	0.2504

5.1.7.4 Causality

The results of Johansen multivariate cointegration indicated cointegration vector to exist among the variables representing Islamic insurance or the determinants of economic growth. The Granger causality test is detailed in this section. The results of the short- and long-run causality tests are reported in Tables 109–120.

The Granger causality test results given in Tables 109 and 110 show Granger causality in the short-run tests between GDPPC and TO running in one way and between GDPPC to CPI in one way. However, no Granger causality is found between AFTF and GDPPC. As for the long-run tests, they suggest there to be Granger causality among AFTF, TO and CPI to GDPPC. Overall, the study found no causality between Islamic insurance (as represented by AFTF) and economic growth (represented by GDPPC) in the short run. The long-run causality tests indicate evidence of unidirectional causality in a single direction running from AFTF, TO, and CPI to GDPPC. Granger causality show that the null hypothesis that AFTF does not Granger Cause

GDPPC and the null hypothesis that GDPPC does not Granger Cause AFTF is not rejected. As for long run show that the null hypothesis that AFTF , TO, CPI does not cause GDPPC is rejected but, the null hypothesis that GDPPC TO, CPI does not cause AFTF is not rejected.

Table 109: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
AFTF does not Granger Cause GDPPC	3.694385	0.1577
GDPPC does not Granger Cause AFTF	4.435542	0.1089
TO does not Granger Cause GDPPC	2.012307	0.3656
GDPPC does not Granger Cause TO	82.19100*	0.0000
CPI does not Granger Cause GDPPC	2.940697	0.2298
GDPPC does not Granger Cause CPI	8.664460**	0.0131

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 110: Long -run Granger causality

Null Hypothesis:	ECT	Probability
AFTF , TO, CPI does not cause GDPPC	-0.525208**	0.0361
GDPPC TO, CPI does not cause AFTF	0.191012**	0.0172

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality test presented in Tables 111 and 112 show bidirectional Granger causality between TO and GDDPC in the short run. They also indicate that there is short-run causality between GDPPC and AGTF. However, no Granger causality is found between CPI and GDDPC. In terms of the long run, the results presented in Table 112 show there to be no long-run causality among AGTF, TO, CPI, and GDPPC. Overall, the study found causality between Islamic insurance (as represented by AGTF) and economic growth (as represented by GDPPC) in the short run only. This arises from the probability values reported in the tables 111 , 112 : the null hypothesis that AGTF does not Granger Cause GDDPC is not rejected but, the null hypothesis GDDPC does not Granger Cause AGTF is not rejected. The null hypothesis that AGTF, TO, CPI does not cause GDDPC is rejected while GDDPC, TO, CPI does not cause AGTF is not rejected.

Table 111: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
AGTF does not Granger Cause GDPPC	2.143495	0.3424
GDPPC does not Granger Cause AGTF	9.296834*	0.0096
TO does not Granger Cause GDPPC	9.259773*	0.0098
GDPPC does not Granger Cause TO	10.55610*	0.0051
CPI does not Granger Cause GDPPC	2.835389	0.2423
GDPPC does not Granger Cause CPI	0.353092	0.8382

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 112: Long -run Granger causality

Null	ECT	Probability
AGTF , TO, CPI does not cause GDPPC	1.001938*	0.0055
GDPPC TO, CPI does not cause AGTF	0.011157	0.7451

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality test given in Tables 113 and 114 indicate that there is short-run causality between CPI to GDPPC and short-run bidirectional Granger causality between TO and GDDPC. However, no Granger causality is found between CPFT and GDPPC. In terms of the long-run, the relationship is positive, and the causality among GDPPC, TO, CPI, and CPFT runs in one direction. In general, the study found no causality between Islamic insurance (as represented by CPFT) and economic growth (as represented by GDPPC) in both short- and long-run tests.

Table 113: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
CPFT does not Granger Cause GDPPC	1.278082	0.5278
GDPPC does not Granger Cause CPFT	1.042006	0.5939
TO does not Granger Cause GDPPC	12.73576*	0.0017
GDPPC does not Granger Cause TO	10.40655*	0.0055
CPI does not Granger Cause GDPPC	10.09764*	0.0064
GDPPC does not Granger Cause CPI	2.727184	0.2557

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 114: Long -run Granger non- causality

Null	ECT	Probability
CPFT , TO, CPI does not cause GDPPC	0.854581**	0.0259
GDPPC TO, CPI does not cause CPFT	0.504080**	0.0327

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality tests given in Tables 115 and 116 indicate no short-run Granger causality between AFTF and FCF or among TO, CPI, and FCF. The long-run causality tests indicate evidence of unidirectional causality running from AFTF, TO, and CPI to FCF. In general, the study found no causality between Islamic insurance (as represented by AFTF) and economic growth (as represented by fixed capital formation) in the short-run tests, yet found evidence of unidirectional causality in the long-run tests. Granger causality show that the null hypothesis that AFTF does not Granger Cause FCF and the null hypothesis that FCF does not Granger Cause AFTF is not rejected. As for long run show that the null hypothesis that AFTF, TO, CPI does not cause FCF is not rejected but, the null hypothesis that FCF, TO, CPI does not cause AFTF is rejected. This shows that Granger causality runs in one direction from FCF, TO, and CPI to AFTF.

Table 115: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
AFTF does not Granger Cause FCF	1.847457	0.3970
FCF does not Granger Cause AFTF	4.884994	0.0869
TO does not Granger Cause FCF	3.465619	0.1768
FCF does not Granger Cause TO	5.003704	0.0819
CPI does not Granger Cause FCF	0.276248	0.8710
FCF does not Granger Cause CPI	0.844794	0.6555

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 116: Long -run Granger causality

Null	ECT	Probability
AFTF , TO, CPI does not cause FCF	0.205738	0.2008
FCF, TO, CPI does not cause AFTF	-0.766614*	0.0000

(*) and (**) indicate level of significance at 1% and 5% respectively.

The results of the Granger causality test given in Tables 117 and 118 indicate there to be short-run causality between TO and FCF and short-run Granger causality between FCF and CPI. However, no Granger causality is found between AGTF and FCF. In terms of the long run, the relationship is positive, and the causality among AGTF, TO, CPI, and FCF runs in one direction. Overall, the study found no causality between Islamic insurance (as represented by AGTF) and economic growth (as represented by FCF) in short-run tests, yet found evidence of unidirectional causality in long-run tests. Granger causality show that the null hypothesis that AGTF does not Granger Cause FCF and the null hypothesis that FCF does not Granger Cause AGTF is not rejected. As for long run show that the null hypothesis that AGTF, TO, CPI does not cause FCF is rejected but, the null hypothesis that FCF, TO, CPI does not cause AGTF is not rejected. This shows that Granger causality runs in one direction from AGTF, TO, and CPI to FCF.

Table 117: Short-run Granger causality

Null Hypothesis:	Chi-square Value	Probability
AGTF does not Granger Cause FCF	3.809456	0.2828
FCF does not Granger Cause AGTF	1.355429	0.7160
TO does not Granger Cause FCF	8.892002**	0.0308
FCF does not Granger Cause TO	3.960080	0.2658
CPI does not Granger Cause FCF	4.241094	0.2366
FCF does not Granger Cause CPI	11.56421*	0.0090

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 118: Long -run Granger non- causality

Null	ECT	Probability
AGTF , TO, CPI does not cause FCF	-0.766659**	0.0314
FCF, TO, CPI does not cause AGTF	-0.204269	0.4870

(*) and (**) indicate level of significance at 1% and 5% respectively.

The Granger causality test results given in Tables 119 and 120show no Granger causality in the short-run tests between FCF and CPFT and between FCF and CPI, respectively. However,

they indicate short-run bidirectional Granger causality between TO and GDDPC As for the long-run tests, they suggest there to be bidirectional Granger causality among CPFT, TO, CPI, and FCF. In general, the study found no causality between Islamic insurance (as represented by CPFT) and economic growth (as represented by FCF) in the short-run test. The long-run test found evidence of bidirectional causality between the variables .This arises from the probability values reported in Tables 119 and 120 the null hypothesis that CPET does not Granger Cause FCF and the null hypothesis that FCF does not Granger Cause CPFT is not rejected. As for long run show that the null hypothesis that CPFT, TO, CPI does not cause FCF is rejected and , the null hypothesis that FCF, TO, CPI does not cause CPFT is rejected. This shows that Granger causality runs in two ways from CPFT, TO, and CPI to FCF and from FCF, TO and CPI to CPFT .

Table 119: Short-run Granger non- causality

Null Hypothesis:	Chi-square Value	Probability
CPFT does not Granger Cause FCF	1.328015	0.2492
FCF does not Granger Cause CPFT	0.897218	0.3435
TO does not Granger Cause FCF	3.937532**	0.0472
FCF does not Granger Cause TO	4.174757**	0.0410
CPI does not Granger Cause FCF	1.176754	0.2780
FCF does not Granger Cause CPI	1.464494	0.2262

(*) and (**) indicate level of significance at 1% and 5% respectively.

Table 120: Long -run Granger non- causality

Null	ECT	Probability
CPFT , TO, CPI does not cause FCF	-0.603439*	0.0041
FCF, TO, CPI does not cause CPFT	-0.377112*	0.0021

(*) and (**) indicate level of significance at 1% and 5% respectively.

5.1.7.5 Conclusion

The objective of this section is to examine the causal relationship between Islamic insurance and economic growth using annual time series data from 1986 to 2012. VECM-based causality tests are used in order to establish the relationships among Islamic insurance as represented by AFTF, AGTF, and CPFT and economic growth. Empirical investigation suggests that there is short-run causality between Islamic insurance and economic growth when Islamic insurance is represented by CPFT and AGTF and when economic growth is represented by GDPPC. However, the results show no short-run causality between Islamic insurance and economic growth when Islamic insurance is represented by AFTF, AGTF, and CPFT and economic growth is represented by GDPPC or FCF. In the long run, most Islamic insurance variables show unidirectional causality between Islamic insurance and economic growth.

5.1.8 Conclusion

The objective of this chapter is to examine causal relationships among bank development, stock market development, conventional insurance, Islamic insurance, and economic growth in Malaysia using annual data for the periods 1975 to 2012. These relationships were studied a using multivariate VAR framework to evaluate long-run relationships among bank development, stock market development, conventional insurance, Islamic insurance, real GDP per capita, fixed capital formation, trade openness and consumer price index. The study also used vector error correction model-based causality tests to establish long- and short-run causality relationships among bank development, stock market development, conventional insurance, Islamic insurance, and economic growth. In this study, four bank development indicators were used: the ratio of commercial bank assets divided by commercial bank plus central bank assets, liquid liabilities, domestic credit to the private sector, and bank deposit liabilities.

The total value traded ratio, turnover ratio, number of listed companies, market capitalization, and total capital raised in the primary market were used as indicators for stock market development. The five variables representing conventional insurance were gross premium income (life insurance), gross premium income (nonlife insurance), life insurance penetration, non-life insurance penetration, and non-life insurance density. The three variables for Islamic insurance included: assets of family takaful funds, assets of general takaful funds, and total contributions by participants to family takaful funds. Empirical results suggest that there is a short-run unidirectional Granger causality between bank development and economic growth using bank deposit liabilities and domestic credit to the private sector when using real GDP per capita or fixed capital formation as indicators for economic growth. However, when bank development was represented by using the ratio of commercial bank assets divided by commercial bank plus central bank assets and liquid liabilities, the results indicated no short-run causality between bank development and economic growth. As for the long run, when economic growth was represented by real GDP per capita or by fixed capital formation, the study found unidirectional causality between bank development and economic growth. When stock market variables—turnover ratio, total value traded ratio, market capitalization, and total value traded ratio—were used, the results indicated short-run Granger causality between stock market and economic growth. However, with the number of listed companies or total capital raised in the primary market, the results indicated no causality between the stock market and economic growth. The results also indicated no long-run Granger causality between the stock market (as represented by LC or IPOs) and economic growth (represented by real GDPPC). However, there was evidence of unidirectional causality between the stock mark and economic growth when VT, TR, and MC were used. There was no short-run causality between conventional insurance and

economic growth when the following variables of conventional insurance were used: gross premium income (non-life insurance), non-life insurance penetration, or non-life insurance density. However, the results indicated a short-run between conventional insurance and economic growth when gross premium income (life insurance) and life insurance penetration represented insurance and GDPPC or FCF were used for economic growth. In the long run, the results showed that most conventional insurance variables show no causality between conventional insurance and economic growth. When Islamic insurance variables—assets of general takaful funds and total contributions by participants in the family takaful—were used, the results indicated a short-run between Islamic insurance and economic growth as represented by real GDP per capita. However, with assets of the family takaful funds, the results showed no short-run causality between Islamic insurance and economic growth. The results also showed no short-run causality when using the same variable of Islamic insurance and economic growth represented by FCF. Long-run Islamic insurance variables showed unidirectional causality between Islamic insurance and economic growth.

Chapter 6
Discussion and Conclusions

This chapter consists of a discussion and conclusions of the main findings. It also offer some recommendations based on the findings of the study and offers suggestions for further research.

6.1 Discussion and Conclusions

The relationship between financial development and economic growth and the causal relationship between them is an issue for debate. A number of scholars do not believe the development of the financial system has any significant role in determining economic growth (see Robinson 1954; Lucas 1988). However, a growing body of empirical research has found evidence of a robust relationship between financial development and economic growth (see Goldsmith 1969; Bencivenga and Smith 1991; King and Levine 1993; Mirnde and Eng 1994; Odedokum 1996; Levine and Zervos 1998; Beck et al. 2000; Chang and Ho 2001).

The purpose of this thesis is to examine the causality relationship among bank development, stock market development, conventional and Islamic insurance development, and economic growth, in terms of the long and short terms in Malaysia. The study applies multivariate VAR and VECM to examine these long-run causal relationships. Specifically, this study attempts to address four questions: (1) does bank development, securities market development, and the development of Islamic and conventional insurance institutions cause economic growth? (2) Does economic growth cause the development of banks, securities market development, and the development of Islamic and conventional insurance institutions? (3): Is there a long-term correlation among the development of banks, securities market development, and the

development of Islamic and conventional insurance institutions and economic growth? (4): Is there a short-term association among the development of banks, securities market development, Islamic and conventional insurance development, and economic growth?

The study utilized four financial indicators as a measure of bank development: the ratio of commercial bank assets divided by commercial bank plus central bank assets, liquid liabilities, domestic lending to the private sector, and bank deposit liabilities. The study established cointegration using four bank indicators, where the ratio of commercial bank assets divided by the commercial bank plus central bank assets and bank deposit liabilities each exhibit three cointegrating vectors based on the trace statistics and one cointegration vector based on the maximum eigenvalue statistics. Liquid liabilities suggests evidence of four cointegrating vectors, while bank deposit liabilities and domestic lending to the private sector suggest evidence of one cointegrating vector, but no cointegrating vector in Models4, 5, and6.The results of cointegration between bank variables and economic development show a positive long-run relationship between bank development and economic growth represented by GDP per capita. Another important finding is that LBDL as a proxy for bank development is positive related to economic growth. The LBDL results are consistent with the findings of Ghali (1999) and Ndako (2010). On the other hand, the relationship between bank development represented by liquid liabilities and economic growth represented by GDPPC was negative. The negative relationship between economic growth represented by GDPPC and bank development represented by liquid liabilities is in line with Waqabaca's empirical finding (2004). The results also show that the relationship between bank development represented by LBDL and DCP and economic growth represented by FCF are negative.

The Granger causality results suggest the existence of short-run unidirectional causality

between bank development and economic growth when bank deposit liabilities and domestic credit to the private sector are used as measures of bank development. The ratio of commercial bank assets divided by commercial bank plus central bank assets and liquid liabilities both indicate no short-run causality between bank development and economic growth. In the long run, there is evidence of unidirectional causality between bank development and economic growth.

The results obtained draw attention to the key function of banking development in enhancing economic growth in Malaysia. For instance, banks play an important role in making credit available for investment by pooling the savings from individual savers into productive investment, which in turn contributes to capital accumulation and economic growth. In addition, the banking system ensures the availability of liquidity in the financial system and helps in reducing risk in the financial system through increasing the availability of the possibilities of diversity. Form this finding, it can be said that bank development can promote economic growth, due perhaps to the factors discussed and to the reforms undertaken in the past two decades by the Malaysian government to improve the banking sector. However, the results show a negative relationship between bank development and economic growth as represented by FCF. One explanation for this negative relationship is that banks may have channelled limited funds into domestic investment or that funds have been channelled to less profitable investments another explanation is that some of the variables used may not be good proxies for the efficiency of the banking sector.

The study also examined the causal relationship between stock market development and economic growth using stock market variables. Five measures of the stock market system were used, represented by total value traded ratio, turnover ratio, number of listed companies, market capitalization, and total capital raised in the primary market. The study applied multivariate VAR

and VECM. Ten models were used in this part of analysis, which found that three models exhibited two cointegrating vectors (9 and 10), while four models exhibited two cointegrating vectors (11, 14, 15, and 16). We found three models with a single cointegrating vector (13, 17, and 18), but no cointegrating vector in Model 12, where MC was used. The results of cointegrating indicated a positive association between stock market (as represented by VT) and economic growth (represented by GDPPC).The cointegration results show a positive relationship between TR as a proxy for stock market development and GDPPC. This positive relationship between stock market and economic growth is in line with the empirical results of Beck and Levine (2004) and Choong, Yusop et al (2005). The findings also show a positive relationship between the number of listed companies as a proxy for stock market development and GDPPC. While the results of cointegration show a negative relationship among stock market development as represented by VT, TR, MC, IPOs, and FCF, they show a positive relationship between LC as a proxy for stock market development and economic growth as represented by FCF.

One possible interpretation of these results is that the positive relationship between TR and economic growth is attributable to the increase in Malaysian stock market activity in respect to the economy. The positive relationship between TR and economic growth could show that higher growth in stock market activity leads to economic growth. The positive relationship between LC as a proxy of stock market development and GDPPC may be due to a large number of listed companies in the Malaysian stock market and the ability of the stock market to provide benefits from diversification. Another finding is that there is a negative relationship among stock market development as represented by VT, TR, MC, IPOs and economic growth as represented by FCF. However, the results show a positive relationship between LC as a proxy for stock market development and economic growth as represented by FCF. One explanation for this

negative relationship may be that less funding is made available to entrepreneurs to finance their business, leading to a negative impact on economic growth; there may also be some variables considered that are not good as predictors of economic growth as represented by FCF. The positive relationship that was established between stock market development as represented by LC and economic growth could be attributed to the increased number of public firms that participate in the Malaysian stock market.

The study performed Wald tests, with findings indicating evidence of unidirectional causality from stock market variables VT and MC to economic growth variables GDPPC and FCF. They also indicated unidirectional causality from FCF to TR, but there was no causality between the stock market variables LC and IPOs and the economic growth variable GDPPC. They indicate short-run causality among stock market variables VT, MC, and IPOs and the economic growth variable FCF. The results indicated no long-run Granger causality between the stock market (represented by LC or by IPOs) and economic growth (represented by GDPPC). However, there is evidence of unidirectional causality between stock market and economic growth when VT, TR, and MC are used.

The study also analysed the causal relationship between conventional insurance and economic growth. The study utilized five financial indicators as a measure of conventional insurance: gross premium income (life insurance), gross premium income (non-life insurance), life insurance penetration, non-life insurance penetration, and non-life insurance density. The study established cointegration using these five financial indicators for conventional insurance, where GPILF and GPINL each exhibit three cointegrating vectors and NLIP and NLID suggest evidence of one cointegrating vector. LIP suggests evidence of two cointegrating vectors. The results of cointegration tests indicate a positive relationship between economic growth (GDPPC)

and GPILF and a positive association between conventional insurance (LIP) and economic growth (GDPPC) that is statistically significant. However, the findings indicated a negative relationship between NLIP, NLID, and GPINLF as proxies of conventional insurance and GDPPC. The negative relationship between GDPPC and NLID is in line with the empirical findings of Nguyen, Avram et al (2010). Possible interpretations of these results could be that the positive relationship between economic growth in the form of GDPPC and conventional insurance in the form of GPILF is attributable to increases in the level of income, which encourages people to buy insurance, thus increasing premium income and the amount of investable funds that could be channelled to profitable investments and consequent economic growth. Another important finding is that a positive relationship between conventional insurance (represented by LIP) and economic growth (represented by GDPPC) may be due to several factors. For instance, rising income levels, higher levels of the awareness of the benefits of insurance among the populace, and the higher number of foreigners who come to work or study in Malaysia. However the negative relationship between GPINLF and GDPPC may be due to the fact non-life insurance activities are concentrated in the short term rather than the long term. The findings also show that GPILF and LIP and FCF are positively related, which may be due to the funds that life insurance companies have obtained from policyholders, which are being invested in ways that contribute to economic growth. Another possible explanation is due simply to rising income levels. The finding that there is a negative relationship among GPINLI, NLIP, NLID, and FCF may be due to the investments from non-life insurance policies being focused on short-term investments, so that their impact is negative on economic growth.

The findings from the causality test suggest the existence of short-run unidirectional causality between conventional insurance and economic growth when GPILF or LIP are used as

measures of conventional insurance and GDPPC or FCF are used as measures of economic growth, while GPILF, GPINLF, NLIP, NLID, and LIP indicated no short-run causality between conventional insurance and economic growth. The results showed most of the conventional insurance variables have no long-run causality between conventional insurance and economic growth.

The study also examined the causal relationship between Islamic insurance and economic growth using the Islamic insurance variables of assets of family takaful funds, assets of general takaful funds, and total contributions by participants in the family takaful funds. Using the six models, we found two cointegrating vectors each in models 29 and 32 and three cointegrating vectors in model 33. We found three models with a single cointegrating vector (30, 31, and 34).

Family *takaful* insurance has been growing rapidly as many people have increased the demand for both family *takaful* policies and as financial investments. Recently, the *takaful* insurance sector has undergone an impressive development and has contributed to Malaysian economic growth. This study provides evidence to confirm the long-term relationship between the total assets of family *takaful* insurance and economic growth in Malaysia. The *takaful* insurance institutions could transform the pooled funds collected from the participants into a financial investment that is diversified among the government Islamic papers, private Islamic debt securities, and equity Investment properties. Therefore, these investments will positively affect growth in the country. This positive relationship is consistent with the findings of Ching, Kogid et al. (2010). Another finding is the absence of any relationship between the total assets of family *takaful* institutions and economic growth in the short run, which may be because most of the activities of those institutions have focused on long-term financial investments. As for the total assets of the general *takaful* funds (AGTF), this has also undergone an impressive

development and has contributed to economic growth, because general *takaful* insurance also expanded with a large increase in funds received from the participants. These funds were channelled into investments in activities permissible under Islam, which is diversified among the government Islamic papers, private Islamic debt securities, and investment properties. The findings confirmed the existence of a long-term cointegration relationship between total AGTF insurance and economic growth. This positive relationship is consistent with the findings of Ching, Kogid et al. (2011). Another important finding is a positive relationship between total contributions by participants in a family *takaful* fund (CPFT) and economic growth, which may be due to an increase in contributions by participants in CPFTs, the use of these in investments that may affect positively economic growth in Malaysia. This positive relationship is consistent with the result of Boon (2005), who found in his study that insurance funds affect both capital formation and GDP growth in the short and long terms.

The study performed Wald tests and the findings indicated short-run causality between Islamic insurance and economic growth. When total contributions by participants in the family *takaful* and assets of general *takaful* funds are employed with assets of family *takaful* funds, the results showed no short-run causality between Islamic insurance and economic growth. Also, the results showed no short-run causality when using the same variables of Islamic insurance and economic growth represented by FCF. In the long run, most of the Islamic insurance variables showed unidirectional causality between Islamic insurance and economic growth.

6.2 Recommendations

Based on the above findings, this study presents the following recommendations. The government should, through specialized departments, encourage savings and investment through the development of appropriate policies that give equal importance to both the financial sector

(based on the banks) and the stock market (based on the market economy) to promote capital formation and investment and thereby increase the living standards of the people by increasing economic growth.

The government should also encourage more companies, especially small and medium enterprises, to become listed on the stock market and allow them to tap into investment funds from the population as a whole, which would stimulate and strengthen the financial system and the stock market in particular, and thus increase economic growth.

The government must use political actions to restructure the insurance industry in the country to consolidate and fortify the status and operations of insurance companies. Both Islamic and conventional insurance companies in the country should, through the use of seminars, conferences, and advertisements, create greater public awareness of their products.

The government should adopt a wide-ranging monetary policy that includes the downward adjustment of the deposit reserve ratio, a reduction in interest rates, the vigorous adjustment of credit policy, the expansion of open-market operations, and the expansion of commercial banks' credit scopes, all of which may be necessary for boosting effective demand.

It is proposed, at the macro level, that future reform policies should allow commercial banks to be fully commercialized. These type of banks can play an important role in supporting economic growth and promoting systemic economic reform. The main future challenge, at the micro level, to Malaysian commercial banks is likely to be strengthening their capital adequacy ratios and operational efficiency. Commercial banks should first enhance their risk management capabilities.

6.3 Suggestions for Future Research

This study offers several suggestions for future research. It examines the causality relationship among bank development, stock market development, conventional insurance, Islamic insurance, and economic growth. This study did not use all possible measures of bank development—such as the ratio of credits provided by financial intermediaries to the private sector, the ratio of bank claims on the private sector to nominal GDP, the ratio of currency to demand deposits—the stock market (where the ratio of stock market volatility could be explored), conventional insurance (such as the total assets of the Malaysian life insurance sector, the total assets of the Malaysian non-life insurance sector, or Islamic insurance (total contributions by participants in general *takaful*). Therefore, further research could be undertaken that uses different measures to test the relationship among bank development, stock market, conventional insurance, Islamic insurance, and economic growth. To see whether changes in those variables affect economic growth, a dataset over an extended period is required to improve the robustness of results that test for causal relationships. Another direction for future research is a cross-national study involving other developing countries, especially those where Islamic insurance plays a role. Furthermore, the study did not exam unlisted firms but was restricted to companies listed on stock exchanges. The reason for this decision is the lack of information for unlisted companies, but does mean that part of the country's business sector has not been studied. Result validity may be limited by the data. Additional effort is need to lengthen the span of the time-series data and the number of countries studied.

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